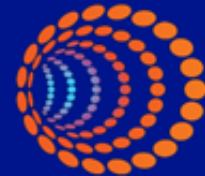


Decarbonising Scotland - exploring the role of hydrogen and the gas networks

- Playback

nationalgrid



SGN
Your gas. Our network.

Who we are...



**Jenny
Pemberton**

National Grid Gas
Transmission



**Simon
Gill**

Scottish Government



**Danielle
Stewart**

National Grid Gas
Transmission



**Colin
Thomson**

SGN

Logistics



Should last for approximately an hour



Your questions are welcomed throughout via chat function



All callers will be placed on mute



Slides will be circulated after the call

Agenda

1

Round up of the event

2

What we heard

3

Next steps

Objectives of the workshop

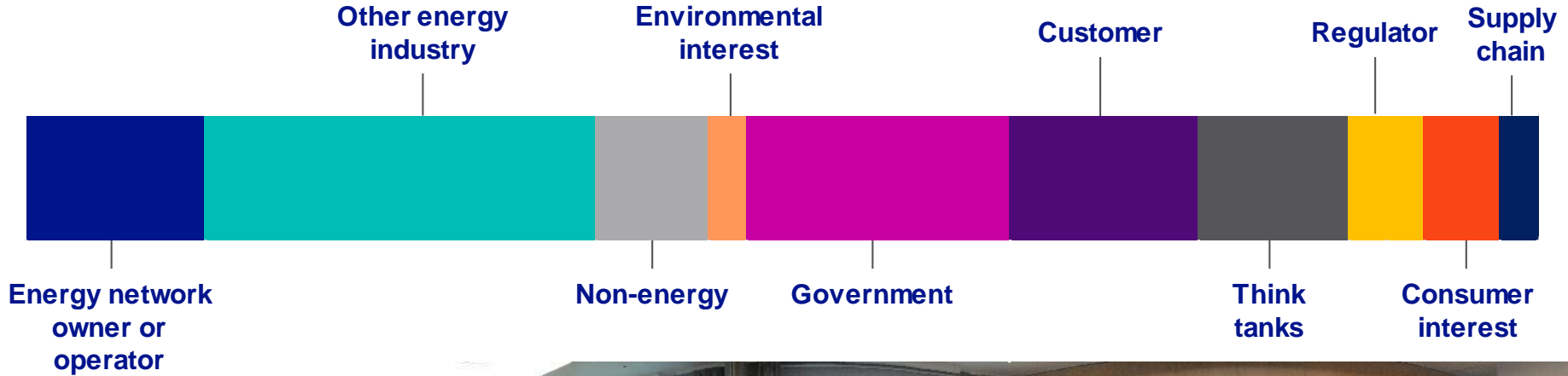
- 1. To create a holistic view of current state and long-term aspirations for hydrogen in Scotland and with particular reference to the role the gas networks could play in enabling different scenarios**
- 2. To identify the blockers and develop prioritisation against these**



Who attended

More engagement needed with:

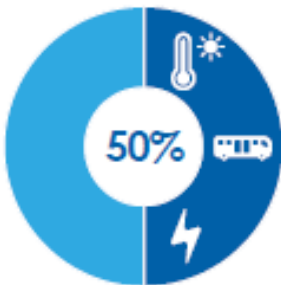
- Major energy users
- Less informed stakeholders



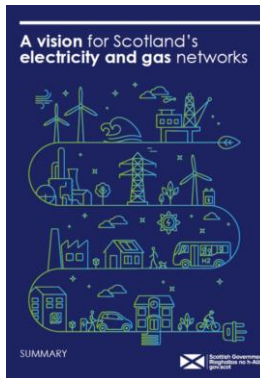
Workshop had a holistic view. Good mix of people from public and private sector



Scottish Government



THE EQUIVALENT OF **50%** OF THE ENERGY FOR SCOTLAND'S HEAT, TRANSPORT AND ELECTRICITY CONSUMPTION TO BE SUPPLIED FROM RENEWABLE SOURCES



Hydrogen Action Plan

Heat Decarbonisation policy statement



AN INCREASE BY **30%** IN THE PRODUCTIVITY OF ENERGY USE ACROSS THE SCOTTISH ECONOMY

Climate Change (Emissions Reduction Targets) (Scotland) Act 2019

Acts of the Scottish Parliament ▶ 2019 asp 15 ▶ Table of contents

Table of Contents	Content	Explanatory Notes	More Resources
What Version <ul style="list-style-type: none"> Latest available (Revised) Original (As enacted) 		Status: This is the original version (as it was originally enacted).	
Opening Options		Introductory Text	
More Resources		PART 1 Emissions reduction targets <i>The net-zero emissions target</i> 1. The net-zero emissions target	

Pathway to 2050

How the gas sector can contribute step-by-step to the decarbonisation of Great Britain's energy system

Preparing for Transition

Strategic, technical and policy planning to enable low carbon gases to play a significant role in GB's transition to net-zero, while maintaining safe and reliable operation

Facilitating Connections

More anaerobic digestion (AD) biomethane plants connected to the gas grid
Preparations accelerate for first hydrogen projects
Ramp up energy efficiency improvements throughout GB

Expanding Supply

First hydrogen projects integrated with carbon capture, utilisation & storage (CCUS) and anchored by baseload consumers, likely from industry and transport.
Continuing scale-up of biomethane supply

Expanding the Demand Base

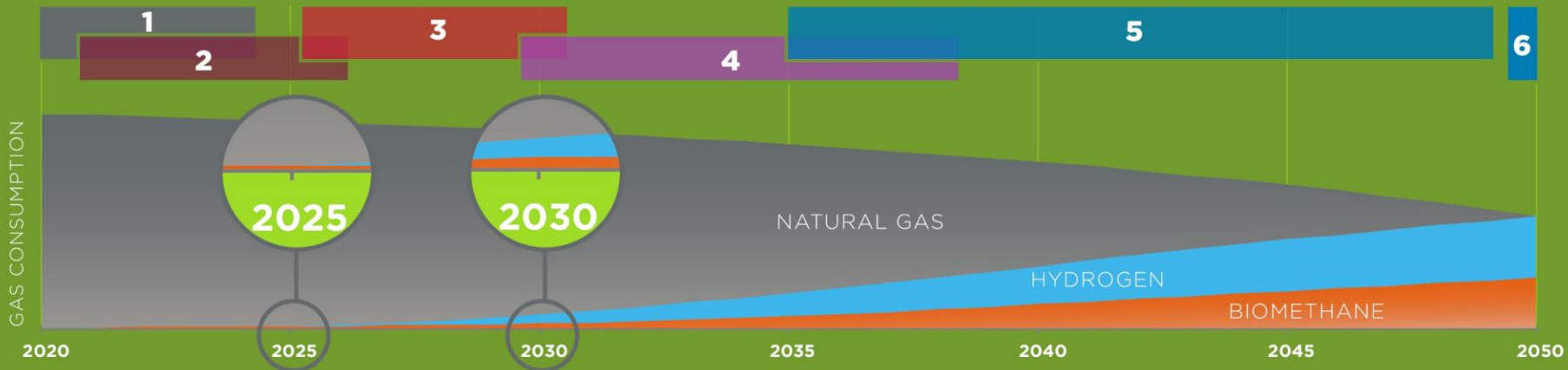
Hydrogen use extends to commercial and residential consumers near the first hydrogen projects, initially via low blends (up to 20%) but developing into 100% hydrogen clusters
Consumers in other regions continue to receive natural gas, with rising blends of biomethane

Increasing Low Carbon Gases

Hydrogen clusters spread and connect to become extensive hydrogen zones, enabled by an evolving, carefully managed National Transmission System (NTS)
Greater volumes and diversification of low carbon gas supply as more production methods mature technically and economically

100% Low Carbon Gases

Low carbon gases fully integrated across the GB energy system, with distinct regional solutions
All gas end-users are supplied with hydrogen and/or biomethane, the principal type varying by region
Natural gas no longer used, unless abated with CCUS for blue hydrogen production
Net-zero energy system achieved in 2050



National Grid

Scale of the Challenge

22m

gas customers in the UK

995TWh

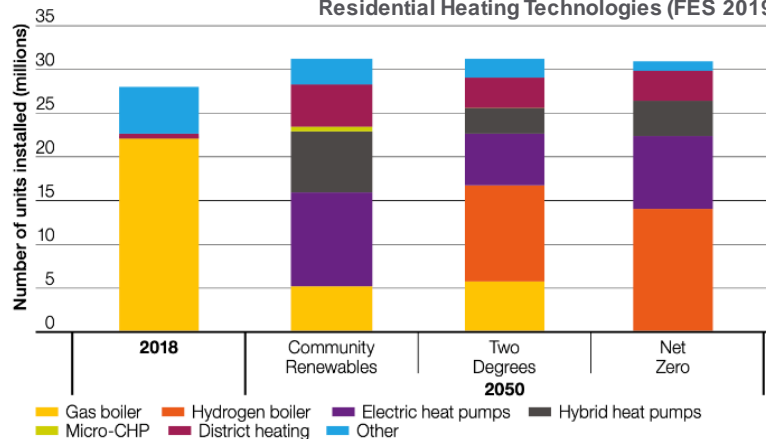
energy delivered by the NTS

3x total electricity demand

85%

households are using gas for heat

Residential Heating Technologies (FES 2019)



Collaboration



HyNTS

Feasibility of Hydrogen in the NTS

Aberdeen Vision

Project Cavendish

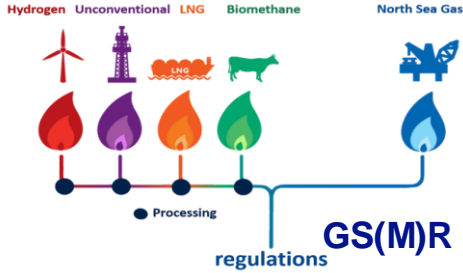
Hydrogen Flow Loop

NTS Hydrogen Injection

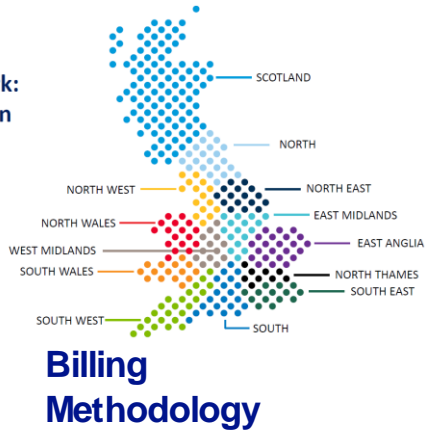
Hydrogen Deblending

H21 Network Operations NIC 2019 Bid

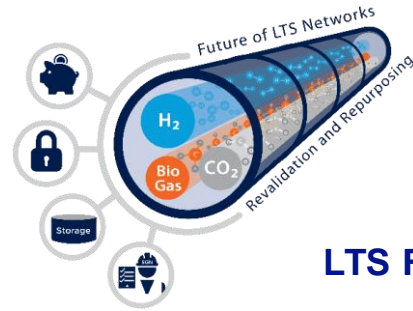
SGN



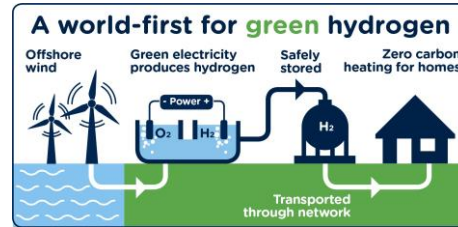
The current billing framework: Local Distribution Zones (LDZs)



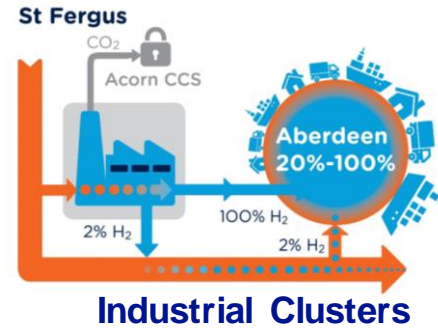
National Grid



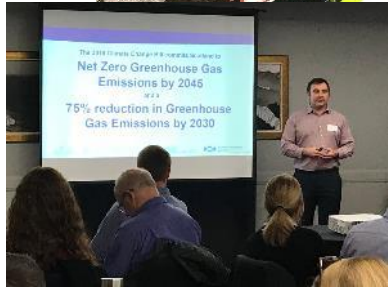
LTS Futures



Methilltoun



What three words would you use to describe the net zero challenge?

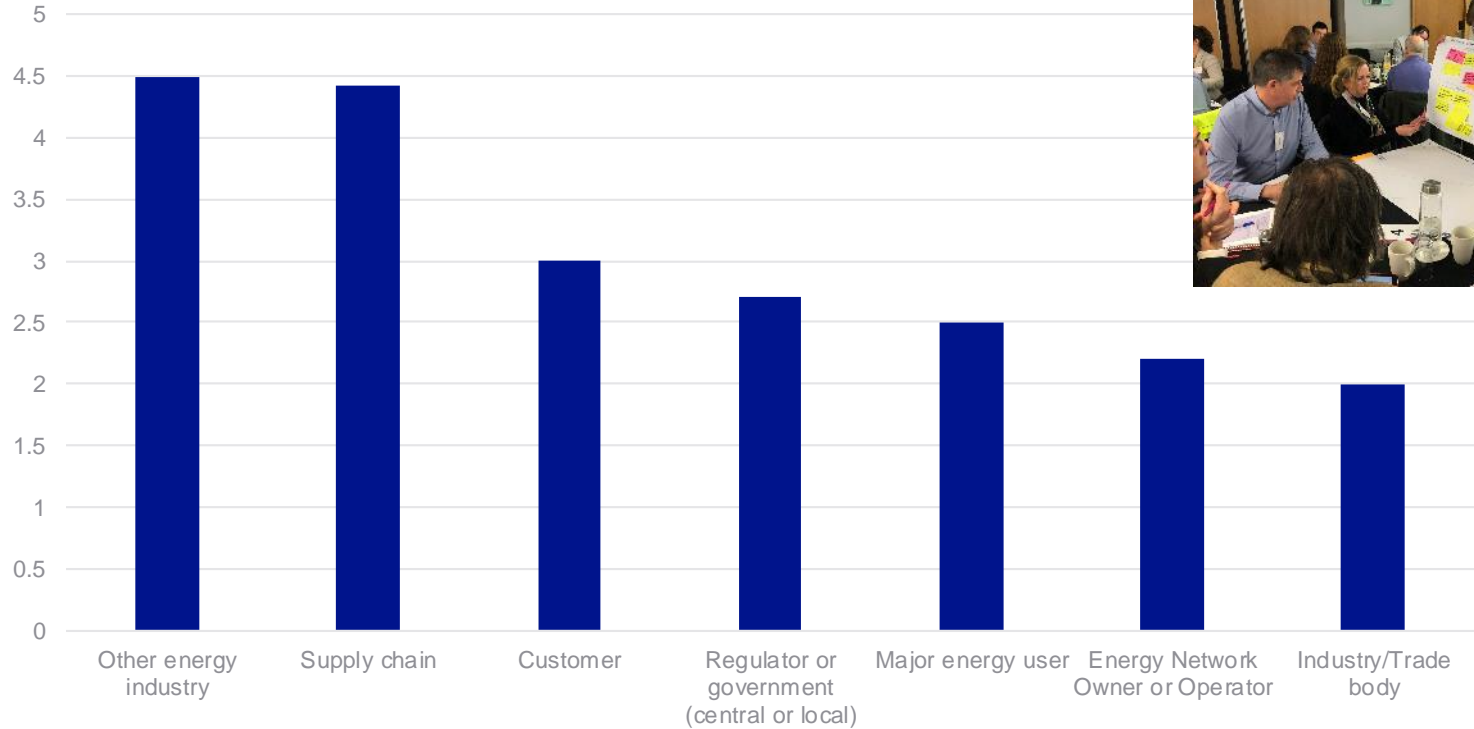


On a scale of 1-5, what level of priority is your organisation giving hydrogen?

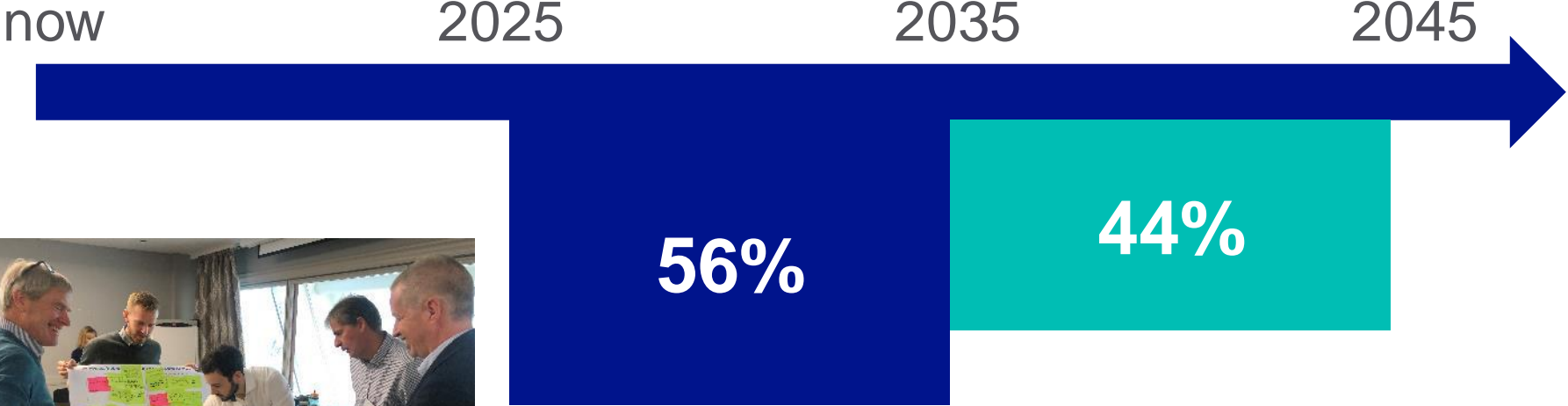
1. Low – little buy in, lacking strategic direction
- 2.
- 3.
- 4.
5. Very high – Active board commitment, dedicated investment



On a scale of 1-5, what level of priority is your organisation giving hydrogen?



When do you see hydrogen playing a significant part of Scotland's energy mix?



When do you see hydrogen playing a significant part of Scotland's energy mix?

now

“2025-2035 depending on the success of CCuS. Later for green hydrogen production”

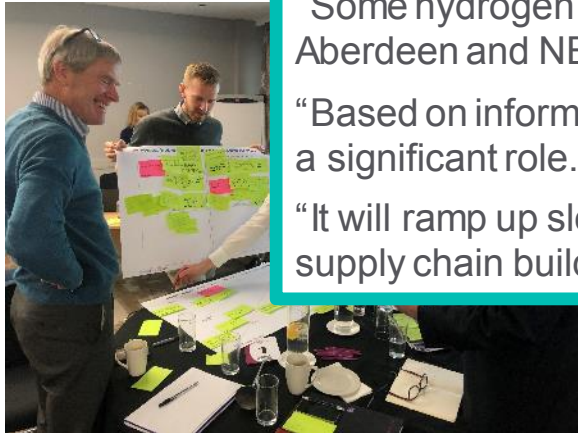
“Scottish government taking a leading role with SGN/National Grid developing Hydrogen Clusters during the next and subsequent price controls”

“Some hydrogen networks up and running late 2020's (Orkney maybe Aberdeen and NE England) expending through into 2030's and 40's.”

“Based on information today I believe there is a case that hydrogen can play a significant role. Optimism”

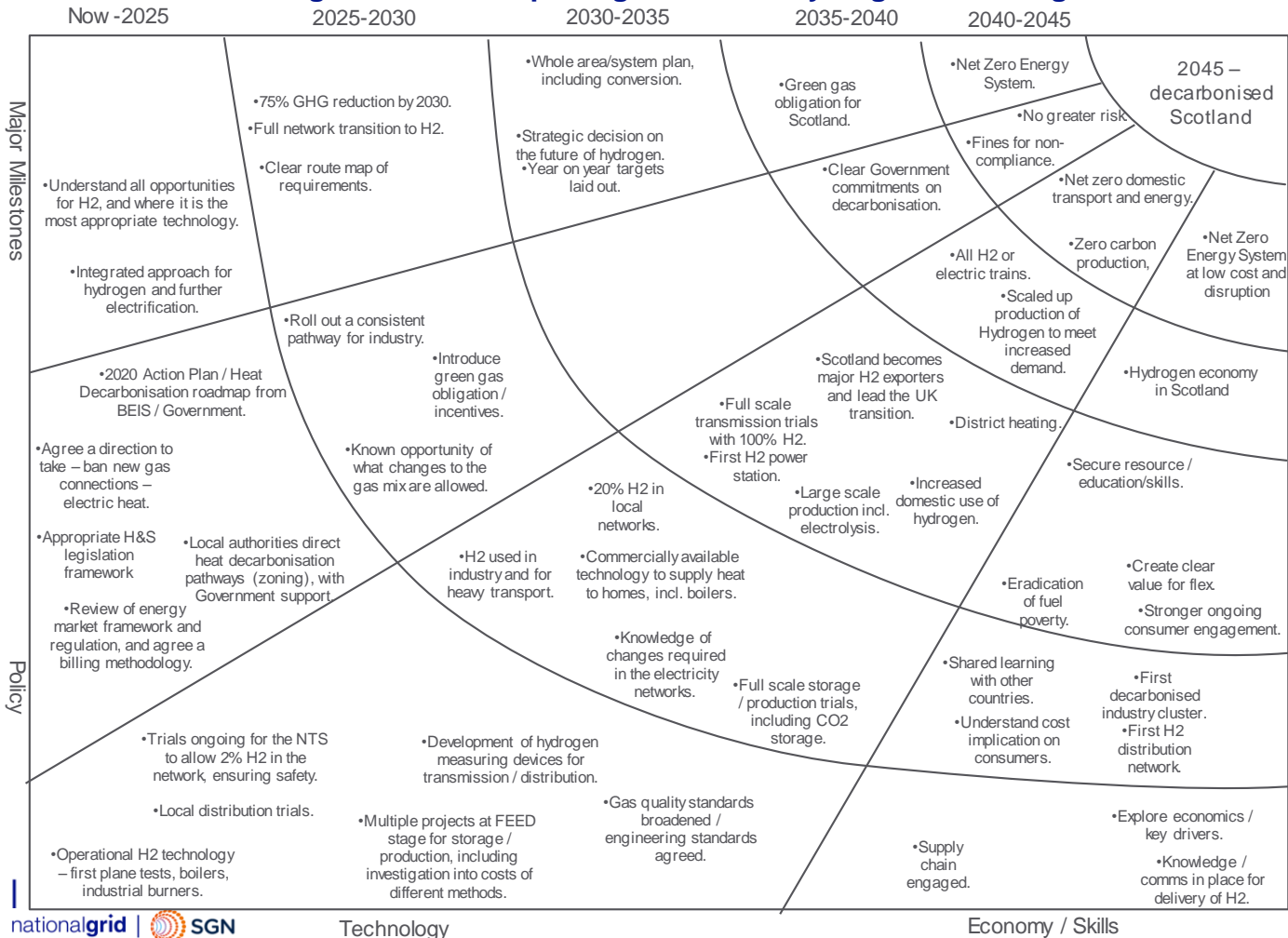
“It will ramp up slowly at first and then accelerate as costs come down and supply chain builds up”

2045



Decarbonising Scotland – exploring the role of hydrogen and the gas network

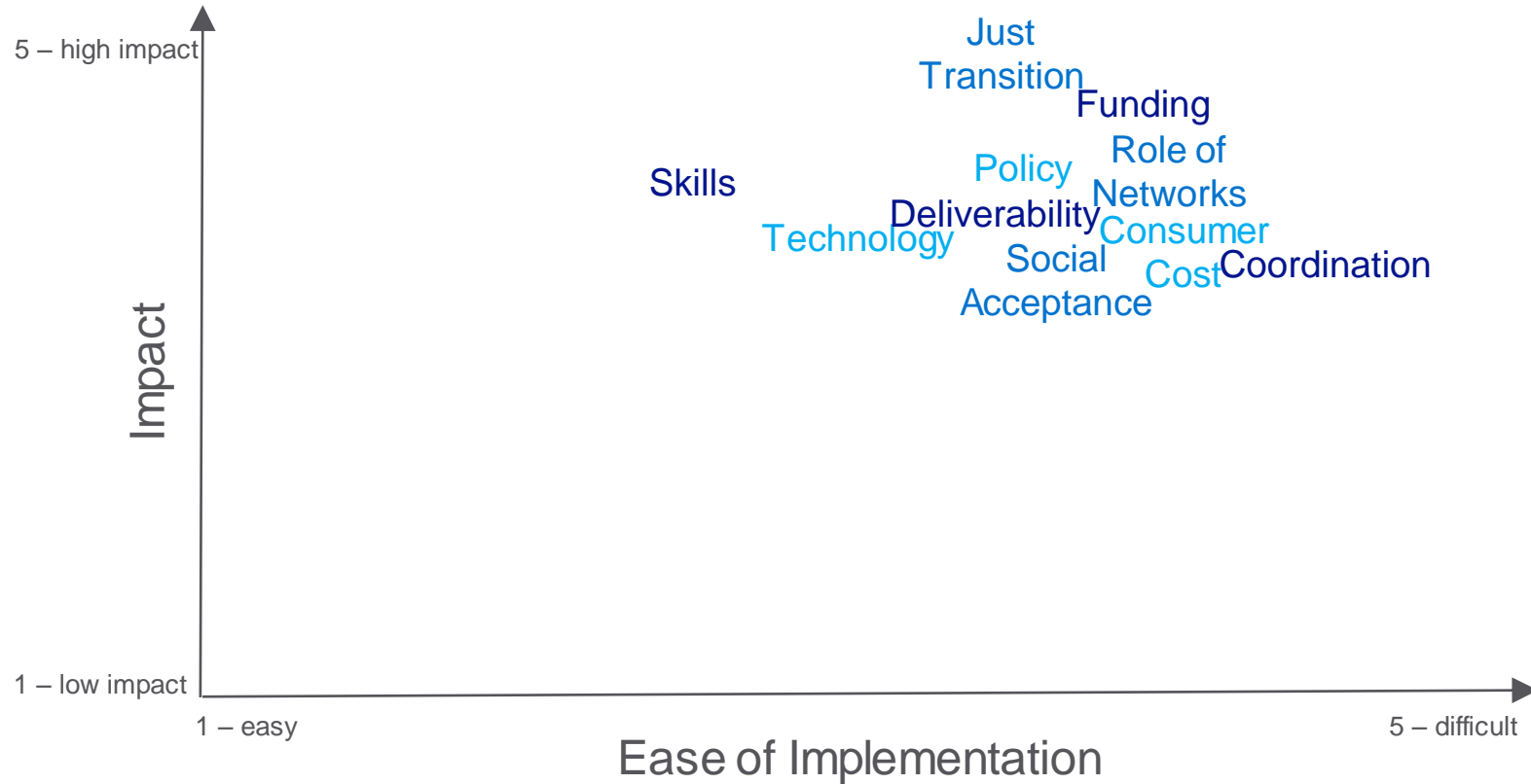
Your roadmap



What are the challenges on the road to Net Zero?



Challenge Prioritisation



Next steps

Incorporate the outputs from this workshop into the Pathways work

Deliver Pathways actions and recommendations

Continue to engage with stakeholders to develop the programme

Align programmes and collaborate across industry and government

Support National Grid and SGN in developing a ‘Scottish pathways project’

- *We commit to working with National Grid Gas and SGN as they develop pathways to support Scottish targets, adapting the work they have done on a GB scale.*
- *13th February: Energy Networks Summit, Glasgow 9:15 – 16:15. Details and sign up here:*

<https://www.eventbrite.co.uk/e/networks-vision-summit-tickets-85789812639?ref=estw>



Questions



Thank You

