

Subsidy Advice Unit Report on the proposed Net Zero Hydrogen Fund subsidy scheme

Referred by Department for Energy Security and
Net Zero

15 November 2023

Subsidy Advice Unit

Part of the Competition and Markets Authority

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1. Introduction

- 1.1 This report is an evaluation prepared by the Subsidy Advice Unit (SAU), part of the Competition and Markets Authority, under section 59 of the Subsidy Control Act 2022 (the Act).
- 1.2 The SAU has evaluated the Department for Energy Security and Net Zero (DESNZ)'s assessment of compliance of the Net Zero Hydrogen Fund (NZHF) with the requirements of Chapters 1 and 2 of Part 2 of the Act (the Assessment).¹
- 1.3 This report is based on the information provided to the SAU by DESNZ in its Assessment and evidence submitted relevant to that Assessment.
- 1.4 This report is provided as non-binding advice to DESNZ. The purpose of the SAU's report is not to make a recommendation on whether the scheme should be implemented, or directly assess whether it complies with the subsidy control requirements. DESNZ is ultimately responsible for making the scheme, based on its own assessment, having the benefit of the SAU's evaluation.
- 1.5 A summary of our observations is set out at section 2 of this report.

The referred scheme²

- 1.6 The NZHF, worth up to £240 million, forms part of a suite of measures designed to support at-scale deployment of low carbon hydrogen production during the 2020s. The NZHF grant allocation is split into four distinct strands.
- 1.7 The referred scheme relates to Strand 3 of the NZHF which provides capital expenditure (CAPEX) grant funding to electrolytic hydrogen production projects³ concurrently with time-limited revenue support via the Hydrogen Production Business Model (HPBM)⁴ as part of Hydrogen Allocation Round 1 (HAR1).⁵

¹ Chapter 1 of Part 2 of the Act requires a public authority to consider the subsidy control principles and energy and environment principles before deciding to give a subsidy. The public authority must not award the subsidy unless it is of the view that it is consistent with those principles. Chapter 2 of Part 2 of the Act prohibits the giving of certain kinds of subsidies and, in relation to certain other categories of subsidy creates a number of requirements with which public authorities must comply.

² [Referral of Net Zero Hydrogen Fund Scheme by the Department for Energy Security and Net Zero](#)

³ Production of hydrogen via water electrolysis, where water is split into hydrogen and oxygen using low carbon electricity.

⁴ The HPBM will provide support payments to a low carbon hydrogen producer, over a 15-year contract term, towards the costs of hydrogen production and a return on capital invested. [Referral of Hydrogen Production Business Model subsidy scheme by the Department for Energy Security and Net Zero - GOV.UK \(www.gov.uk\)](#)

⁵ The first electrolytic hydrogen allocation round (HAR1) 2022 offers joint HPBM revenue and NZHF CAPEX support.

- 1.8 The key design features of the referred scheme (ie Strand 3 of the NZHF) include:
- (a) Projects will be able to apply for up to 20% of the CAPEX costs that fall within scope of the NZHF scheme.⁶
 - (b) Beneficiaries must be a UK registered business of any size. Subject to limited exceptions, only new build electrolytic hydrogen production facilities which meet the Low Carbon Hydrogen Standard⁷ will be eligible.⁸
 - (c) Funding is awarded through an allocation process (HAR1) which includes checking projects against eligibility criteria and ranking them according to pre-determined evaluation criteria. Subsequently, projects must pass due diligence before being able to commence negotiations with DESNZ.⁹

SAU referral process

- 1.9 On 29 September 2023, DESNZ requested a report from the SAU in relation to the NZHF scheme.
- 1.10 DESNZ explained in its submission that the scheme is considered to be a ‘scheme of particular interest’¹⁰ because of the value of subsidies to be granted, and is accordingly subject to mandatory referral under the Act. In particular, under the NZHF scheme a single beneficiary may receive in excess of the SOPI threshold of £10 million.
- 1.11 The SAU notified DESNZ on 5 October 2023 that it would prepare and publish a report within 30 working days, on or before 15 November 2023.¹¹ The SAU published details of the referral on 5 October 2023.¹²

⁶ CAPEX costs for storage and transport are not included within scope of this NZHF funding.

⁷ The Low Carbon Hydrogen Standard defines what constitutes ‘low carbon hydrogen’ at the point of production and sets a maximum threshold for the amount of greenhouse gas emissions allowed in the production process for hydrogen to be considered ‘low carbon hydrogen’. The standard sets out in detail the methodology for calculating the emissions associated with hydrogen production and the requirements producers are expected to meet to prove that the hydrogen they produce is compliant.

⁸ Full eligibility criteria are set out in [Referral of Net Zero Hydrogen Fund Scheme by the Department for Energy Security and Net Zero - GOV.UK \(www.gov.uk\)](#).

⁹ [Hydrogen Business Model and Net Zero Hydrogen Fund: Electrolytic Allocation Round: guidance for applicants](#)

¹⁰ Within the meaning of regulation 3 of the Subsidy Control (Subsidies and Schemes of Interest or Particular Interest) Regulations 2022, which sets out the conditions under which a subsidy is considered to be of particular interest.

¹¹ Sections 53(1) and 53(2) of the Act.

¹² [Referral of Net Zero Hydrogen Fund Scheme by the Department for Energy Security and Net Zero](#)

2. Summary of the SAU's observations

- 2.1 The Assessment is drafted in line with the four-step process described in the Statutory Guidance for the United Kingdom Subsidy Control Regime (the [Statutory Guidance](#)) and as reflected in the SAU's Guidance on the operation of the subsidy control functions of the Subsidy Advice Unit (the [SAU Guidance](#)).
- 2.2 We consider that DESNZ has carefully considered the scheme's compliance with the subsidy control and energy and environment principles. In particular, we found that the Assessment reflects the following positive features:
- (a) It clearly explains the specific policy objectives pursued and market failures that the scheme will remedy. It provides a clear and detailed assessment of both the alternatives to a subsidy and alternative forms of subsidy and explains the reasons for the adopted approach;
 - (b) It clearly articulates the counterfactual and the additionality of the subsidy;
 - (c) It engages in detail with the subsidy design considerations of the Statutory Guidance, including showing that the subsidy size is the minimum necessary;
 - (d) It references supporting evidence well and clearly, helping the SAU to evaluate the extent to which DESNZ's statements were supported by evidence; and
 - (e) It positions the scheme well within wider Government policies to support hydrogen production and explains how the NZHF will make a unique contribution to overall hydrogen and Net Zero targets including by reducing ongoing revenue support under the HPBM.
- 2.3 The Assessment could however be strengthened by:
- (a) more clearly setting out the potential competitive impacts of the subsidy; and
 - (b) considering the effects on international trade and investment within the balancing exercise at Step 4.
- 2.4 Our report is advisory only and does not directly assess whether the scheme complies with the subsidy control requirements. The report does not constitute a recommendation on whether the scheme should be implemented by DESNZ. We have not considered it necessary to provide any advice about how the proposed scheme may be modified to ensure compliance with the subsidy control requirements.¹³

¹³ Section 59(3)(b) of the Act.

3. The SAU's evaluation

3.1 This section sets out our evaluation of the Assessment, following the four-step framework structure used by DESNZ.

Step 1: Identifying the policy objective, ensuring it addresses a market failure or equity concern, and determining whether a subsidy is the right tool to use

3.2 The first step involves an evaluation of the Assessment against:

- (a) Principle A: Subsidies should pursue a specific policy objective in order to (a) remedy an identified market failure or (b) address an equity rationale (such as local or regional disadvantage, social difficulties or distributional concerns); and
- (b) Principle E: Subsidies should be an appropriate policy instrument for achieving their specific policy objective and that objective cannot be achieved through other, less distortive, means.¹⁴

Policy objectives

3.3 The Assessment sets out that the primary policy objective of the NZHF is to support the commercial deployment of new low carbon hydrogen production projects through the provision of upfront capital grants, to assist with achieving the Government's aim of deploying up to 10GW of low carbon hydrogen production capacity by 2030 (with at least half from electrolytic hydrogen) and the UK's legally binding 2050 Net Zero target.¹⁵

3.4 It further states that an additional policy objective of NZHF is to reduce the amount of ongoing revenue support needed by HPBM projects due to lower CAPEX financing costs.

3.5 Our view is that the policy objectives are focussed, relevant, and have been clearly set out and explained. DESNZ has used relevant evidence to underpin its policy aims, including the Climate Change Committee's Carbon Budget 6 advice¹⁶ and the British Energy Security Strategy.¹⁷

¹⁴ Further information about the Principles A and E can be found in the [Statutory Guidance](#) (paragraphs 3.18 to 3.42) and the [SAU Guidance](#) (paragraphs 4.7 to 4.11).

¹⁵ See [British Energy Security Strategy](#) (Department for Business, Energy & Industrial Strategy)

¹⁶ [Sixth Carbon Budget - Climate Change Committee](#)

¹⁷ [British Energy Security Strategy](#) (Department for Business, Energy & Industrial Strategy)

Market failure

- 3.6 The Statutory Guidance explains that market failure occurs where market forces alone do not produce an efficient outcome. The most common cases of market failure which are relevant to subsidy control occur when at least one of the following features is present: the existence of externalities; the involvement of public goods; or imperfect or asymmetric information.¹⁸
- 3.7 The Assessment identifies the following market failures:
- (a) Investment uncertainty whereby ‘first movers’ in the production and consumption sides of the market bear significant learning costs and risks, which may benefit future producers and consumers. The NZHF aims to remedy this market failure by providing upfront CAPEX to reduce the costs and risks for developers and investors entering the nascent market.
 - (b) Coordination failures, whereby investment and supply are suppressed in the absence of demand, which DESNZ argues will remain low unless supply (availability) increases and hydrogen prices (in relation to alternative fuels) fall. The scheme aims to remedy this market failure by providing up-front CAPEX support for construction costs, with the aim of helping projects to overcome the initial cost and risk hurdles that are restricting investment.
 - (c) Negative externalities. The Assessment argues that low carbon fuels, including hydrogen, are at a competitive disadvantage due to the social cost of emissions (a negative externality) not being captured in the market price for high carbon fuels. The NZHF aims (in conjunction with the HPBM scheme) to contribute to an overall reduction in hydrogen production costs, thereby reducing the price advantage associated with producing and using high carbon fuels.
- 3.8 We consider that the Assessment sets out and explains well a range of market failures limiting the production of low carbon hydrogen at scale, providing relevant detail and evidence.

Consideration of alternative policy options and why the NZHF scheme is the most appropriate and least distortive instrument

- 3.9 In order to comply with Principle E, public authorities should consider why the decision to give a subsidy is the most appropriate instrument for addressing the identified policy objective, and why other means are not appropriate for achieving the identified policy objective.¹⁹

¹⁸ [Statutory Guidance](#), paragraphs 3.21-3.32.

¹⁹ [Statutory Guidance](#), paragraphs 3.40-3.41.

- 3.10 The Assessment considers several existing or alternative policy options that were considered including: (i) tax incentives aimed at encouraging investment; (ii) higher carbon prices and an extension of the UK Emissions Trading Scheme (ETS); and (iii) utilising existing hydrogen funds. The Assessment concludes that these options would not efficiently address market barriers related to hydrogen deployment.
- 3.11 The Assessment and the supporting evidence explain that investors will require additional funding to cover the higher costs and risks in the initial stages of development of hydrogen solutions until they reach scale, efficiency and maturity to compete against other technologies.
- 3.12 The Assessment develops the reasoning set out in Principle A, further explaining the limited industry experience in the large-scale deployment of some of the underpinning technologies and the risks faced by investors including those of technology failures, cost overruns and technology obsolescence for first mover investors as costs decline.
- 3.13 It concludes that a direct grant of funds under the NZHF to cover up to 20% of eligible CAPEX is the most effective means of assisting projects to reach Final Investment Decision by de-risking investment, and thereby accelerating development of hydrogen production solutions. It explains that the subsidy is complementary to the HPBM.
- 3.14 The Assessment also considers alternative forms of subsidy and explains why they were rejected as less effective at achieving the policy objective. These include repayable loans, equity stakes and capital guarantees. The alternative forms considered are further discussed in Step 3 of the Assessment.
- 3.15 In our view, the Assessment demonstrates that DESNZ considered several policy options for achieving the policy objective and clearly sets out the arguments in favour of the chosen model. DESNZ relied on relevant evidence in support of its conclusions, including an independent report which examined the ability of several policy options to achieve the policy objective and the outcome of a consultation which gathered market feedback on the design of the scheme.

Step 2: Ensuring that the subsidy is designed to create the right incentives for the beneficiary and bring about a change

- 3.16 The second step involves an evaluation of the assessment against:
- (a) Principle C: First, subsidies should be designed to bring about a change of economic behaviour of the beneficiary. Second, that change, in relation to a subsidy, should be conducive to achieving its specific policy objective, and something that would not happen without the subsidy; and

- (b) Principle D: Subsidies should not normally compensate for the costs the beneficiary would have funded in the absence of any subsidy.²⁰

Counterfactual assessment

- 3.17 In assessing the counterfactual, the Statutory Guidance explains that public authorities should assess any change against a baseline of what would happen in the absence of the subsidy (the ‘do nothing’ scenario’).²¹ This baseline would not necessarily be the current ‘as is’ situation (the ‘status quo’) but what would likely happen in the future – over both the long and short term – if no subsidy were awarded.
- 3.18 The Assessment argues that a ‘do nothing’ scenario would be the continued use of fossil fuels. The Assessment further sets out that some low carbon hydrogen production projects might still proceed with revenue support from the HPBM, but the scale of deployment would be smaller and the cost to Government higher, without support from the NZHF to reduce upfront costs and encourage investment in the construction of hydrogen production facilities.
- 3.19 The Assessment states that a number of electrolytic hydrogen production projects require the NZHF funding in addition to HPBM support. It further explains that, in this nascent market, only providing the HPBM revenue support without the NZHF funding may not bring forward the number and scale of projects required to meet Government’s capacity targets for this first allocation round. This in turn could slow down efforts to reach 10GW by 2030 as well as Net Zero by 2050.
- 3.20 The Assessment also considers decarbonisation based on electrification and importing hydrogen. Relying on external analysis, it sets out that electrification would not deliver the same benefits in terms of carbon reduction and air quality compared to hydrogen, thus would not be sufficient to meet Net Zero targets. It also notes that, while importing hydrogen would reduce UK emissions, it would not be sufficient to satisfy the scale of decarbonisation needed by 2050 and it would deny the UK its secure access to reliable and affordable energy.
- 3.21 We consider that DESNZ satisfactorily explained why they chose the counterfactual and how the NZHF will help achieve the policy objectives.

²⁰ Further information about the Principles C and D can be found in the [Statutory Guidance](#) (paragraphs 3.43 to 3.57) and the [SAU Guidance](#) (paragraphs 4.12 to 4.14).

²¹ [Statutory Guidance](#), paragraphs 3.46-3.47.

Changes in economic behaviour of the beneficiary

- 3.22 The Statutory Guidance sets out that subsidies must bring about something that would not have occurred without the subsidy.²² In demonstrating this, public authorities should consider the likely change or additional net benefit.
- 3.23 The Assessment notes that the NZHF subsidises upfront CAPEX which, alongside time limited revenue support (HPBM), reduces risks to private investors. As a result, the subsidy will change the beneficiary's economic behaviour by encouraging investment into first-of-a-kind projects, initiating production of low carbon hydrogen that otherwise may not have been financially viable.
- 3.24 The Assessment notes that, in order to realise benefits from upfront CAPEX support, project developers are required to contribute private sector match-funding. This will ensure that they are committed to the project's success.
- 3.25 The Assessment notes that the NZHF, by helping to lower upfront costs of projects and lowering finance costs, will decrease the level of support that low carbon hydrogen projects will require from the HPBM.
- 3.26 The Assessment and relevant evidence on which it relies shows that the NZHF would fund projects that would significantly contribute to the Government's ambition of up to 1GW of hydrogen capacity under construction or in operation by 2025. The assessment therefore argues that the NZHF scheme will directly contribute to reducing UK greenhouse gas emissions and assist as a significant first step to reaching Net Zero by 2050 by supporting at scale deployment of new low carbon hydrogen production.
- 3.27 In our view, the Assessment clearly sets out the expected change in economic behaviour of NZHF beneficiaries and how the scheme encourages investment and funding for the commercial deployment of new low carbon hydrogen projects, thereby contributing directly to the policy objective.

Additionality assessment

- 3.28 According to the Statutory Guidance, 'additionality' means that subsidies should not be used to finance a project or activity that the beneficiary would have undertaken in a similar form, manner, and timeframe without the subsidy.²³ For schemes, public authorities should, where possible and reasonable, ensure the scheme's design can identify in advance and exclude those beneficiaries which it can be reasonably determined would likely proceed without subsidy.²⁴

²² [Statutory Guidance](#), paragraph 3.50.

²³ [Statutory Guidance](#), paragraphs 3.49-3.53.

²⁴ [Statutory Guidance](#), paragraph 3.55

- 3.29 The assessment explains that, without the NZHF, it is unlikely that many large scale electrolytic hydrogen projects would be able to be constructed and move to commercial deployment. This would limit the production of low carbon hydrogen in the UK to small scale projects with limited environmental impact, slow down the development of a low carbon hydrogen market in the UK and risk the UK not meeting wider capacity targets.
- 3.30 The Assessment explains that producers must justify why a grant award is necessary for the development of their project and are required to submit extensive data and evidence to support the level of subsidy that they are requesting. It further explains that there are effective criteria embedded within the selection process which ensure that contracts provide additionality and that the crowding out of private investment is minimised.
- 3.31 The Assessment further explains that non-additionality has been designed out of the process by (i) involving the Industrial Development Advisory Board,²⁵ which will examine the case for assistance of each project to determine whether the additionality principle has been met, and (ii) only allowing projects to claim funding in arrears, following completion of pre-agreed project milestones and deliverables, thus minimizing the likelihood of grant funding expenditures that would have been incurred anyway. Finally, the NZHF support will only be available for new build hydrogen production facilities.
- 3.32 The Assessment also explains that, while projects will receive support through both the NZHF and the HPBM, the HPBM scheme has been designed not to cover costs already covered under the NZHF, and therefore avoid double compensation.
- 3.33 We consider that the Assessment has clearly demonstrated and evidenced that the allocation process, including the evaluation criteria, are sufficient to assess additionality and ensure that the NZHF will not finance a project or activity that would have been undertaken in a similar form, manner and timeframe without a subsidy.

Step 3: Considering the distortive impacts that the subsidy may have and keeping them as low as possible

- 3.34 The third step involves an evaluation of the assessment against:
- (a) Principle B: Subsidies should be proportionate to their specific policy objective and limited to what is necessary to achieve it; and

²⁵ The Industrial Development Advisory Board (IDAB) advises ministers on applications from companies proposing to start capital investment projects in the Assisted Areas in England and who have applied for regional selective assistance under the Grant for Business Investment scheme or the Regional Growth Fund (see [Industrial Development Advisory Board](#)).

- (b) Principle F: Subsidies should be designed to achieve their specific policy objective while minimising any negative effects on competition or investment within the United Kingdom.²⁶

The nature of the instrument

- 3.35 The Assessment considers several alternative instruments to grants. These include loans, equity investments and capital guarantees. The Assessment and supporting material explain the reasoning behind discounting each of these options, including that they were unlikely to de-risk private sector investment, were not targeted at the specific objective of improving the economic viability of a project, and were complex to administer.

The breadth of beneficiaries and the selection process

- 3.36 The Assessment outlines that beneficiaries will be chosen through an allocation process, made up of various stages. The Assessment describes this allocation process in detail, including eligibility and evaluation criteria. Eligible beneficiaries must, for instance, have a minimum production capacity of 5MW, a commercial operation date no later than the end of 2025 and a Technology Readiness Level of 7 or more.²⁷ The Assessment states that DESNZ is considering expanding the eligibility criteria of future rounds to include other production technologies.
- 3.37 It also states that, in order to create competitive tension and further reduce cost to Government, DESNZ is short listing more projects than will be awarded an NZHF contract.

The size of the subsidy

- 3.38 The Assessment explains how DESNZ set the subsidy's funding intensity to up to 20% of eligible CAPEX costs outlined, based on stakeholder engagement and internal analysis. The Assessment outlines that this is the minimum acceptable co-financing for projects across all strands of the NZHF. The Assessment further states that CAPEX accounts for a small proportion of total lifetime costs of electrolytic projects and is, consequently, proportionate. The Assessment also submits that a case for assistance assessment is carried out during the due diligence and negotiation phases, examining whether requested subsidy amounts are required.

²⁶ Further information about the Principles B and F can be found in the [Statutory Guidance](#) (paragraphs 3.58 to 3.93) and the [SAU Guidance](#) (paragraphs 4.15 to 4.19).

²⁷ For definitions of Technology Readiness Levels please refer to [Hydrogen Business Model and Net Zero Hydrogen Fund: Electrolytic Allocation Round: guidance for applicants \(publishing.service.gov.uk\)](#), pages 36 and 37.

- 3.39 The Assessment also states that the NZHF reduces revenue support required through the HPBM.

The timespan over which the subsidy is given

- 3.40 The Assessment submits that the subsidy is a one-off subsidy with a milestone- and programme-plan based payment model, which DESNZ views as less distorting than a recurring subsidy. The expenditure must be incurred no later than the financial year 2025/26. The Assessment also states that the choice of a one-off subsidy reflects the intention that NZHF is a medium-term intervention, providing the basis for low carbon hydrogen production in the UK.

The nature of the costs being covered

- 3.41 The Assessment states that the scheme will provide capital funding for costs associated with constructing the hydrogen production facility only and will not cover everyday business expenses. The list of eligible costs provided in the Assessment was created alongside the HPBM to ensure additionality. Grant recipients must retain an audit trail for grant-related expenditure, with costing information provided by recipients during the application stage being scrutinised by various technical experts to ensure they are not inflated or relate to other activities.

The performance criteria/ringfencing

- 3.42 The Assessment states that the Department for Business and Trade's Central Grants and Loans (CGL) team will lead on the NZHF payment and administration, with payments being carried out at milestone points, in arrears and after verification by an accountant. Recipients must also provide quarterly reports detailing progress including supporting evidence and must ensure grant funding is only used for the intended purpose. The Assessment further notes that the grant funding agreement will include suspension and termination rights alongside repayment provisions.
- 3.43 The Assessment also submits that the first and final claim in each financial year must be supported by an independent accountant's report. Additionally, DESNZ notes that CGL's Monitoring Officers will frequently visit projects to perform inspections, review any additional information and discuss progress.

Monitoring and evaluation

- 3.44 The Assessment outlines longer-term plans to establish a monitoring and evaluation framework for the hydrogen policy space that will track the implementation and impact of the scheme.

Impact on international trade and investment

- 3.45 The Assessment submits that international competition for hydrogen investment is increasing, intensifying the need for a competitive UK offer to secure investment.
- 3.46 The Assessment is unclear whether projects that have received NZHF funding will be permitted to export the hydrogen that they produce. The Assessment further discusses potential impacts of not restricting the export of hydrogen-derived products through the Low Carbon Hydrogen Agreement (LCHA). However, the impact of NZHF on these volumes is not clear.

Competition Impacts

- 3.47 The Assessment does not include a systematic review of competitive impacts of NZHF following the Statutory Guidance, but mentions under Step 4 the potential impacts of offtaker-restrictions and the impact of HAR1 on the natural gas market (see Step 4 for further detail).

Conclusion on Step 3

- 3.48 Overall, the Assessment engages systematically and in detail with the subsidy design considerations of the Statutory Guidance, including showing that the subsidy size is the minimum necessary.
- 3.49 However, it could be improved by methodically discussing potential competitive impacts and/or market distortions arising from NZHF, including the competitive impacts on existing hydrogen producers and on low carbon technologies not supported by the NZHF. Whilst Step 4 briefly touches upon some competitive impacts, the Assessment currently does not include any meaningful discussion of such effects.

Step 4: Carrying out the balancing exercise

- 3.50 The fourth step involves an evaluation of the assessment against subsidy control Principle G: subsidies' beneficial effects (in terms of achieving their specific policy objective) should outweigh any negative effects, including in particular negative effects on: (a) competition or investment within the United Kingdom; (b) international trade or investment.²⁸
- 3.51 The Assessment sets out a series of expected benefits of the scheme including that it will support the deployment of low carbon hydrogen production projects towards the 10GW ambition and reduce greenhouse gas emission by:

²⁸ See [Statutory Guidance](#) (paragraphs 3.96 to 3.98) and [SAU Guidance](#) (paragraphs 4.20 to 4.22) for further detail.

- (a) sharing upfront risk with private sector investors and overcoming first mover disadvantage;
- (b) lowering lifetime project costs and therefore the amount of ongoing revenue support required through the HPBM, achieving better value for money; and
- (c) triggering learnings and insights, driving down the development and construction costs of future projects and driving consumer acceptance of hydrogen.

3.52 The Assessment lists several potential negative impacts:

- (a) risk of crowding out private financing; although this risk is deemed low and will be mitigated through the allocation process (see paragraph 3.30);
- (b) restricting the use of alternative hydrogen production technologies by funding only low carbon electrolytic hydrogen production facilities, thus potentially missing out other technologies which could lead to a reduction in emissions;
- (c) missed opportunities for hydrogen market development, because the initial allocation rounds exclude the sale of HPBM subsidised volumes to certain offtakers (notably blending into the gas grid and exports); and
- (d) the displacement of the use of natural gas in the UK with hydrogen, affecting the contribution of UK's natural gas sector to the economy. According to DESNZ, the negative impact is outweighed by the wider benefits, principally increasing energy resilience and helping to meet the Net Zero targets.

3.53 The Assessment concludes that the benefits presented by the NZHF outweigh any potential negative impacts and that the scheme will play a direct role in reducing emissions as one of a range of Government interventions intended to facilitate the deployment of hydrogen projects.

3.54 In our view, the Assessment clearly sets out the positive effects of the scheme in relation to the policy objectives as well as potential negative impacts, and conducts a high level balancing exercise between them, in line with the Statutory Guidance.

3.55 However, shortcomings in relation to the assessment of potential negative competitive impacts in Step 3 impact the completeness of Step 4 and the Assessment would be strengthened by, having addressed this point, weighing these against the beneficial effects in Step 4.

3.56 The Assessment would also be strengthened if DESNZ explicitly considered the impacts on international trade and investment and likewise weighed them against the anticipated benefits in its balancing exercise at Step 4.

Energy and Environment Principles

- 3.57 This step involves an evaluation of the Assessment with regard to compliance with the energy and environment principles, where these are applicable to the scheme.²⁹
- 3.58 The Statutory Guidance summarises the scope of the different energy and environment principles that apply to different types of subsidies.³⁰ DESNZ has conducted an assessment of the scheme against Principles A, B, C and E. We are satisfied that the other energy and environment principles are not applicable to this scheme.

Principle A: Aim of subsidies in relation to energy and environment

- 3.59 The assessment against Principle A should show how the subsidy is consistent with delivering a secure, affordable and sustainable energy system and a well-functioning and competitive energy market, or increasing the level of environmental protection compared to the level that would be achieved in the absence of the subsidy. If a subsidy is in relation to both energy and environment, it should meet both of these limbs.³¹
- 3.60 The Assessment sets out that the NZHF is aimed at supporting the commercial development of new low carbon hydrogen production which aims to deliver a secure, affordable and sustainable energy system.
- 3.61 The Assessment also explains that the NZHF will increase the level of environmental protection compared to the level that would be achieved in the absence of the subsidy, through diversifying the UK's energy mix and reducing its reliance on high-carbon fuels, supporting the development of new hydrogen production technologies, reducing the cost of hydrogen production, reducing greenhouse gas emissions from the production and use of hydrogen and supporting the development of a low-carbon hydrogen industry in the UK. We note that the Statutory Guidance sets out that subsidies and schemes with a specific policy objective of promoting Net Zero will tend to be consistent with Principle A of the energy and environment principles.³²

²⁹ See Schedule 2 to the Act.

³⁰ Principles A and B apply to all subsidies in relation to energy and environment. Principle C applies for subsidies for electricity generation adequacy, renewable energy or cogeneration. Principle D applies to subsidies for electricity generation only. Principle E applies to subsidies for renewable energy or cogeneration. Principle F applies to subsidies in the form of partial exemptions from energy related taxes and levies. Principle G applies to subsidies that compensate electricity intensive users for increases in electricity costs. Principle H relates to subsidies for decarbonisation of industrial emissions. Principle I relates to subsidies for improving energy efficiency of industrial activities.

³¹ [Statutory Guidance](#), paragraphs 4.19-4.28.

³² [Statutory Guidance](#), paragraph 4.27.

Principle B: Subsidies not to relieve beneficiaries from liabilities as a polluter

- 3.62 The assessment against Principle B should explain clearly how the proposed subsidy or scheme does not relieve a polluter from liabilities arising from its responsibilities as a polluter under the law of England and Wales, Scotland or Northern Ireland.³³
- 3.63 The Assessment sets a maximum threshold for the amount of greenhouse gas emissions allowed in the production process for hydrogen to be considered 'low carbon hydrogen'. It explains that all beneficiaries of the NZHF are required to comply with this standard and that there are no provisions within the Grant Funding Agreement or the Grant Offer Letter which relieve beneficiaries from liabilities arising from their responsibilities as a polluter.

Principle C: Subsidies for electricity generation adequacy, renewable energy, or cogeneration

- 3.64 Subsidies or schemes for electricity generation adequacy, renewable energy, or cogeneration, should be assessed against Principle C. DESNZ has indicated that in its view, the NZHF is designed to support the development of a low-carbon hydrogen industry in the UK.
- 3.65 According to the Statutory Guidance, subsidies or subsidy schemes should not undermine the UK's ability to meet its obligations under Article 304 of the UK-EU Trade and Co-operation Agreement (requiring the UK to ensure that wholesale electricity and natural gas prices reflect actual supply and demand).³⁴ Subsidies must not have the effect of introducing significant distortions, price controls, or significantly impede the transparent operation of the wholesale electricity and natural gas markets.³⁵
- 3.66 Principle C also requires that the subsidy or scheme does not unnecessarily affect the efficient use of electricity interconnectors as provided for under Article 311 of the Trade and Co-operation Agreement. This article provides for the efficient use of, and non-discriminatory approach to capacity on, interconnectors between the UK and the European Union. The assessment should also show how the subsidy or scheme has been determined by means of a transparent, non-discriminatory and effective competitive process, or, alternatively, an explanation should be provided for why a competitive process was not required.³⁶
- 3.67 DESNZ indicates in its Assessment that the NZHF scheme does not undermine the UK's ability to meet its obligations under Article 304 of the TCA, it does not

³³ [Statutory Guidance](#), paragraphs 4.29-4.35.

³⁴ [Statutory Guidance](#), paragraph 4.37.

³⁵ [Statutory Guidance](#), paragraph 4.38.

³⁶ [Statutory Guidance](#), paragraphs 4.36-4.45.

distort the wholesale electricity and natural gas markets, and it has been determined by means of a transparent, non-discriminatory and effective competitive process.

Principle E: Subsidies for renewable energy or cogeneration shall not affect beneficiaries' obligations or opportunities to participate in electricity markets

3.68 Under Principle E, subsidies for renewable energy or cogeneration shall not affect beneficiaries' obligations or opportunities to participate in electricity markets.

According to the Statutory Guidance, a statement that nothing in the terms of the scheme relieves a recipient of the obligation or ability to participate in electrical markets is sufficient to ensure compliance with this principle.³⁷

3.69 The Assessment explains that the NZHF scheme does not place any limitations on hydrogen producers' abilities to participate in electricity markets, and there are no provisions within the Grant Funding Agreement that relieve recipients either directly or indirectly of any obligations they may have to participate in electricity markets.

Conclusion on the Energy and Environment Principles

3.70 We consider that DESNZ has clearly explained and evidenced how the NZHF complies with each of the energy and environment principles set out above.

Other requirements of the Act

DESNZ confirmed that no other requirements or prohibitions set out in Chapter 2 of Part 2 of the Act apply to the scheme.

³⁷ [Statutory Guidance](#), paragraphs 4.49-4.52.