

1. Introduction

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During the summer of 2018, many lives were lost in the Morando Bridge collapse in Genoa (Italy). Pictures of the devastated bridge – an artery to neighbouring countries – made their way around the world. Subsequent discussions cited increased traffic of heavy-duty lorries as a possible cause for the collapse of the structure.

Less known is that the instability of the bridge, along with the necessity for new infrastructure to cope with the increased traffic of heavy-duty lorries, had been discussed at length. In this regard, the 2009 plan *La Gronda di Genova* was aimed at reducing the stress on the Morando Bridge by creating a by-pass.¹ It turned out to be a fruitless exercise, however, as the plan ended up being abandoned due to a lack of public consent.²

Such lack of public consent concerning infrastructural projects is not novel. In the words of Wolf and Van Dooren, ‘Few policy issues are able to cause the broad and intense civil unrest that infrastructural projects can’.³ They studied the political and societal debate concerning the development of the Oosterweel connection, another infrastructural project that is currently unrealized. The connection would decrease the amount of traffic jams that plague the city of Antwerp and prevent traffic infarcts on the Belgian network of highways. In their study, Wolf and Van Dooren show that, in order to influence the debate, *facts* and *feelings* were utilized by both policy-makers and the public. Imaginative framing (ie feeling-based arguments) and evidentiary framing (ie facts- or science-based arguments) were both used in this debate to inspire, manage and manipulate not only feelings and opinion, but science as well.

¹ Ilsole24ore.com, article of 14 August 2018, *Genova, storia del ponte morandi dalle polemiche al crollo*.

² Ilsole24ori.com, Redazione, *Gronda di Genova, storia di un’opera contestata*.

³ E.E.A. Wolf and W. Van Dooren, *How Policies Become Contested: A Spiral of Imagination and Evidence in a Large Infrastructure Project*, *Policy Science* (2017) 50, p. 449. <https://doi.org/10.1007/s11077-017-9275-3>.

Behavioural science (particularly in relation to risk assessment and risk management) is becoming a more important field in the determination of environmental policy, regulation and decision-making. As such, it has much to add to analysis of feeling-based propositions and positions in environmental matters. In this regard, Wolf and Van Dooren's study demonstrates the – generally – close interaction between *facts* and *feelings* in environmental decision-making procedures. While infrastructural projects are a good example of a fertile breeding ground, leading to a heightened debate using *facts* and *feelings*, they are not the only example. Admittedly, it is difficult to imagine an environmental field in which science- and feeling-based arguments do not play a role in decision-making – see, for example, the debates on both nuclear energy and mega-farms.⁴

Accordingly, Eva Wolf's presentation during the first U4 Environmental Law Network event organized in Brussels on 14 and 15 September 2018 carrying the topic 'Governing Facts and Feelings in Environmental Decision-Making – Towards Equal Opportunities in Environmental Governance' was a very welcome one.

This book builds on the proceedings of the Brussels event. It discusses the perceived tension in the environmental field between, on the one hand, the need to engage all parts of society in environmental governance and, on the other hand, the need for professional expertise to deal with the complex matter the environment is. Technical and scientific information are required in the decision-making process under many pieces of international, European and national environmental legislation. Scientific assessments of the impact of human activities on the environment and human health are, for example, required under the Strategic Environmental Assessment (SEA) Directive,⁵ the Environmental Impact Assessment (EIA) Directive⁶ and the Habitats Directive.⁷

Moreover, decision-making must take account of the opinions and feeling of the general public. We have just celebrated the 20th anniversary of the signature of the Aarhus Convention on access to information, public participation

⁴ M. Van Lieshout, A. Dewulf, N. Aarts and C. Termeer, *Do Scale Frames Matter? Scale Frame Mismatches in the Decision Making Process of a 'Mega Farm' in a Small Dutch Village*, *Ecology and Society* (2011) 16(1), p. 38.

⁵ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, OJ L 197, 21.7.2001, pp. 30–37.

⁶ Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment Text with EEA relevance, OJ L 26, 28.1.2012, pp. 1–21.

⁷ Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora, OJ L 206, 22.7.1992, pp. 7–50.

and effective judicial protection in environmental matters.⁸ Public participation in environmental decision-making is paramount in this regard to achieve what is called participatory democracy. EU law recognizes the importance of the Convention and of the public participation pillar by requiring public participation procedures for both specific and general decisions. The former include those covered by the EIA and Habitats Directives, while the latter refer to plans and programmes covered by the SEA Directive. Thus, the duties to base decision-making procedures in environmental matters on *scientific knowledge* and on the *opinion* and *feelings* of the public overlap in many cases.

This book focuses on the tension created when attempting to reconcile these two duties. Indeed, not only can general public opinion deviate from scientific knowledge, scientific knowledge itself can be lacunose or contradictory. In this regard, the *precautionary principle* is an effective tool to reconcile facts and feelings in the context of uncertainty. First, because precautionary measures are provisional (they only apply for the duration of the scientific uncertainty) and, second, because precautionary measures are proportional to the degree of uncertainty (the greater the uncertainty, the stronger the measures). Yet, the precautionary approach is under pressure at both international and EU level. Hence, public officials, including judges, are confronted with the challenge of having to govern facts and feelings in environmental decision-making.

This book includes a collection of contributions providing guidance to decision-makers, including judges, about how to govern facts and feelings in environmental decision-making. Part I of the book looks at the *inclusion and management of feelings and opinions of the public* in the decision-making process, by means of public participation procedures. Three recurring problems highlighted in the literature are addressed in this regard.

First, Goda Perlaviciute's chapter addresses the often-mentioned problem that public participation procedures in the field of energy transition tend to exacerbate societal conflicts and divisions, rather than overcoming them. Climate change mitigation and adaptation policy relies on sustainable energy transition. Yet, plans and projects for wind farms, hydropower stations, and carbon capture and storage installations are slowed down, or even withdrawn, due to public resistance. Accordingly, the question raised is how to develop sustainable energy projects that better address societal interests and values and are socially more acceptable. The enhancement of possibilities for public participation mechanisms in the context of energy projects might offer a solution. Indeed, by inviting an increasing number of people to participate,

⁸ Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters, done at Aarhus, Denmark, 25 July 1998, Treaty Series, vol. 2161, p. 447.

decision-making procedures in this area would become more democratic and fair. In theory, such processes would lead to higher acceptance of energy projects by the various groups of society. Even though both international and national policy in the area of energy transition emphasizes the importance of public participation, the question remains whether public participation is truly the silver bullet for controversial energy projects. Today, certain groups dominate participatory processes (most notably, well-educated white males, over 55, with above-average incomes) and participation can end in polarization rather than consensus (eg debates between climate change sceptics and believers). These findings result in heavy criticism of today's approach to public participation. Based on environmental psychology insights, Perlaviciute's chapter proposes a value-based approach to address the key challenges surrounding participatory democracy in energy projects. There are four categories of people's values: biospheric (protecting nature and the environment); altruistic (safeguarding the well-being of others); egoistic (safeguarding personal resources); and hedonic (seeking pleasure and comfort). Energy projects carry implications for each of those. Her chapter postulates that, by linking the strength of people's values to the implications of energy projects on these values, it can be established (i) who participates and (ii) whether a consensus can be reached. Hence, this framework serves to help us understand the motives that drive people with different values to participate, increasing a heterogenic representation of values during public participation procedures. Moreover, the framework helps us to understand which values lead participants to engage in conflicts and how to address those values during the participation process for energy projects.

Second, Lorenzo Squintani and Hendrik Schoukens' chapter addresses the emerging problem that large groups of our society, usually the weaker ones, such as the less-well educated, are de facto marginalized during public participation procedures. For example, studies show that less-well-educated and financially insecure people cannot effectively take part in environmental public participation procedures. From a legal perspective, public participation procedures tend to focus on procedural equality, ie on ensuring that each member of the public has the same right to participate as any other member does. In this chapter, Squintani and Schoukens focus on how law in the EU can be used to anchor public participation procedures to material equality, ie equity. Hence, they focus, first, on the role that positive action plays in EU law in general. Both the general principle of equal treatment and the role played by positive action in specific areas of EU law are discussed in this regard. Second, they focus on public participation in environmental matters, in particular focusing on the room for positive action under the Aarhus Convention, and EU law implementing it. On the whole, this chapter develops a framework for

further research on how to achieve equal opportunities in public participation procedures concerning environmental matters.

Third, Alexandra Aragão's chapter addresses the fact that people's feelings are difficult to incorporate in today's environmental decision-making procedures, given those procedures' reliance on objective, rather than subjective, arguments. The purpose of this chapter is to show that science and technology can turn *feelings* into *facts*, hence enhancing the functioning of public participation procedures. To this extent, her chapter first describes the legal duty in environmental decision-making – found in both EU and international law – to include the relationship between facts and science, on the one hand, and feelings and emotions, on the other hand. Second, her chapter discusses how digital information and communication technologies (ICT) and geographic information systems (GIS) can be used to operationalize the emerging scientific paradigm of ecosystem services. Third, her chapter links ecosystem services science to the legal framework for the protection of fundamental rights, focusing mainly on cultural ecosystem services. In this way, her chapter discusses the possibility of producing information that is legally binding.

In Part II the book focuses on the way in which *scientific evidence is taken into account during decision-making procedures before the judiciary*. Thus, the second part links the theory of the first part to practice.

First, Jan Darpö's chapter discusses some key aspects of scientific and technical evidence in EU law and the challenges that these requirements may pose for national courts in national environmental litigation procedures. As the reader is aware, environmental decision-making under EU law is often based on complex scientific assessments performed by the administrative authorities. Those assessments might be challenged in court by different actors who oppose environmental hazardous activities and non-sustainable use of natural resources, contesting the legality of the decisions at stake. Against this backdrop, the possibilities open to national courts to independently evaluate scientific and technical information is of the utmost importance to the effectiveness of EU obligations in this field of law. It is evident that, when analysing how different legal systems within the Union use scientific evidence in environmental cases, we have to deal with an(other) encounter between the procedural autonomy of Member States and the EU law requirement for effective justice. This chapter discusses what this encounter means when environmental decision-making is challenged in court in some of the legal systems of the EU. It starts with a few remarks on the characteristics of environmental law and the use of legal-technical standards in this sphere of law. This is followed by an analysis of the case law of the Court of Justice of the European Union on the requirements imposed by EU law on national courts to evaluate scientific and technical information in environmental litigation. Subsequently, some observations are made about who are the providers of

scientific evidence in environmental cases and what obstacles litigants might encounter in different legal systems, eg concerning costs and the availability of independent experts. The next key issue concerns the power, available in different legal systems, of national courts to engage in their own evaluation of scientific and technical information. Both the competence of the reviewing court itself, as well as the possibility to ask for outside advice (eg independent experts and expert panels from outside the administration), will be looked at. To a certain degree, this question relates to the level of scrutiny exercised by the national court regarding administrative decision-making, referred to as the 'intensity of review' in environmental litigation. In this respect, the legal systems of the Member States show significant variations, which are partly due to the different traditional legal philosophies concerning the relationship between policy-makers and the judiciary. The chapter finishes with a couple of conclusions concerning the main challenges posed by scientific and technical evidence in environmental litigation.

Second, the approaches by the courts that are considered pace-setters in this sector are discussed. First, Merideth Wright's chapter provides an insight into the approaches followed by the Vermont Environmental Court and some other common law jurisdictions. After highlighting the importance of procedural fairness and consideration for litigants' feelings about the environmental judicial process, her chapter discusses techniques used in some courts to maximize the opportunity for litigants to participate in environmental and land development cases. Given the complexity of such cases, particular attention is given to the position of self-represented litigants. The complexity of such cases can also be a challenge for the judges. Accordingly, Section 2 of this chapter discusses some techniques developed in common law countries, especially in environmental cases based on statutes, and especially in non-jury cases, empowering judges to handle the acceptance and validation of scientific facts in litigated cases.

Third, Mikael Schultz's chapter discusses the approach taken by the Swedish Land and Environmental Courts. In particular, this chapter focuses on how to incorporate science-based evidence into environmental proceedings before these courts by highlighting the solutions developed by the Swedish judiciary. Subsequently, the chapter deals with the role of the 'technical judge', a non-lawyer with broad experience in natural science or civil engineering. On the basis of explicative case studies, this chapter details the contribution of the technical judge in understanding and evaluating the technical or scientific material submitted by the parties' experts. Consequently, as is demonstrated, the technical judge has a role to play in keeping the judgments, and the resulting permit conditions, in line with scientific insights and developments. The chapter, further, discusses when case law should be changed due to new scientific knowledge. Finally, the chapter includes a more philosophical dis-

cussion on the question whether the law may actually permit a certain degree of uncertainty in the court.

Part III of the book focuses on the *precautionary principle as a tool to manage scientific uncertainty* in decision-making processes, with particular attention to judicial decision-making, and focuses on those views limiting the value of this principle in environmental decision-making.

To this extent, first, Peter-Tobias Stoll's chapter discusses the regulation of the precautionary approach at EU level, with a particular focus on the role that the innovation principle plays – or could play – in this regard. The precautionary principle divides commentators. Some see it as a pointless and potentially dangerous principle that hinders progress, while others believe that it helps protect human health and the environment from complex hazards. In this context, industry groups, in 2015, proposed an innovation principle to prevent the precautionary principle from halting innovation. The precautionary principle enables decision-makers to adopt precautionary measures when scientific evidence on an environmental or human health hazard is uncertain and the stakes are high. It is a way of addressing scientific uncertainty which may arise in a variety of situations: complexity (systemic and complex problems, where the probability of outcomes is unknown), ambiguity (contested framings and diverging values, where the outcomes are unknown), and ignorance (unanticipated effects, where the unknowns are unknown). It is particularly relevant in light of the fact that scientific studies are designed to minimize false negatives, and that past cases have shown that adverse effects on environment and health often turn out to be more diversified and extensive than initially anticipated. In case of scientific uncertainty, policy-makers may rely on information from stakeholders and/or science-policy interfaces, which may be conflicting. A decision to apply the precautionary principle in a legislative process needs to assess the seriousness and irreversibility of the threat and will ultimately be based on the values of the decision-makers. Cases where the precautionary principle has been applied include climate change, genetically modified organisms (GMOs), declining bee populations and asbestos. Cases where the precautionary principle could potentially be applied – as a result of scientific uncertainty, high stakes and possibly irreversible outcomes – include certain aspects relating to pesticides and nanomaterials. Over the past decade, the EU has, in order to respond to scientific uncertainty and the need for innovation, used the concept of 'responsible research and innovation', now a cross-cutting theme in the Horizon 2020 framework for research and innovation. Precaution and innovation can go hand in hand if the precautionary principle promotes a diversity of technologies, allowing it to keep options open and to increase the resilience of our societies.

Second, Wybe Th. Douma's chapter looks at the manner in which the precautionary approach has been regulated, and allegedly limited, at interna-

tional level by analysing World Trade Organization (WTO) Panel cases and the Appellate Body cases (involving the EU but also countries like Australia, Japan and Korea), as well as those of arbiters in the Investor-State Dispute Settlement context. The precautionary principle is a general principle of EU law, which is explicitly institutionalized in the environment title of the Treaty on the Functioning of the European Union – it is applied in other areas as well, such as the protection of human health. The case law of the Court of Justice, as well as the guiding role of the European Commission, provide insights into the application in practice of the principle. Such practice, however, stands in contrast to the law of the WTO, to which the EU is a party. In this respect, the EU approach to precautionary measures has been put under pressure, most notably in the field of beef hormones and GMOs. This chapter establishes, first, the key lesson of the relationship between the EU precautionary principle and WTO law. Second, attention is given to bilateral trade agreements with third countries, in which the EU is facing similar challenges since such agreements are linked to WTO law. By focusing on the Comprehensive and Economic Trade Agreement (CETA), which has been presented as the gold standard for future trade agreements, this chapter describes how the links to WTO law limit the Union in maintaining or adopting precautionary measures. In the context of dispute settlement, the chapter investigates how public participation, facts and feelings, and precautionary measures flowing from other trade and investment agreements have been taken into consideration by arbiters. By examining these aspects of CETA, and comparing them to other trade regimes, it is discussed whether this agreement sufficiently anchors and safeguards the possibility for its parties to maintain and adopt precautionary measures, and the possibility for citizens to be involved in the shaping and defending of public policy measures.

On the whole, the book offers a unique insight into techniques for the reconciliation of *facts* and *feelings* – two main components of environmental decision-making procedures. This insight reveals a path leading to a new role for environmental administrations and courts in decision-making procedures. As discussed in the conclusions to this book, the progressive relevance of public participation procedures and science-based reasoning, coupled with the development of digital means of communication and decision-making, opens the door to what is called ‘environmental administration 3.0’.

We wish the reader a pleasant and instructive reading!