Strike price and strike price indexation

Note, the strike price indexation questions relate to the natural gas cost faced by CCUS-enabled projects

Hydrogen business model stakeholder workshops

Thursday 11 August 2022

Agenda

1. Strike price: future pricing structure of hydrogen
2. Strike price: additional revenue
3. Strike price indexation: natural gas benchmark
3. Strike price indexation: amount of natural gas indexed

Aims

- Work together with projects, investors and other interested parties to deliver an investable and value for money hydrogen business model
- Stakeholder workshops aim to improve policy development by enabling us to test initial policy thinking with projects and potential investors
- Today we'll go through each agenda item and briefly outline what the issue is, what we're thinking and why
- We'll then invite views from you to understand the issue more as projects and investors

Note –
- The content in the following slides does not represent BEIS policy, but provides ideas for discussion.
- This session will be recorded for BEIS internal use only.

Using design principles to develop the hydrogen business model

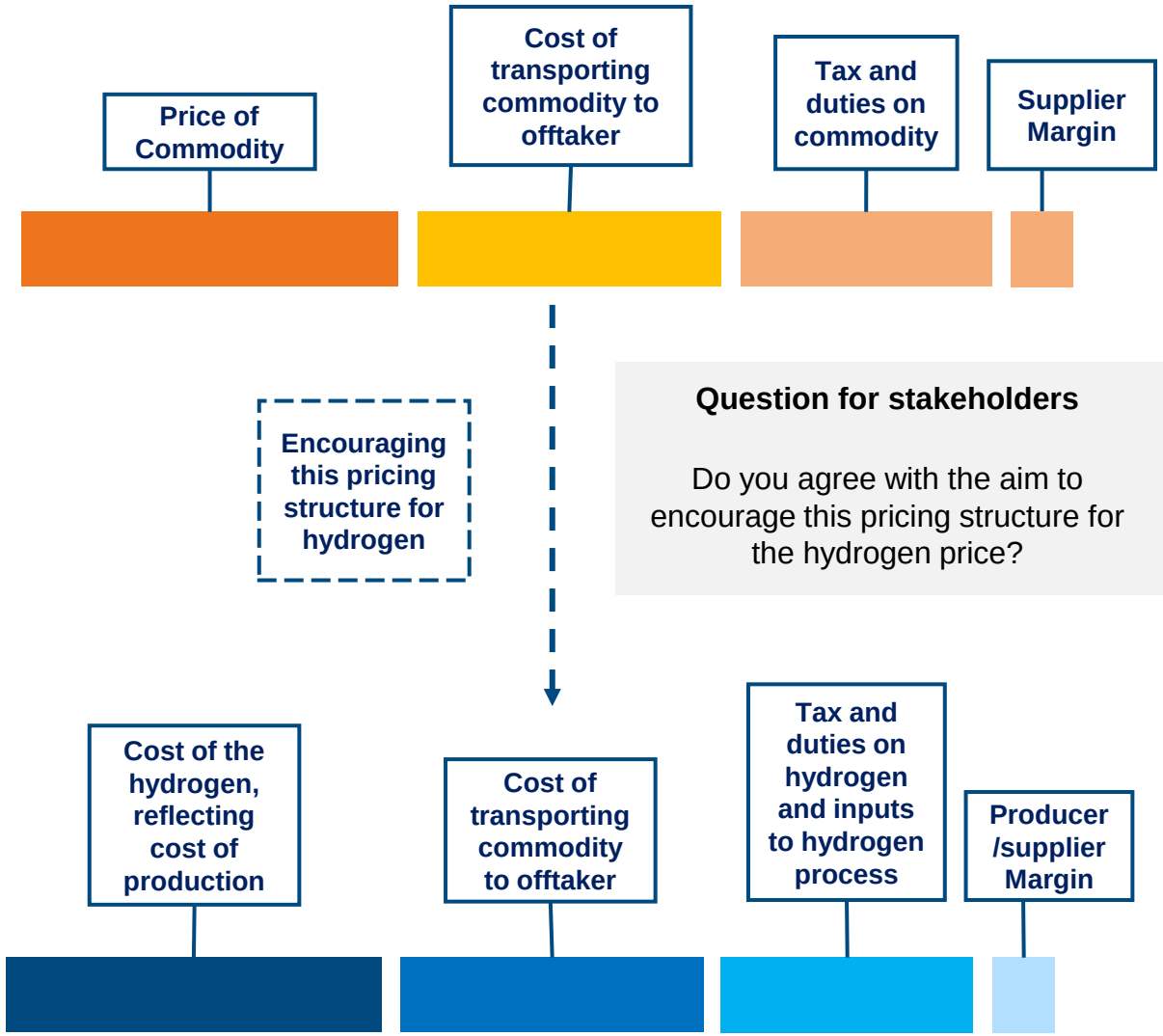
- Team driving at delivering an investable and VfM HBM, enabling the first contracts to be allocated from 2023
- We are focused on managing the main risks: price and volume risk
- We are using these design principles to guide policy development

Principle	Description
Promotes market development	*Incentivise producers to develop hydrogen demand and promote its use*
Promotes market competition	*Not create barriers to market entry, enable abuse of market power, or provide enduring competitive advantage to first movers*
Investable	*Provide sufficient predictability over revenues and returns to investors and mitigate risks which investors are not best able to bear*
Value for money	*Be effective in achieving its intended purpose at the lowest possible cost to government and prevent excessive returns to developers*
Reduces support over time	*Allow support to reduce over time by responding to market conditions and encouraging learning, innovation, and cost reductions over time*
Suitable for future pipeline	*Work for FOAK projects and NOAK projects with minor adjustments*
Compatible	*Be compatible with other policies and not allow double subsidy*
Technology agnostic	*Be applicable to a range of production technologies*
Size agnostic	*Be applicable to a range of project sizes and not incentivise inefficient sizing of production plants*
Avoids unnecessary complexity	*Avoid unnecessary complexity in its design, implementation and administration, and be transparent for producers to comply with*

Strike price

Questions for CCUS-enabled and electrolytic projects

Department for
Business, Energy
& Industrial Strategy



Question for stakeholders

Do you agree with the aim to encourage this pricing structure for the hydrogen price?

Reaffirming the desired hydrogen pricing structure to inform strike price policy development

- Current **pricing structure of commodities** is split between the price of the commodity, transport, tax and duties imposed on the commodity (so passed through to end users), and the supplier margin
- We are encouraging a similar **pricing structure of hydrogen**
- We want the price of the hydrogen (the commodity cost) to only reflect the cost of production.
- This will provide the best opportunity for a hydrogen price to emerge that represents the same thing for all technologies, wherever hydrogen is produced in the country
- A consistent hydrogen price will give confidence to offtakers and allow for an efficient market to emerge where the overall price an offtaker pays for hydrogen represents the costs associated with producing and transporting

Additional revenue

What are the key considerations?

- Avoiding oversubsidy and ensuring value for money for government
- Investability, providing sufficient predictability over revenue
- Simplicity of design

Options we have considered

- Allow sale of by-products and additional services without adjustment to the subsidy.
- Allow sale of by-products and additional services without adjustment to the subsidy. Require open book accounting procedure with the counterparty to monitor type and size of additional revenue streams. ***Current thinking***
- Ban additional revenues
- Clawback 100%
- Clawback <100%

Sample revenue stream	Producer type
Heat	Electrolytic
Oxygen	Electrolytic
CO2	CCUS-enabled
Grid balancing and ancillary services	Electrolytic

We do not expect revenues from the above markets to be significant in the short to medium term.

Out of scope: any potential future revenues from sales of LCHS certificates and sale of negative emissions credits on a merchant basis. Policy work on these positions is ongoing.

Strike price indexation

Questions for CCUS-enabled projects

Natural gas benchmark choice for natural gas indexation

What did we set out in the Indicative HoTs on natural gas indexation?

- The natural gas cost of the strike price will be indexed to the market price of natural gas.

- We didn't define what benchmark we would use as the market price

What are the key considerations?

- Natural gas price floor is the National Balancing Point (NBP) month ahead averaged over the month prior to the billing period, as set out in the indicative HoTs

- Original rationale for choosing the natural gas price floor price benchmark. This price benchmark has lower volatility than day ahead or on-the-day prices, but higher liquidity than quarter/season/year ahead. It's a price that parties could reasonably contract at and hedge against.

- Relationship between the reference price floor and strike price and ensuring producer doesn't lose out by strike and reference prices expanding/contracting at different rates

- Available ways for producers to buy natural gas

Options we have considered

a. Aligned with the natural gas price floor benchmark *Current thinking*

b. Unaligned with the natural gas price floor benchmark

Strike price indexation position in the indicative HoTs

4.12	Strike Price Indexation	BEIS' minded-to position in respect of Strike Price indexation for: (a) CCUS-Enabled Facilities, is for the natural gas cost component of the Strike Price to be indexed (in a certain proportion, to be determined) to the market price of natural gas, on the basis of a natural gas price benchmark (which may be based on UK NBP Month Ahead Natural Gas Price), and for all other components of the Strike Price to be indexed to CPI (except for CO_2 T&S fees, which are a pass-through – see discussion in item 4.17 (*CO_2 T&S Fees*)); and

Definition of the natural gas price for the natural gas price floor in the indicative HoTs

4.5	Natural Gas Price	The **"Natural Gas Price"** will be the arithmetic average of the daily value of the UK NBP Month Ahead Natural Gas Price published on every business day of the calendar month preceding the relevant Billing Period. The UK NBP Month Ahead Natural Gas Price will be the price for natural gas delivered to the National Balancing Point (NBP) Virtual Trading Point, in equal amounts every calendar day of the nearest calendar month. Natural gas is the most prevalent counterfactual fuel from which offtakers would switch. Therefore, in BEIS' view, offtakers would be likely to pay at least the Natural Gas Price for hydrogen, especially as they would save on CO_2 emissions costs compared to the counterfactual. BEIS is considering the price source, the corresponding reference price review procedure and the fallback mechanism in the event that the relevant price source ceases to publish the UK NBP Month Ahead Natural Gas Price.

Amount of natural gas indexed

What did we set out in the Indicate HoTs on natural gas indexation?

- Natural gas cost would be indexed to the market price of natural gas
- We set out that we would be considering the 'proportion' of natural gas used by projects that would be indexed, recognising that different CCUS-enabled technologies use different amounts of natural gas

What are the key considerations?

- Enable diversity of technologies noting different operating characteristics and production inputs
- Appropriate allocation of risk between HMG and projects
- Delivering HBM that is VfM and investable and supports market development
- Resilience and security of hydrogen supply, recognising wider system impacts

Strike price indexation position in the indicative HoTs

4.12	Strike Price Indexation	BEIS' minded-to position in respect of Strike Price indexation for: (a) CCUS-Enabled Facilities, is for the natural gas cost component of the Strike Price to be indexed (in a certain proportion, to be determined) to the market price of natural gas, on the basis of a natural gas price benchmark (which may be based on UK NBP Month Ahead Natural Gas Price), and for all other components of the Strike Price to be indexed to CPI (except for CO_2 T&S fees, which are a pass-through – see discussion in item 4.17 (*CO_2 T&S Fees*)); and

Options we have considered

a. Only index an amount of natural gas reflecting the best available thermal efficiency conversion rate for CCUS-enabled technologies. Technical advice suggests 1.15MWh of natural gas to 1MWh of hydrogen is most appropriate, taking into account manufacturing / operation uncertainties ***Current thinking***

b. Partial indexation of natural gas for all projects as a fixed % of natural gas use (e.g 90% of natural gas consumption)

c. Indexation linked to the actual natural gas consumption of the relevant project

Thank you and questions

Thank you for joining today's stakeholder workshop

We appreciate that you continue to provide invaluable insight and feedback on the hydrogen business model

Any further questions, please contact one of us directly or use the hydrogen business model inbox

benjamin.marsh2@beis.gov.uk and emily.hooker@beis.gov.uk

or

hydrogen.businessmodels@beis.gov.uk

Annex

Strike price indexation questions for CCUS-enabled projects

Summary of additional strike price indexation policy current thinking

Issue	Description	Current thinking
Use of refinery off gas as input to CCUS-enabled production process	Some CCUS-enabled projects may decide to use refinery off gas interchangeably with natural gas as a feedstock input for hydrogen production.	Index ROG in the same way as the natural gas cost, to the natural gas price benchmark. Exclude ROG pre-treatment costs from the strike price
Use of biomethane as input to CCUS-enabled production process	Some CCUS-enabled projects may decide to use biomethane interchangeably with natural gas as a feedstock input for hydrogen production	[Index biomethane in the same way as the natural gas cost, to the natural gas price benchmark]