

Public Participation in the Hydrogen Economy

Lessons Learned from the Northern Netherland Hydrogen Valley

Lorenzo Squintani and Stan Schouten

11.1 INTRODUCTION

As underlined by the Hydrogen Strategy for a Climate Neutral Europe and the REPowerEU programmes,¹ both discussed in Chapter 2 by Hancher and Suciu in this book, the development of a hydrogen economy is considered of strategic importance for the achievement of the European Union (EU) climate goals by both the EU and several of its Member States. As for any socio-technical transition, the development of the hydrogen economy requires careful policy and regulatory drafting, as well as the concrete implementation of projects affecting people's living environment. Public participation is mandated under international, European and national law to ensure that the hydrogen economy best fits within the environmental and societal needs of the interested regions.

Public participation, defined as collaborative participation where project proponents or policymakers invite citizens to discuss and decide together upon policies and projects affecting the environment, can indeed improve the quality of decisions and their ability to generate consensus, and thus acceptability,² although some practitioners might experience it as a time-consuming exercise. Moreover, public participation is regarded as a pillar of environmental democracy under the Rio Convention,³ and the Aarhus Convention, which establishes rights and obligations for its signatory parties in order to spur *participatory* democracy (articles 6–8 of the Convention).⁴

Both the EU and all of its Member States are party to the Convention and have adopted legislation to implement it, as will be discussed further below. However, some discrepancies between the requirements of the Convention and the legal frameworks of certain Convention

¹ European Commission, 'A hydrogen strategy for a climate-neutral Europe', COM(2020)301; Communication on REPowerEU: Joint European Action for more affordable, secure and sustainable energy, COM(2022) 108 final (8 March 2022), with Annexes and Communication on Options.

² Jonas Ebbesson, 'The Notion of Public Participation in International Environmental Law' (1998) 8 YB of Intl Environmental L 51.

³ United Nations, Rio Declaration on Environment and Development, UN Doc. A/CONF.151/26 (vol. I); 31 ILM 874 (1992).

⁴ United Nations, Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus, Denmark, 25 June 1998, UN Treaty Series 2161), p. 447.

Parties have already been discussed in the literature.⁵ Besides, empirical evidence suggests that a major problem with the implementation of the Convention concerns the manner in which such frameworks are applied in *practice*.⁶ There are, as of today, no studies focusing on public participation with a view to the development of the hydrogen economy, at the level of compliance of the regulatory frameworks with the Convention or at the level of the application of participatory rights in practice.

This chapter aims to close that gap by answering how the EU and national standards on public participation have been shaped and applied in practice in the development of the hydrogen economy when looking at them from the perspective of the Aarhus Convention.⁷ We present here the results of the case study focusing on the Netherlands, which hosts the first fully fledged hydrogen valley of the EU, namely the Northern Netherlands Hydrogen Valley (so-called HEAVENN project).⁸

After presenting the EU and Aarhus Convention frameworks for public participation and showing their points of convergence and discrepancies (Section 11.2), we will discuss the policy framework shaping the Northern Netherlands Hydrogen Valley (Section 11.3). Specific focus will be placed on the organization of public participation in the setting up of policy documents, plans and strategies by public and semi-public bodies⁹ in this valley, as the lacunas in the drafting and application of the regulatory framework on public participation in the field of the hydrogen economy become most visible here. Although studies on public perceptions about hydrogen are yet to deliver accurate empirical data,¹⁰ it can be expected that hydrogen storage will be the hydrogen-value-chain aspect most prone to attract societal debate. Accordingly, Section 11.3 will focus on an ongoing public participation procedure regarding hydrogen storage in depleted salt caverns in the Hydrogen Valley in the northern Netherlands. In Section 11.4, we will discuss the potential implications of our findings and conclude accordingly. In doing so, this chapter will provide data for comparative purposes and for the further development of the conceptual and applied frameworks for the hydrogen economy.

⁵ As regards the EU itself, Ludwig Krämer, 'The EU and Public Participation in Environmental Decision-Making' in Jerzy Jendróska and Magdalena Bar (eds.), *Procedural Environmental Rights: Principle X in Theory and Practice* (Intersentia, 2017) pp. 121–141; for Spain, José I. Cubero Marcos and Unai A. Gorriño, 'Controversies about Projects or Plans Passed by Law in Spain' in Bernard Vanheusden and Lorenzo Squintani (eds.), *EU Environmental and Planning Law: Aspects of Large-Scale Projects* (Intersentia, 2016) pp. 119–142; and for Italy, Barend Vanheusden, 'The Implementation of the Second Pillar of the Aarhus Convention in Italy: The Need for Reform and for Introduction of the So-Called "Deliberative Arenas"', in Vanheusden and Squintani (eds.), pp. 143–165.

⁶ For an example from Belgium related to air quality, Eva Wolf and Wouter van Dooren, 'How Policies Become Contested: A Spiral of Imagination and Evidence in a Large Infrastructure Project' (2017) 50(3) *Policy Sciences* 449; for another example about renewable energy sources, Sanne Akerboom, *Between Public Participation and Energy Transition: The Case of Wind Farms* (PhD thesis, Amsterdam, 2018).

⁷ It should be noted that in this chapter we do not differentiate between public participation of the general public and that specifically of environmental non-governmental organizations (ENGOs), since for the findings presented in this study this difference is irrelevant.

⁸ HEAVENN stands for H₂ Energy Applications in Valley Environments for Northern Netherlands, see <<https://heavenn.org/>> accessed November 2023.

⁹ The concept of semi-public bodies within the context of this chapter is explained in Section 11.2.3 below.

¹⁰ For initial empirical data from Germany see, Johann J. Häußermann, Moritz J. Maier, Thea C. Kirsch, Simone Kaiser and Martina Schraudner, 'Social Acceptance of Green Hydrogen in Germany: Building Trust through Responsible Innovation' (2023) 13(22) *ESS* <<https://doi.org/10.1186/s13705-023-00394-4>> accessed 25 November 2023.

11.2 THE EU LEGAL FRAMEWORK FOR PUBLIC PARTICIPATION IN ENERGY MATTERS

11.2.1 General Issues: *Lacunae in the EU Framework for Public Participation on Hydrogen Plans and Programmes*

Public participation in energy matters is covered by the general framework on public participation in environmental matters. This is due to the fact that energy policy and activities usually, if not always, have implications for the environment.¹¹ In the EU legal order, public participation is, firstly, explicitly envisaged under article 11(1) of the Treaty on European Union (TEU), stating that EU institutions shall give citizens and representative associations the opportunity to make known and publicly exchange their views in all areas of Union action. This also includes energy. Furthermore, specifically on energy and environmental themes, the EU framework has been created in light of the Aarhus Convention.

This Convention is a so-called mixed agreement,¹² to which EU Member States and the EU itself are parties. The provisions of the Convention thus rank higher than EU secondary law, but lower than the Treaties.¹³ Moreover, the provisions of the Convention have primacy over conflicting national rules.¹⁴ This is also true regarding those provisions that have not yet been implemented by the EU legislator.¹⁵ This finding is relevant as EU law has still not fully implemented the Convention, as has been discussed elsewhere.¹⁶

Relevant for this study is the fact that the Aarhus Convention prescribes public participation for all (national) plans and programmes on the environment, and thus also those on the hydrogen economy. The main directive implementing the Aarhus Convention with a view to its application at a national level, the so-called Aarhus Directive,¹⁷ does not cover the actual EU energy law framework. Nor are the Renewable Energy Sources Directive¹⁸ and the Gas¹⁹ and

¹¹ Kars J. de Graaf and Lorenzo Squintani, 'Sustainable Development, Principles of Environmental Law and the Energy Sector' in Martha M. Roggenkamp, Kars J. de Graaf and Ruven Fleming (eds.), *Energy Law, Climate Change and the Environment* (Edward Elgar, 2021) pp. 41–45.

¹² On mixed agreement see, e.g., Jan H. Jans and Hans H. B. Vedder, *European Environmental Law: After Lisbon* (Europa Law, 2012) pp. 71–74.

¹³ Consolidated version of the Treaty on the Functioning of the European Union (TFEU) [2009] C 306/1 art 216(2); Case 104/81 *Hauptzollamt Mainz v C.A. Kupferberg & Cie KG a.A. (Kupferberg)* ECLI:EU:C:1982:362; Case C-344/04 *International Air Transport Association and European Low Fares Airline Association v Department for Transport (IATA and ELFAA)* ECLI:EU:C:2006:10, paras 35–36.

¹⁴ Jacqueline M. I. J. Zijlmans, *De doorwerking van natuurbeschermingsverdragen in de Europese en Nederlandse rechtsorde* (Sdu uitgevers, 2011) p. 45.

¹⁵ Case C-240/09 *Lesoochranárske zoskupenie VLK v Ministerstvo životného prostredia Slovenskej republiky* ECLI:EU:C:2011:125 (*Zoskupenie*).

¹⁶ Lorenzo Squintani and Goda Perlaviciute, 'Access to Public Participation: Unveiling the Mismatch between What Law Prescribes and What the Public Wants' in Marjan Peeters and Mariolina Eliantonio (eds.), *Research Handbook on EU Environmental Law* (Edward Elgar, 2020) pp. 133–147.

¹⁷ Council Directive 2003/35/EC providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC [2003] OJ L156/17.

¹⁸ Directive (EU) 2018/2001 of the European Parliament and of the Council of 11 December 2018 on the promotion of the use of energy from renewable sources (recast) (Text with EEA relevance) PE/48/2018/REV/1 OJ L 328, 21 December 2018, pp. 82–209.

¹⁹ Directive 2009/73/EC of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in natural gas and repealing Directive 2003/55/EC (Text with EEA relevance) OJ L 211, 14 August 2009, pp. 94–136.

Electricity²⁰ directives listed regarding the scope of application of the Aarhus Directive, to mention just a couple of examples from energy law. The proposed directive on gas and hydrogen also lacks a provision aimed at amending the Aarhus Directive.²¹ The proposal does not, alternatively, contain ad hoc provisions on public participation. Public participation in the development of hydrogen markets will thus not be mandated under these pieces of EU secondary law. The Strategic Environmental Assessment (SEA) Directive, which covers public participation in plans and programmes relating to energy, only addresses public participation when such plans and programmes are likely to have *significant* environmental effects.²² Under the Aarhus Convention, any plan or programme *relating* to the environment must be subject to public participation, even when it does not have potential serious negative effects on it.²³ The EU framework for public participation in the hydrogen economy is thus deficient.

This does not mean that the EU and its Member States do not have to comply with the Convention on these aspects. Decision 2005/370/EC has made the Convention part of the EU *acquis communautaire*.²⁴ As mentioned above, this means that the Convention is, *in its entirety*, binding upon the EU and its Member States, as recognized by the Court of Justice.²⁵

In the rest of this contribution, given the broader and more elaborated scope of the provisions of the Convention and the great overlap between the wording of its provisions and the pieces of EU legislation most directly aimed at implementing them,²⁶ the Convention is used as the basis to explain public participation in the development of the hydrogen economy. The focus will be on the importance of ensuring public participation with a view to policies, plans and programmes (Section 11.2.2), including when these are set up by semi-public bodies (Section 11.2.3). Of course, the Aarhus Convention only pursues minimum harmonization,²⁷ which means that the EU and its Member States can decide to go beyond such a minimum, a practice called green-plating.²⁸

²⁰ Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast) (Text with EEA relevance.) PE/10/2019/REV/1 OJ L 158, 14 June 2019, pp. 125–199.

²¹ Proposal for a Directive of the European Parliament and of the Council on common rules for the internal markets in renewable and natural gases and in hydrogen (recast), COM(2021) 803 final.

²² Council Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment [2001] OJ L197/30.

²³ Commission, 'Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment' (Implementation Guide), pp. 174–175. See also Aarhus Convention Compliance Committee (ACCC), Report concerning the European Union (2 October 2012), ECE/MP.PP/C.1/2012/12.

²⁴ Council Decision 2005/370/EC on the conclusion, on behalf of the European Community, of the Convention on access to information, public participation in decision-making and access to justice in environmental matters [2005] OJ L124/1.

²⁵ For art 9(3) of the Convention, which has not been transposed into EU secondary law, see *Zoskupenie* (2011).

²⁶ Council Regulation (EC) 1367/2006 on the application of the provisions of the Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters to community institutions and bodies [2006] OJ L264/13; Council Directive 2003/4/EC on public access to environmental information and repealing Council Directive 90/313/EEC [2003] OJ L41/26; Council Directive 2003/35/EC providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC [2003] OJ L156/17; Council Directive 2004/35/EC on environmental liability with regard to the prevention and remedying of environmental damage [2004] OJ L143/56.

²⁷ United Nations, *The Aarhus Convention an Implementation Guide* (United Nations Economic Commission for Europe E 13 II E 3) 2014, 42, 50, 67 (Implementation Guide); ACCC, Report concerning Hungary (31 January 2004), ACCC/C/2004/4, para 18.

²⁸ Lorezo Squintani, *Beyond Minimum Harmonisation – Green-Plating and Gold-Plating of European Environmental Law* (Cambridge University Press, 2019) pp. 13–71.

11.2.2 *Specific Issues: The Importance of Ensuring Public Participation as Regards Policies, Plans and Programmes*

This section shows the importance of ensuring public participation early in the chain of decision-making on the hydrogen economy. It focuses on public participation at the level of policies, plans and programmes, and unveils the shortcomings of the EU framework in this regard. Public participation is regulated under three provisions of the Convention: article 6, regarding specific activities significantly affecting the environment; article 7, on plans, programmes and policies; and article 8, dealing with executive regulations and other generally applicable and legally binding rules. Although this chapter focuses on policies, plans and programmes on hydrogen, this provision cannot be understood in isolation from article 6. This is because, for plans and programmes, article 7 refers back to certain obligations set out under article 6.²⁹ We will thus first introduce article 6.

The public participation legal framework set out in article 6 is more detailed in comparison to those for plans and programmes and for policies. It consists of eight categories of obligations. First, it establishes a *notification* duty. Properly informing the public concerned³⁰ – either by a public notice, such as a newspaper announcement, or an individual notice, such as a letter – is essential for effective participation in the decision-making procedure.³¹ To this extent, the notification must include all relevant information about the project and the public participation procedure. Second, the responsible party, which could also be a private party, should set *reasonable time frames* to inform the public concerned and to allow for a response. The Convention does not define the concept of ‘reasonable time frames’ and this could vary in accordance with the kind of activity under scrutiny.³² Third, the procedure should take place *when all options are possible* and participation can be *effective*. Under this provision, the concepts of ‘early engagement’ and ‘effective participation’ are linked to the moment in the decision-making process in which public participation is organized. What matters is that ‘events on the ground’, such as the availability of certain technological choices,³³ have not effectively eliminated alternative options.³⁴ This does not mean that during the establishment of specific activities the public concerned must be able to comment upon options that were subjected to an earlier public participation procedure.³⁵ For example, options that have been subjected to public participation in the context of establishing a plan or programme do not need to be subjected to public participation during the adoption of specific activities implementing such a

²⁹ Article 8 on executive regulations and other generally applicable and legally binding rules only establishes ‘soft obligations’, that is, best efforts obligations Implementation Guide (2014), p. 181, which immediately clarifies that these obligations are still enforceable under article 9(3) of the Convention), and it allows participation by the general public to be organized via representative consultative bodies. It thus allows deviation from the focus on the concept of public participation discussed in this chapter. Accordingly, this provision is not further analysed.

³⁰ On what constitutes an appropriate notification method, see ACCC, Report concerning Belarus (12 May 2011), ECE/MP.PP/2011/11/Add.2, para 86; ACCC, Report concerning Armenia (12 May 2011), ECE/MP.PP/2011/11/Add.1, para 70; ACCC, Report concerning Lithuania (12 May 2011), ECE/MP.PP/2008/5/Add.6, para 67; ACCC, Report concerning France (8 February 2011), ECE/MP.PP/C.1/2009/4/Add.1, para 41.

³¹ This obligation requires also informing the public in other countries if the activity under scrutiny can significantly affect the environment in that country, for example in the context of nuclear energy, ACCC, Report concerning Czech Republic (29 December 2016), ECE/MP.PP/C.1/2017/3, paras 71–72.

³² Implementation Guide (2014), p. 143.

³³ Report concerning Lithuania (2011), p. 74.

³⁴ Implementation Guide (2014), p. 145.

³⁵ Report concerning Lithuania (2011), p. 71.

plan or programme.³⁶ Fourth, *private initiators* should be encouraged to engage in public participation prior to a permit application. Public authorities, however, should retain control of and responsibility for the procedure.³⁷ Fifth, the public concerned must be able to *access all relevant information*, in accordance with the provisions on access to information under the Convention.³⁸ Sixth, the public must be allowed to *submit views*. This provision represents the embodiment of public participation – that is, the ability to express a view, or arguably even a feeling,³⁹ in writing or orally, to the discretion of the public.⁴⁰ Seventh, the responsible authority should *take the views* expressed by the public *into due account*, therefore ensuring a ‘real voice’ to the public. However, this does not mean that it has to align the decision to such views.⁴¹ According to the European Commission, this duty ‘means that the Commission will duly consider the comments submitted by the public and weigh them in the light of the various public interests in issue’.⁴² Basically, this duty means, in legal terms, that a decision-maker must show why a particular comment was rejected on substantive grounds.⁴³ Still, it does not amount to a right of the public to veto the decision, according to the Aarhus Convention Compliance Committee (ACCC).⁴⁴ The eighth, and final, obligation is that the decision-maker should *inform the public* about the final decision and how the views have been taken into account.⁴⁵

The legal framework for public participation procedures as regards plans and programmes build on the framework for decisions on specific activities but is less extensive and specific. Firstly, the Convention does not define the concepts of ‘plans’ and ‘programmes’ concerning the environment. These instruments can take a variety of forms.⁴⁶ In the majority of the cases, plans and programmes are meant to provide a framework for adopting decisions about specific activities. Secondly, obligations regarding public participation procedures on plans and programmes refer explicitly to the second (reasonable time frames), third (early engagement) and seventh (real voice) obligations listed above. They refer also to the need to ensure *transparency*, *fairness* and *access to information*. Although the first, fifth, sixth and eighth obligations, indicated under article 6, can easily be read into the concepts of fairness, transparency and access to information, the different formulation of such obligations denotes the presence of more discretionary powers for public authorities on how to fulfil them than in the context of decisions concerning specific activities.

³⁶ Ibid.

³⁷ Ibid, p. 82.

³⁸ On this topic see, e.g., Moritz Von Unger, ‘Access to EU Documents: An End at Last to the Authorship Rule?’ (2007) 4 *J for Eur Environmental & Planning L* 440; and Jerzy Jendroska, ‘Citizen’s Rights in European Environmental Law: Stock-Taking of Key Challenges and Current Developments in Relation to Public Access to Information, Participation and Access to Justice’ (2012) 9(1) *J for Eur Environmental & Planning L* 71.

³⁹ Alexandra Aragão, ‘When Feelings Become Scientific Facts: Valuing Cultural Ecosystem Services and Taking Them into Account in Public Decision-Making’ in Lorenzo Squintani, Jan Darpö, Luc Lavrysen and Peter-Tobias Stolland (eds.), *Managing Facts and Feelings in Environmental Governance* (Edward Elgar, 2019) pp. 53–80.

⁴⁰ Implementation Guide (2014), p. 153.

⁴¹ ACCC, Report of the Compliance Committee on its Twenty-fourth meeting (8 February 2011), ECE/MP.PP/C.1/2009/4, para 29.

⁴² European Commission, ‘Access to Information, Public Participation and Access to Justice in Environmental Matters at Community Level – A Practical Guide’ <<http://ec.europa.eu/environment/aarhus/pdf/guide/AR%20Practical%20Guide%20EN.pdf>> accessed 24 January 2024.

⁴³ Implementation Guide (2014), p. 155.

⁴⁴ ACCC, Report concerning European Union and the United Kingdom of Great Britain and Northern Ireland (13 January 2014), ECE/MP.PP/C.1/2014/5, para 93.

⁴⁵ ACCC, Report concerning Spain (8 February 2011), ECE/MP.PP/C.1/2009/8/Add.1, para 100.

⁴⁶ Krämer (2017); see also Lorenzo Squintani and Marleen van Rijswijk, ‘Improving Legal Certainty and Adaptability in the Programmatic Approach’ (2016) 28 *Journal of Environmental Law* 443.

From a legal perspective, plans and programmes are not adopted in a vacuum but should fit within the existing policy framework. Under the Aarhus Convention, environmental policies can be defined as ‘a course or principle of action adopted or proposed by an organization or individual’.⁴⁷ Yet this concept remains officially undefined. From the perspective of public participation, article 7, last sentence, of the Convention shows the high level of freedom left to the Convention Parties in this area. There are no specific legal requirements in this regard. Most significantly, the duty to organize public participation procedures at a moment in time in which all options are still open does not apply to policies. This consideration holds true also for the duty to take due account of the views and feelings of the public.⁴⁸ As these two obligations aim at ensuring ‘early engagement’ and ‘real voice’ during public participation procedures, their absence underlines that, under the Convention, there are no explicit legal requirements aiming at ensuring that public participation as regards policies are *effective*.

This finding is particularly relevant when we consider that the content of decisions about specific activities depends on the higher-level instruments in the decision-making chain, namely plans and programmes, and policies. Besides, options discussed during the adoption of a policy, a plan or a programme do not need to be made subject to public participation during the adoption of implementing measures,⁴⁹ as indicated. At the same time, policies influence the room for input during the setting up of plans and programmes, which in turn influences the room for input during the adoption of concrete actions. Policy choices expressed in policy documents can determine that in practice certain options are no longer available at the level of decisions about specific actions.

The above shows the importance of ensuring public participation early in the chain of decision-making about the hydrogen economy, thus at the level of policies, plans and programmes.

11.2.3 *Specific Issues: Ensuring Public Participation by Semi-Public Bodies*

In certain Member States, such as the Netherlands, the development of the hydrogen economy is carried further by a collaboration of public and private bodies, with the latter at times being invested with powers going beyond those of private parties, as further discussed in Section 11.3 below.

In this regard, it should be noted that article 7 of the Aarhus Convention applies vis-à-vis parties that establish plans and programmes. Not only acts adopted by public bodies fall under article 7 of the Aarhus Convention. In certain cases, also policies, plans and programmes which are adopted by what national law considers private law bodies are covered by article 7 of the Convention. This is due to the fact that the concept of a public body is interpreted broadly in the context of the Aarhus Convention and EU law. What is meant by the concepts of ‘public body’ or ‘public authority’ must be viewed from the so-called Foster jurisprudence.⁵⁰ This entails that private law parties can also be qualified as public bodies from the perspective of EU law if they have powers and competences that go beyond those of ordinary private law parties. Transport system operators, distribution system operators and seaport authorities working on the

⁴⁷ Implementation Guide (2014), p. 180.

⁴⁸ Article 10.7 of the Dutch Environment and Planning Order (*Omgevingsbesluit*) will go beyond this standard by requiring public authorities to give account of how they involved the public in drafting environmental strategies and what the outcome of the procedure has been.

⁴⁹ Report concerning Lithuania (2011), p. 71.

⁵⁰ HvJEU C-188/89, A. *Foster e.a. tegen British Gas plc*, ECLI:EU:C:1990:313.

development of the hydrogen economy within their respective fields of operation can all be regarded as being public bodies for the purpose of the application of article 7 of the Aarhus Convention, even in those countries in which such bodies are set up as private companies, such as the Netherlands. The fact that under EU and national law such bodies are entrusted with powers that go beyond those of private parties qualifies them as public bodies under the Aarhus Convention and the EU law that implements it. We will call these kinds of public bodies semi-public bodies, to distinguish them from the traditional public bodies – that is, public law legal persons.

11.3 THE DEVELOPMENT OF THE HYDROGEN ECONOMY IN THE NETHERLANDS AND IN THE NORTHERN NETHERLANDS HYDROGEN VALLEY

11.3.1 National Policies, Plans and Programmes on Hydrogen

The current policy framework for hydrogen in the Netherlands is comprised of a multitude of letters by the Minister of Economics and Climate, ‘working plans’ drafted by working groups, and other documents. The Dutch National Hydrogen Programme 2022–2025⁵¹ and the related Dutch Hydrogen Roadmap,⁵² set up by a working group composed of public and private stakeholders, can be considered the main plans and strategies for the hydrogen economy. In these documents, the Netherlands sets the goal of 500 megawatt (MW) electrolyser capacity by 2025. For the period after 2031, plans exist for electrolysers on both land and at sea. For instance, by 2031 the Netherlands should have the biggest (500 MW) offshore hydrogen production plant in the world.⁵³ This production capacity needs to be supported by a fitting hydrogen infrastructure. The idea is to reuse the current natural gas infrastructure available, which minimizes the new infrastructure that needs to be built. However, the war in Ukraine complicates the initial plans, as the natural gas pipelines are currently necessary for delivery from west to east, and are thus not available for conversion to hydrogen transport.⁵⁴

The National Hydrogen Programme underlines the importance of public acceptability for developing a hydrogen economy.⁵⁵ Yet public participation is only mentioned as regards the *project* level, by informing the general public on those decisions that have already been made.⁵⁶ In fact, neither of these documents have been drawn up following a public participation procedure. Only stakeholders active in the field of hydrogen were invited to contribute to the working sessions which led to the programme. No public participation was organized.⁵⁷

Besides these two programmatic documents, the Dutch Programme for the Energy Infrastructure (Programma Energiehoofdstructuur) sets out a spatial planning framework, regulating the spatial utilization of the Dutch territory for hydrogen infrastructure.⁵⁸

⁵¹ CSWW – cross-sectorale werkgroep waterstof, *Werkplan Nationaal Waterstof Programma 2022–2025* (7 July 2021).

⁵² Dutch National Hydrogen Programme (NWP), *Hydrogen Roadmap for the Netherlands* (30 November 2022).

⁵³ Rijksoverheid, *Windpark boven Groningen beoogd als 's werelds grootste waterstof op zee productie in 2031* (20 March 2023) <<https://rijksoverheid.nl/onderwerpen/duurzame-energie/nieuws/2023/03/20/windpark-boven-groningen-beoogd-als-s-werelds-grootste-waterstof-op-zee-productie-in-2031>> accessed August 2023.

⁵⁴ Minister voor Klimaat en Energie Rob A. A. Jetten (Ministerie van Economische Zaken en Klimaat) *Voortgang waterstofbeleid* (2 December 2022), p. 7.

⁵⁵ CSWW, *Werkplan Nationaal Waterstof Programma 2022–2025*, p. 17.

⁵⁶ Ibid.

⁵⁷ Staatssecretaris Yeşilgöz-Zegerius (EZK – Klimaat en Energie), Kamerbrief bij werkplan Nationaal Waterstof Programma, November 2021, Overheid Identificatienr: 00000001003214369000.

⁵⁸ Rijksoverheid, *Ontwerp-Programma Energiehoofdstructuur: Ruimte voor een klimaatneutraal energiesysteem van nationaal belang* (July 2023), p. 21.

It includes a partially binding spatial plan with specified general areas in which provinces should determine where hydrogen infrastructure (such as electrolyzers, and storage facilities in depleted salt caverns) can be located. This document was drafted by the government, following the so-called Participatory Value Evaluation method, and the government adhered to the formal consultation procedure (in Dutch: *zienswijze procedure*).⁵⁹ While the Participatory Value Evaluation is a way to investigate the preferences of a group of people on various policy options, given a fixed budget,⁶⁰ the consultation procedure allows anyone to submit their opinion or concerns about (part of) a plan.

Regarding the development of hydrogen in the northern Netherlands, the Dutch Programme for Energy Infrastructure indicates a clear preference for using salt caverns for underground hydrogen storage.⁶¹ It is also mentioned specifically that, given the recent history of mining endeavours in the north of the Netherlands which caused earthquakes and social unrest, public participation in the development of these storage facilities would need extra attention and would require ‘a fundamentally different approach than the natural gas extraction in Groningen’.⁶² This brings us to the Northern Netherlands Hydrogen Valley.

11.3.2 *Hydrogen Policies, Plans and Programmes in the Northern Netherlands Hydrogen Valley*

The HEAVENN project in the northern Netherlands is a six-year project that created the first region to be recognized as a hydrogen valley and to receive the accompanying EU subsidy. A hydrogen valley is a concept established by the EU for projects that successfully link hydrogen production through an effective transportation system to its various end uses. A hydrogen valley serves as a demonstration site of a profitable and holistic business model for green hydrogen.⁶³ HEAVENN’s main goal is exactly that: to create replicable business models while maximizing the abundant solar and wind energy available in the region and using green hydrogen across the entire value chain. In that way, the northern Netherlands serves as a showcase for green hydrogen development within the EU. The region covers three Dutch provinces: Friesland, Groningen and Drenthe. Most hydrogen activities take place in Groningen. We therefore analyse the policy, plans and programmes of the province of Groningen from the perspective of public participation in the next section.

11.3.3 *Hydrogen Policies, Plans and Programmes of the Province of Groningen*

The main policy document on hydrogen in the province of Groningen is the Climate Agenda of the Province of Groningen for 2030.⁶⁴ This policy document sets out, among others, the goals of

⁵⁹ Ibid, p. 21.

⁶⁰ Niek Mouter, Paul Koster and Thijs Dekker, ‘Contrasting the Recommendations of Participatory Value Evaluation and Cost–Benefit Analysis in the Context of Urban Mobility Investments’ (2021) 144 TRPAPP 54–73.

⁶¹ Rijksoverheid, *Ontwerp-Programma Energiehoofdstructuur: Ruimte voor een klimaatneutraal energiesysteem van nationaal belang* (3 July 2023), p. 66.

⁶² Ibid.

⁶³ Clean Hydrogen Partnership, ‘REPowering the EU with Hydrogen Valleys: Clean Hydrogen Partnership Invests EUR 105.4 Million for Funding 9 Hydrogen Valleys across Europe’ (31 January 2023) <https://clean-hydrogen.europa.eu/media/news/repowering-eu-hydrogen-valleys-clean-hydrogen-partnership-invests-eur-1054-million-funding-9-2023-01-31_en> accessed August 2023.

⁶⁴ Provincie Groningen, *Klimaatagenda Provincie Groningen 2030* (2020). Also the Environmental Plan of the Province of Groningen has a passage which is relevant for hydrogen, indicating namely that stating that the Province sees the storage of gases in depleted salt caverns, existing or future ones, as favourable for spurring sustainability, Provincie

the province in the field of hydrogen for 2030. The goals are expressed in a broad fashion, in terms of ‘supporting initiatives in the field of hydrogen’,⁶⁵ ‘use of hydrogen as energy carrier’,⁶⁶ ‘reserving space for onshore pipelines for transporting hydrogen’,⁶⁷ ‘improving the business case for hydrogen’,⁶⁸ ‘strengthening the hydrogen value chain’⁶⁹ and ‘execution of hydrogen train pilot’.⁷⁰ Participation is considered an important aspect of the further development and implementation of energy policies in the region, but the Climate Agenda as such was not subject to public participation. The province only invited stakeholders and experts to express their comments on the Climate Agenda.⁷¹

Another general policy document referring to hydrogen in the province of Groningen is the Regional Energy Strategy (*Regionale Energie Strategie – RES*). The RES was developed by the province, municipalities and water boards of the province of Groningen. It was developed in two phases, RES 1.0 and RES 2.0.⁷² Neither of the two documents set out specific goals or actions as regards hydrogen, but simply refer to the development of the hydrogen economy in general terms.⁷³ Neither document was open for public participation.

The same is true for the Investment Plan on Hydrogen presented by public and private parties in the provinces of Groningen and Drenthe in 2020.⁷⁴ Most importantly, this document indicates the storage project in Zuidwending, north-east Groningen, as one of those belonging to the Northern Netherlands Roadmap to 2030,⁷⁵ and covered by the Investment Plan.⁷⁶ The choice of the location for the first hydrogen storage facility in depleted salt caverns seems thus to have taken place by the time this document was established. There is no trace of public participation.

In June 2023, the province of Groningen presented its Provincial Multi-year Programme on Energy and Climate Infrastructure 1.0 (Provinciaal Meerjarenprogramma Infrastructuur Energie en Klimaat), which implements the Dutch Programme for Energy Infrastructure, discussed in Section 11.3.1 above.⁷⁷ At the moment, this programme only focuses on electricity. Hydrogen is referred to in several places, but no specific spatial choice is expected till 2025 when version 2.0 of the programme will be published.⁷⁸

Groningen. ‘Geconsolideerde Omgevingsvisie’ (June 2022), p. 129 <https://provinciegroningen.nl/fileadmin/user_upload/Documenten/Beleid_en_documenten/Omgevingsvisie/Geconsolideerde_Omgevingsvisie_juni_2022.pdf> accessed September 2023. The reference to ‘gases’ can cover also hydrogen in gas form.

⁶⁵ Provincie Groningen, *Klimaatagenda Provincie Groningen 2030*, p. 20.

⁶⁶ *Ibid.*, p. 22.

⁶⁷ *Ibid.*, p. 31.

⁶⁸ *Ibid.*, p. 32.

⁶⁹ *Ibid.*

⁷⁰ *Ibid.*, p. 44.

⁷¹ This information is based on the webpage of the province of Groningen about the hearing concerning the agenda held in the province on 9 September 2020 <<https://provinciegroningen.nl/actueel/nieuws/nieuwsartikel/provinciale-staten-houden-hoorzitting-over-groningse-klimaatagenda-2030/>> accessed September 2023.

⁷² Both documents are available on the website of the Groningen RES <<https://resgroningen.nl/default.aspx>> accessed September 2023. The documents themselves do not have a specific identifier, except than Groningen RES 1.0 and Groningen RES 2.0.

⁷³ E.g. Groningen RES 1.0, p. 23.

⁷⁴ Various authors, *Investeringsplan Waterstof Noordnederland 2020*, October 2020 <<https://provinciegroningen.nl/actueel/dossiers/energietransitie/waterstof/>> accessed September 2023.

⁷⁵ *Ibid.*, p. 25.

⁷⁶ *Ibid.*, p. 42.

⁷⁷ Provincie of Groningen, *Provinciaal Meerjarenprogramma Infrastructuur Energie en Klimaat* (June 2023) <<https://ipo.nl/thema-s/klimaat-en-energie/energietransitie-pmieks/>> accessed September 2023.

⁷⁸ *Ibid.*

Overall, similar to the national level, the province of Groningen's policies, plans and programmes for hydrogen include several macro-level policy choices, which have been established without any visible public participation. After having assessed the actions of public bodies, we will now look at what semi-public bodies in the hydrogen valley of the northern Netherlands have done with their plans and programmes for the hydrogen economy from the perspective of public participation.

11.3.4 *Hydrogen Policies, Plans and Programmes of Semi-Public Bodies: Gasunie*

In addition to the delegated powers of the provinces, private actors are also broadly vested with public functions in the Dutch energy market. In the field of hydrogen, Nederlandse Gasunie N.V. (Gasunie) plays a major role in the development of the hydrogen infrastructure, as discussed in detail in Chapter 17 in this book, by Broersma, Jäger and Holwerda. Gasunie will be the transport system operator responsible for the hydrogen transportation grid in the Netherlands.⁷⁹ HyNetwork Services (HNS) and EnergyStock are two subsidiary companies of Gasunie tasked by the Dutch government to develop the hydrogen network and hydrogen storage, respectively.⁸⁰ The Gasunie group (Gasunie and its subsidiaries) have thus been entrusted with powers that go beyond those of private parties and can be qualified as a semi-public body, as also evident from the discussions by Broersma, Jäger and Holwerda in Chapter 17.⁸¹

The main policy framework within which HNS operates is the Dutch Hydrogen Roadmap, discussed in Section 11.3.1 above. In 2023, HNS proposed amendments to it.⁸² These were presented in a hybrid webinar, the recordings of which are available online, and those who had an interest, without further defining what this 'interest' might have meant, could submit their comments to the proposed amendments for four weeks starting on 23 July 2023. At the time of writing, the received comments and their implementation are not available, but HNS indicates that it will publish such information unless the party submitting the comment indicates that the comment should be treated as confidential.⁸³

With a view to hydrogen storage, the Dutch Hydrogen Roadmap indicates the goal of having between 750 and 1,000 gigawatt/hours (GWh) of hydrogen in salt caverns by 2030.⁸⁴ As indicated in the plan itself, this means that three or four salt caverns will be filled with hydrogen. The first caverns will be in Zuidweinding, in the north of the Netherlands, within the hydrogen valley. At the time of writing, the possible locations of the other three hydrogen caverns is still being studied.⁸⁵

As permission for the first storage facility, the salt cavern in Zuidweinding (project called Energiebuffer Zuidweinding), was covered by the State Coordination Regulation (Rijkscoördinatieregeling), the public participation procedure followed the formal consultation (*zienswijze*) procedure,⁸⁶ under the responsibility of the Ministry for Economic Affairs and

⁷⁹ Minister voor Klimaat en Energie Rob A. A. Jetten (Ministerie van Economische Zaken en Klimaat) *Ontwikkeling transportnet voor waterstof* (29 June 2022) p. 1.

⁸⁰ *Ibid.*

⁸¹ In particular, article 10d (1)(2) Gaswet (Gas Act).

⁸² Hynetwork Services, 'Consultatie conceptvoorstel aanpassing uitrolplan landelijke waterstofnetwerk' <<https://hynetwork.nl/over-hynetwork-services/uitrolplan>> accessed November 2023.

⁸³ *Ibid.*

⁸⁴ Nationaal Waterstof Programma, *Routekaart Waterstof* (2022), p. 57.

⁸⁵ EnergyStok, *The Project* <<https://hystock.nl/en/about-hystock/the-project>> accessed November 2023.

⁸⁶ This procedure is enshrined in Section 3.4 of the Dutch General Administrative Law Act (*Algemene Wet Bestuursrecht*).

Climate. This procedure was opened in April 2023 and closed at the end of May 2023.⁸⁷ All received public input is available on the website of the Ministry, by means of an anonymized bundle report. This report shows that people had remarks about macro policy options, such as the alleged unreasonableness of investing in hydrogen,⁸⁸ and the need to develop the caverns elsewhere in the Netherlands.⁸⁹ At the time of writing, the responses to these remarks are not available.

Still, in 2022, prior to the formal participation procedure, Gasunie's subsidiary responsible for the development of hydrogen storage facilities, EnergyStock, published a participation plan (*Participatieplan*).⁹⁰ In that plan, EnergyStock defines the targeted audience groups as local residents, the government and administrative bodies, companies, NGOs, nature associations and other social parties.⁹¹ Most importantly, this plan indicates the main focus of the participation procedure.⁹² It also indicates that the participation procedure will *not* concern the location of the project as the cavern at the current location is already in use by the exploiting parties (Nobian and EnergyStock) and is the most suitable one for the project.⁹³ This shows that this macro-level policy option was not the subject of the participation procedure. This option was adopted when publishing the National Hydrogen Programme and related roadmap, discussed in Section 11.3.1 above. Apparently this policy option is not open to debate at the level of specific decisions.

Under the Aarhus Convention, it is fine not to discuss policy options at the level of specific decisions during a public participation procedure, as explained in Section 11.2 above. This is, however, only true when the macro-level policy options were subject to a participatory process when settled. As indicated in Section 11.3.1, this was not the case when the National Hydrogen Programme and related roadmap were established.⁹⁴ This option should, therefore, be open to the participatory process at the level of the specific project.

11.4 STANDING OF DRIFT SAND: A DEFICIENT PARTICIPATORY PROCESS FOR MACRO-LEVEL POLICY OPTIONS

The development of hydrogen infrastructure presented above shows the existence of a complex framework of policy, programmes and plans adopted by national and local authorities, as well as by semi-public bodies. The analysis presented in this book shows shortcomings in the drafting and implementation of the regulatory framework on public participation as regards the development of a hydrogen economy at all levels of governance, from the EU to the local level.

⁸⁷ This information is available on the website of RVO, 'Energiebuffer Zuidwending: Project Hystock Waterstofopslag' (11 May 2022) <<https://rvo.nl/onderwerpen/bureau-energieprojecten/lopende-projecten/zuidwending>> accessed November 2023.

⁸⁸ Inspraakpunt Bureau Energieprojecten, 'Inspraakbundel Zienswijzen op concept Notitie Reikwijdte en Detailniveau Energiebuffer Zuidwending: Project Hystock Waterstofopslag', Anonymised Zienswijze number: 202300884.

⁸⁹ Ibid, Anonymised Zienswijze number: 202301267.

⁹⁰ EnergyStock, 'Voornemen en Voorstel voor Participatie voor het project Energiebuffer Zuidwending: project HyStock Waterstofopslag (uitvoerende partij: EnergyStock)' (2022) <https://rvo.nl/sites/default/files/2022-06/Voornemen-en-Voorstel-voor-Participatie-Energiebuffer-Zuidwending-Hystock_o.pdf> accessed 18 September 2023.

⁹¹ Ibid.

⁹² Ibid; specifically, the position of the injection and extraction points, the layout of the terrain, whether the facility for injection and extraction will be developed and how it fits within the landscape and environment surrounding it, and matters concerning safety and nuisance of the project and the related construction works.

⁹³ Ibid.

⁹⁴ The specific location of Zuidwending was also included in the Dutch Programme for Energy Infrastructure, which was open to public participation. However, this occurred in 2023, thus after the participation plan for the project was established in 2022.

The lack of explicit requirements for public participation in the EU regulatory framework for renewable energy in general, and energy production and transport in particular, is echoed by the lack of a participatory process for the establishment of the National Hydrogen Programme and related National Roadmap. Also at regional level, the policies, plans and programmes for the development of the hydrogen economy in Groningen do not show the presence of public participation. The macro-level policy options concerning investments in the hydrogen economy, the shape of the hydrogen pipeline network, the goals as regards hydrogen storage and the location of the first depleted salt caverns to be used for such storage were decided at these levels, without public participation. This means that the policy options decided at these levels of decision-making did not benefit from the insights of the general public. The potential benefits of a participatory process as regards these macro-level policy options – substantively better, more democratic and greater acceptability – were thus left unexploited.

We showed that participatory processes were initiated at the project level for the hydrogen storage facility at Zuidwending. The outcomes of this decision-making process are still pending, but it was striking to see that the participatory plan of EnergyStock mentioned that the selection of Zuidwending as a hydrogen storage location was not part of the participatory procedure. During the formal consultation procedure, people clearly expressed remarks about such a macro-level policy option, as well as other macro-level policy options. It is too soon to make a final judgement about the compatibility of this procedure with the legal framework on public participation established under the Aarhus Convention. At the time of writing, it is not known if the comments about the macro-level policy options will be addressed. If not, the provisions of the Aarhus Convention would be breached.

Still, the lack of proper participatory processes by the establishment of the macro-level policy options at the national and regional levels remain concerning even if this specific procedure appears to comply with the Aarhus Convention requirements. Public participation contributes to better, democratically embedded and more acceptable policies, with potential benefits for their implementation at a project level, although practitioners might see it as potentially time-consuming.

To enjoy these potential benefits, it is important that the Aarhus Convention requirements on public participation are applied in full, at all levels of government, including in case of plans and programmes from semi-public bodies. Macro-level policy options can then be subject to public participation when they are drafted and thus easy to change, rather than when they are implemented at project level, often by different parties than those who can shape macro-level policy options. Finally, the visibility of the duty of public participation in the context of the development of the hydrogen economy would benefit from a clearer framework on public participation at EU level. The existing EU regulatory framework, specifically the Aarhus Directive and/or the Gas Directive now, or once repealed to cover renewable and natural gases and hydrogen, should be amended accordingly.

FURTHER READING

- Liu, L., Perlaviciute, G. and Squintani, L., 'Opposing out loud versus supporting in silence: Who wants to participate in decision-making about energy projects?' (2022) 17, 11 *Environmental Research Letters*, 114053
- Perlaviciute, G. and Squintani, L., 'Public participation in climate policy making: Toward reconciling public preferences and legal frameworks' (2020) 2, 4 *One Earth*, 341–348
- Squintani, L. and Schoukens, H., 'Towards equal opportunities in public participation in environmental matters in the European Union', in Squintani, L., Darpö, J., Lavrysen, L. and Stoll, P.-T. (eds.). *Managing Facts and Feelings in Environmental Governance*, Edward Elgar, 2019, 22–52