Bridging the Gap to Net Zero: Data and digitalization workstream

25th November 2020

nationalgridESO

Agenda

Welcome and introduction	Louise Schmitz, ESO
Workstream findings and recommendations	Vicky Chiles, ESO
Key stakeholders' reflections in conversation with	Laura Sandys
Review of Slido questions and comments	Laura Sandys
Wrap up and next steps	Vicky Chiles, ESO

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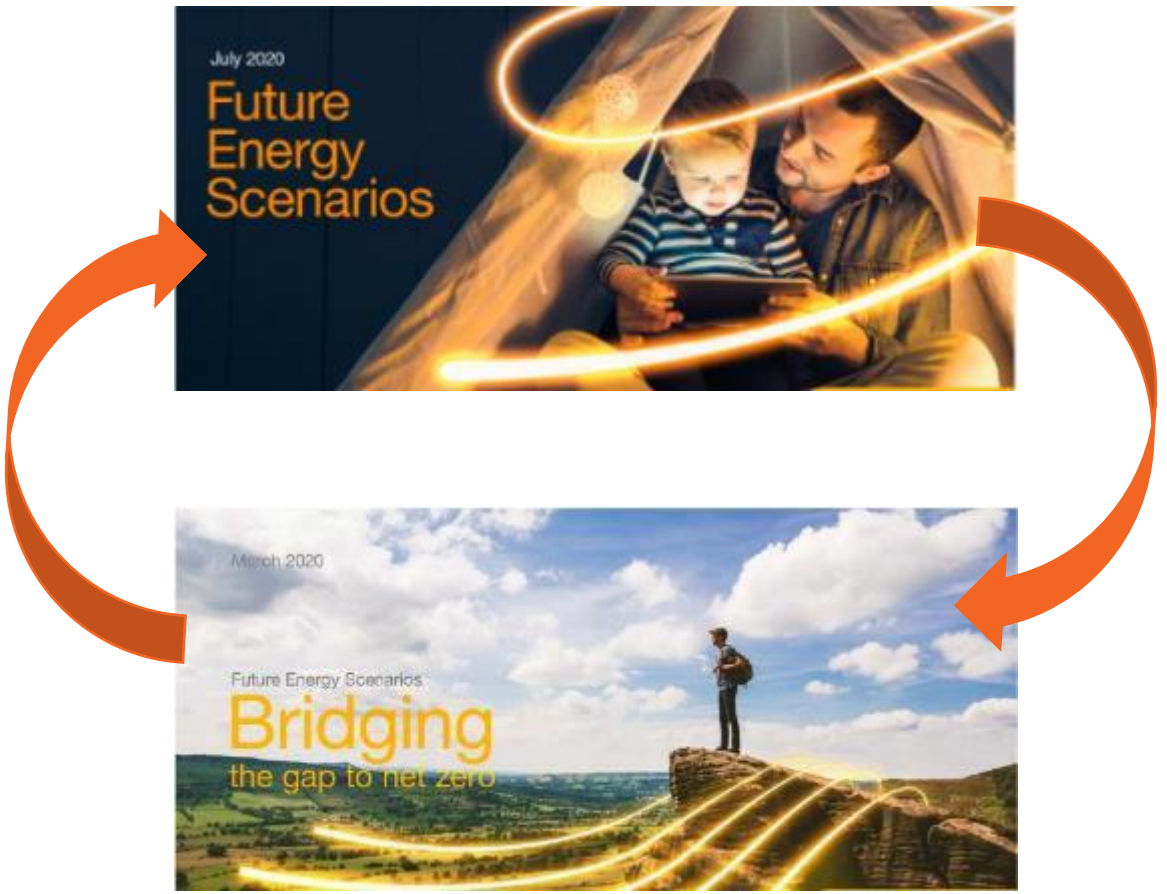
Bridging the Gap recommends what *needs to happen* to achieve net zero emissions

FES Bridging the Gap to Net Zero:

- Considers what *needs* to happen in the **next 10 years** if we are to meet net zero
- **Explores key areas of uncertainty, gathers evidence and works collaboratively with stakeholders to build consensus.**
- Recommends actions for policymakers and industry to move towards net zero.
- Informs FES modelling and analysis

What we've done so far:

- Consulted with wide range of external and internal stakeholders about the topic and structure of the project
- Held an online webinar to gather more views and input
- Led three workstreams of industry volunteers



FES 2020 scenarios all have a greatly increased proportion of renewable electricity generation

- Over 10 million Battery Electric Vehicles on the road (in Leading the Way, with an ICE ban date of 2032)
- Over 5.8 million heat pumps in Consumer Transformation
- Over 135,000 different battery storage sites (LW)
- Carbon emissions reduced by up to 37% (LW)
- Increase in peak demand of up to 13% (LW)
- 17% reduction in amount of dispatchable capacity available

Whilst not all of these changes will happen, there is some certainty about the potential impacts:

- More intermittent electricity supplies due to increase in renewable electricity generation capacity
- More need for flexible demand and supply
- **Increased complexity because of millions interactions on the energy system**

Bridging the Gap 2020: Peaks and troughs: how markets, technology and data & digitalisation can help meet the new challenges of a decarbonised energy system.

Part 1 – Webinar in October

What are the new peaks and troughs?

The energy system has been designed to meet one definition of peak. However, we're now in a world where there are new challenges – not just peak demand but also peak supply or peak EV demand.

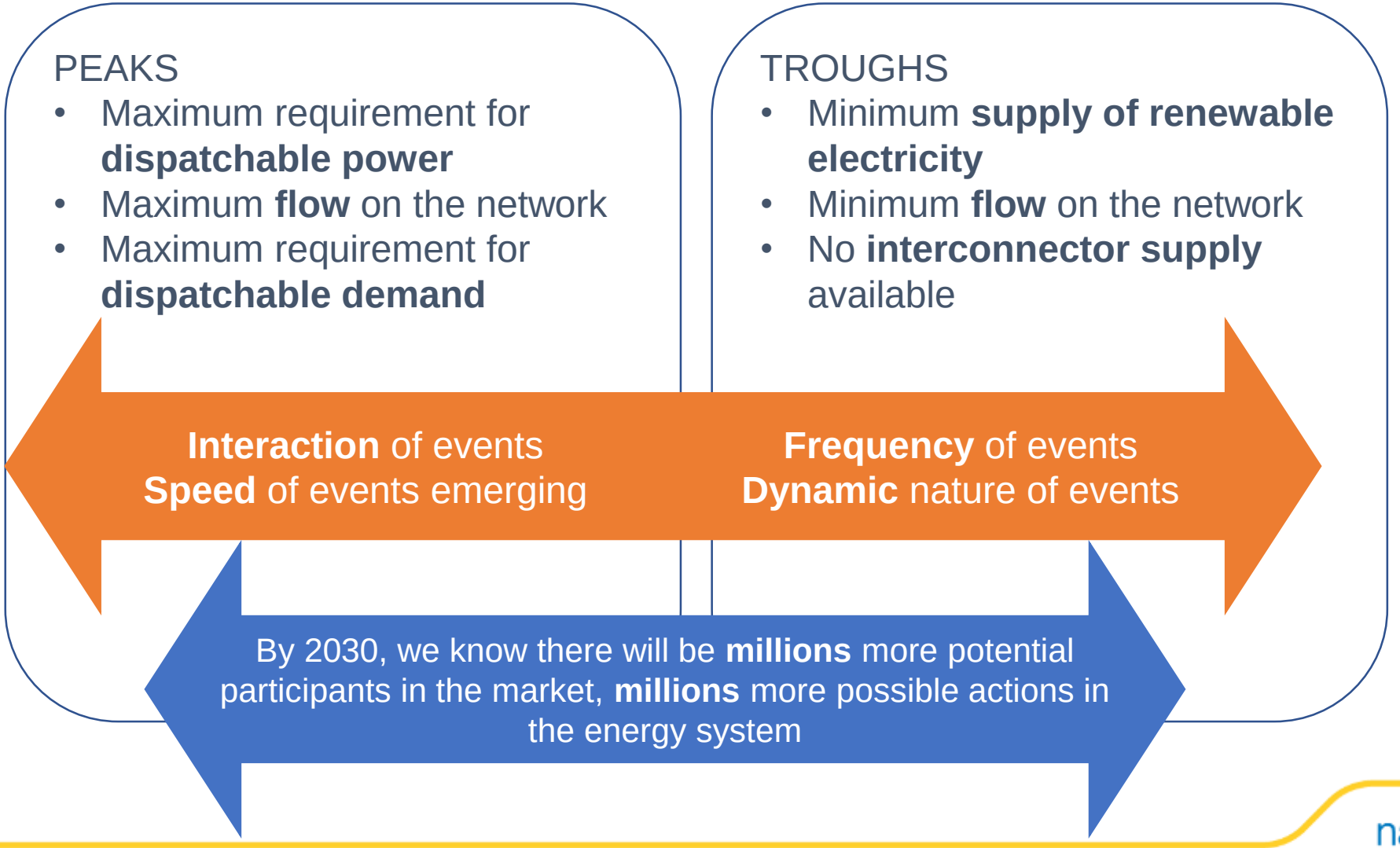
PART 2: How markets, technology and data and digitalisation can help meet these new peaks and troughs? Additional questions:

PART 2a: Data & Digitalisation	PART 2b: Technology	PART 2c: Markets
What can we learn from other sectors' and countries' use of D&D to manage rapidly changing peaks and troughs of supply and demand?	Which technologies have the potential to make the biggest positive impact between now and 2030? Where's the biggest bang for buck??	How can markets unlock the value of flexibility and enable wider consumer participation?

PART 3 - Report in February

The recommendations from the workstreams, the interaction between them and common threads will be brought together in a final report, due early 2021.

At the October event, we agreed the new peaks and troughs that we are already seeing in our energy system as it decarbonises



Data and Digitalisation workstream Findings, recommendations and actions

Vicky Chiles, ESO Strategy

Context and aim: data and digitalisation workstream

- We need to be securely on a net zero path by 2030.
- The ESO will be making a lot more transactions in order to manage peaks and troughs in supply and demand
- High level run-through, intended to find areas of consensus and to share knowledge and experience.

Workstream members

After October's Bridging the Gap workshop, we asked for volunteers to join the workstream to co-create and collaborate over a short period.

Workstream focus

Informed by audience polls at October workshop and external stakeholder engagement

How can data and digitalisation help to manage the challenges associated with the new peaks and troughs that we could see as our energy system continues to decarbonise?

Additional focus areas:

- What can we learn from other sectors' and countries' use of data and digitalisation to manage rapidly changing peaks and troughs of supply and demand?
- What are the barriers to implementation?

A look at other sectors and countries…

Visibility

Distributed storage framework

Multiuse platform

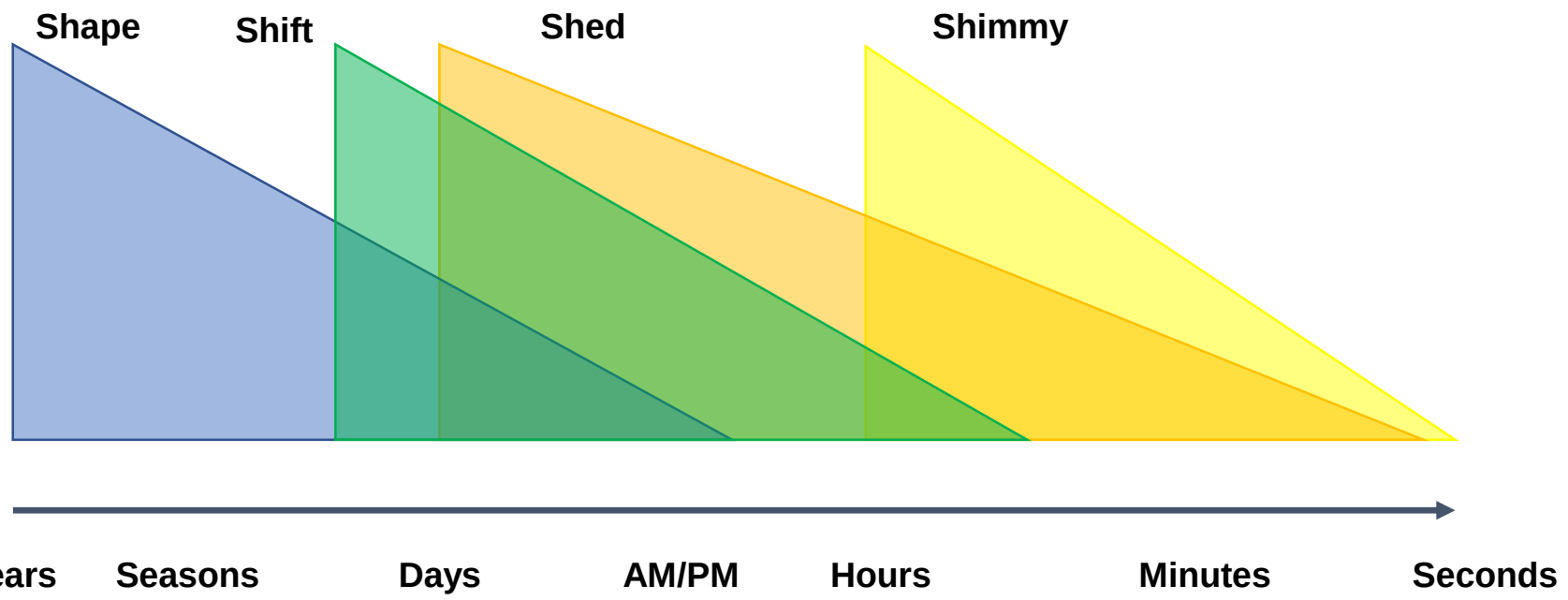
Storage management

Compatibility standards

Central data hub

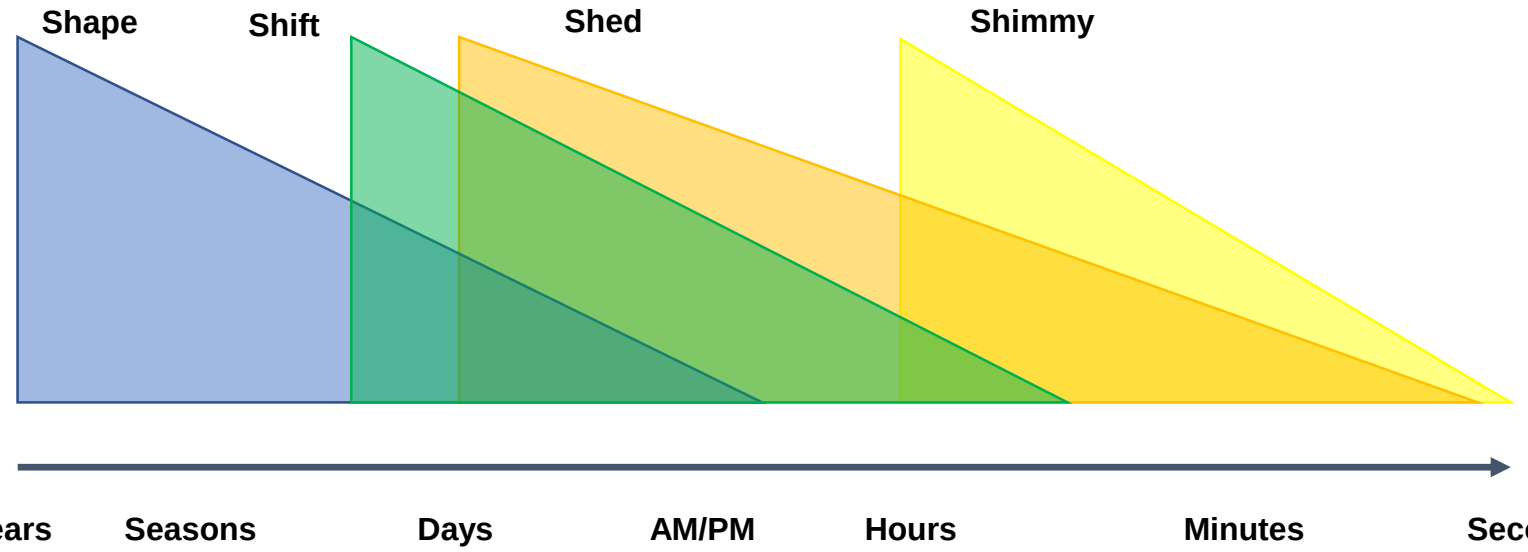
Data access

When it comes to the energy sector, there are barriers that need to be overcome to unlock flexibility



Adapted from: https://eta-publications.lbl.gov/sites/default/files/lbnl-2001113.pdf

What does data and digitalisation need to do for us to address these new challenges?



Incentivise EE and Behaviour Change

Mitigate Ramps and Capture Surplus Renewables

Manage contingency events and move load

Fast DR to smooth net load and support frequency

Shape: Greater data analytics of new drivers of demand and supply building up a much clearer picture of what the trends are with new assets – and locational vulnerabilities.

Shift: Data and digital tools throughout the system embedded in technologies including in home to provide visibility of potential to shift, and linked to markets to incentivise these behaviours

Shed: access, visibility and market signals automated through digital tools to drive shedding

Shimmy: highly sensitive system tools to communicate need, assess capability and resilience with clear market signals

Interim findings: requirements needed that are common to all four of the ‘S’ actions

Prerequisites

- [ ] Visibility for all actors
- [ ] Visibility and data flows on all assets and their capability
- [ ] Interoperability “standards”
- [ ] Resilient communications networks
- [ ] Shadow model in place to start learning of interaction between tech, digital tools and markets
- [ ] Alignment with the deployment of new technologies and market development complementing each other

Governance

- [ ] Digital architecture
- [ ] Sharing protocols across the system
- [ ] Presumed open
- [ ] Redress / algorithm governance
- [ ] Electricity and gas collaboration

Tools and skills

- [ ] New modelling tools
- [ ] Investment in skills and soft assets

Interim recommendations and actions:

How can data and digitalisation help to manage the challenges associated with the new peaks and troughs that we could see as our energy system continues to decarbonise.

Recommendations

1. Industry and the regulator to review regimes to ensure that they encourage effective collaboration and data sharing.
2. An agreed method for the roll out of industry wide interoperability standards
3. A clear, joined-up approach with communications infrastructure.
4. Initiatives to enhance and develop the workforce, relating to upskilling of data and digitalisation expertise in the energy sector.

Actions/innovation project ideas

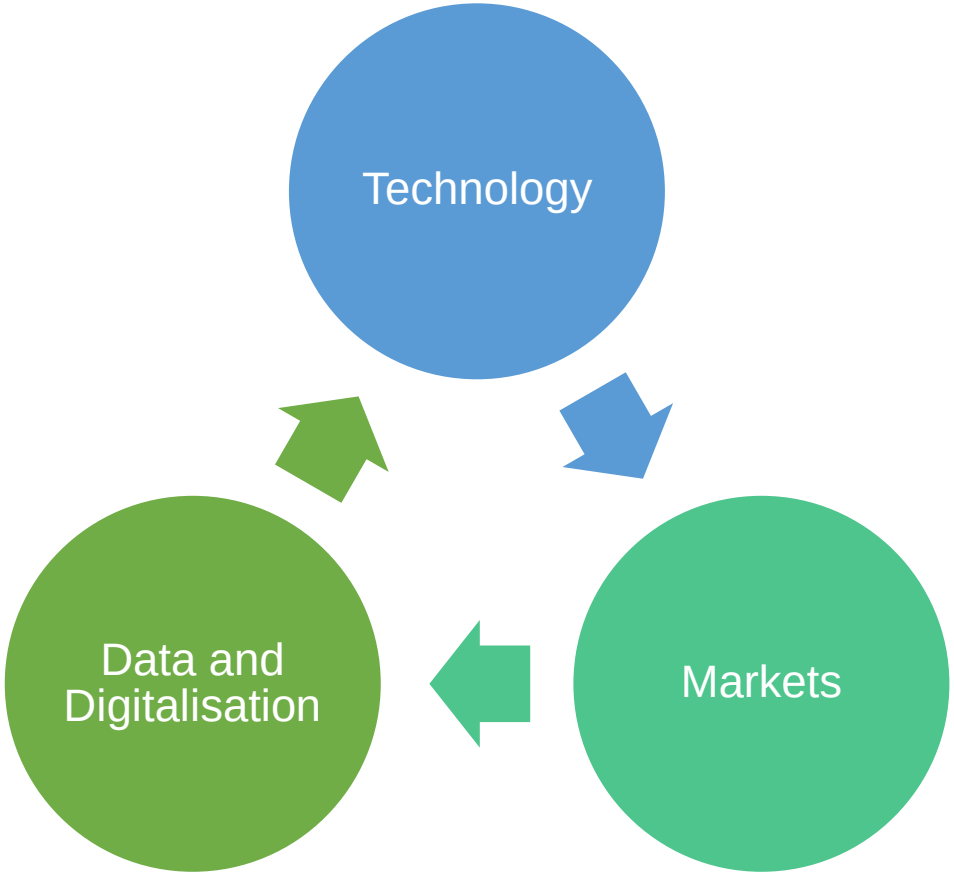
5. A systems approach to conducting pilot projects at different levels/scales involving machine learning and/ or Artificial Intelligence to forecast the rapidly changing peaks and troughs.

6. Least regrets analysis and pilot trials for early investment in data and digitalisation, to drive progress in areas where there is already existing clarity on the use case, cost and benefit.


Discussion with Laura
Sandys, Co-chair

The Chair's view

There is clear intereaction and integration between all three workstreams



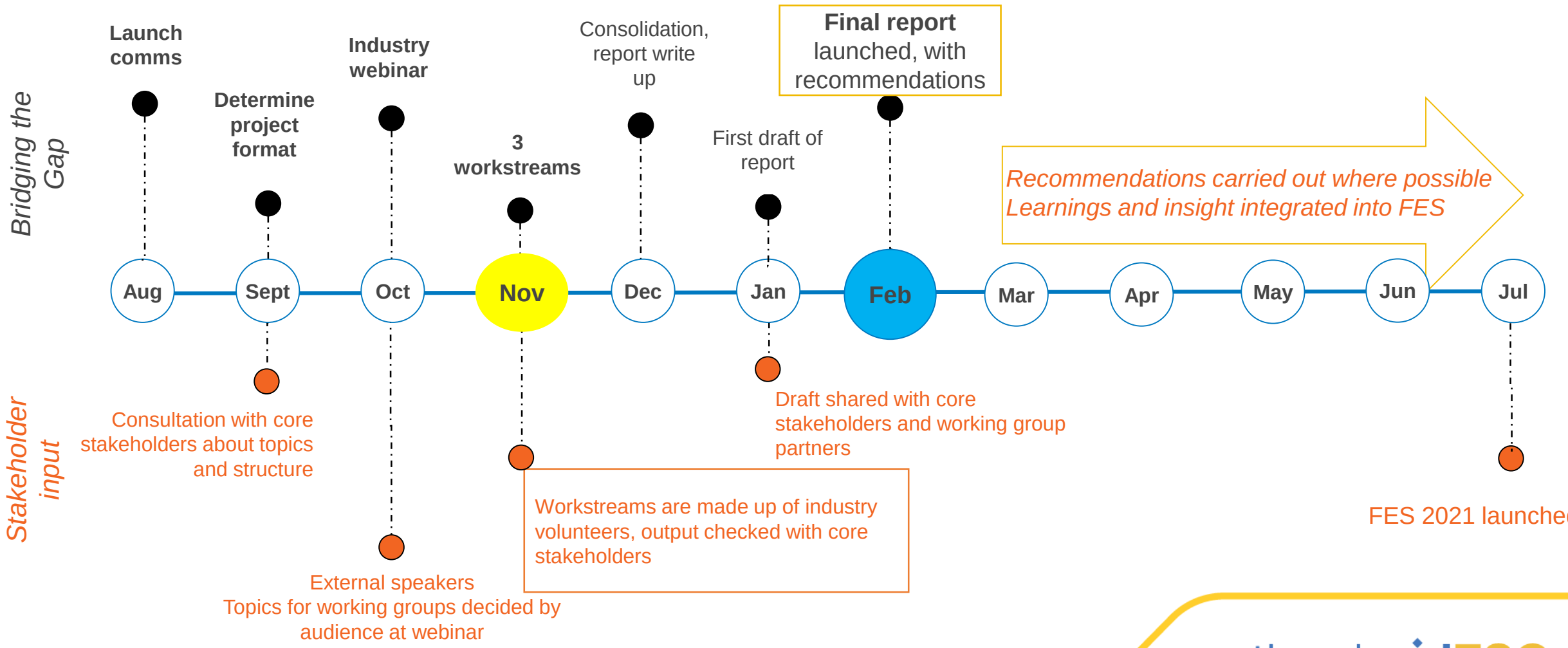
And there are some clear, **common themes** arising:

- Data and digitalization are fundamental to progress
- New skills are required to enable the transition #greenrevolution
- Transparency of and availability of data is necessary
- Clarity of roles and standards for data, governance, performance and delivery vital
- Government's plan to Build back greenersets an imperative to take action

Review of Slido questions and comments

Wrap up and next steps

Bridging the Gap final report will be due in February 2021



We'd like to hear your feedback on how you found today's workshop. Please take this short survey.

The ESO is currently gathering stakeholder views ahead of the publication of our data and digitalisation strategies. If you'd like to input, click here.

For any other questions or comments, please email: FESbtg@nationalgrid.eso.com

Thank you for your time and contributions today

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