

ATKINS

Member of the SNC-Lavalin Group

The role of Anticipatory Regulation (AR) in achieving Net Zero in a post Covid-19 world

5th May 2020

**Imperial College
London**

Achieving net zero by 2050 is an unprecedented challenge requiring multiple disruptive innovations to take place - concurrently - across infrastructure and the economy.

However, regulation in its current form is broadly considered to not be fit for purpose to navigate the challenges the 21 century, capture the opportunities of the 4th Industrial Revolution and realise net zero.

There is a need for a new regulatory construct. One which will shape markets, guide industry, society and government to better manage risks and uncertainties in order to proactively enable and encourage targeted investment and innovation.

The UK has been a pioneer of market liberalisation of the utility sector. It would be fitting for it to be at the forefront of the transition to a new form of regulatory approach such as Anticipatory Regulation. A transition that is already underway and arguably inevitable. It is now a question of how we get there, not if. The speed and ease of how we make this transition and co-discover this new way of working is contingent on a more collaborative approach to realising a net zero future.



ATKINS PANEL SESSION

Atkins convened an expert panel to discuss The role of Anticipatory Regulation (AR) in achieving Net Zero in a post Covid-19 world.*

A summary of the salient issues that emerged during the 90-minute discussion are grouped in themes and outlined as follows.



5 MAY



37 ATTENDEES



90-MINUTES
DISCUSSION

*The background to the webinar series and the biographies of the panel members can be found in Annex 1 and 2, respectively.

**There is a broad
base of activity
taking place
internationally
around AR.**

01.

Nation states

are seeking to capture the **opportunities** that the **4th Industrial Revolution** is likely to present and avoid mal-adoption of multiple concurrent rapidly emerging disruptive technologies.

1.1.

There is an international ground swell of innovation enabling regulation being developed which also complies with statutory obligations e.g. In Japan, Malaysia, Canada etc. This builds on analogous concepts developed in supranational organisations e.g. World Economic Forum's Agile Governance Agenda¹ and OECD Governance Innovation².

1.2.

It is based on these international initiatives that Nesta have systemised the nascent concepts around AR³. Work on operationalising elements, functions and modes within AR continues to be undertaken.

¹ World Economic Forum [Agile Governance: Reimagining Policy-making in the Fourth Industrial Revolution](#) dated 24th April 2018.

² OECD Global Conference on [Governance Innovation: Towards Agile Regulatory Frameworks in the Fourth Industrial Revolution](#) dated January 2020.

³ Nesta, 2017. [A working model for anticipatory regulation](#); and [Renewing Regulation: 'anticipatory regulation' in an age of disruption](#).

**Anticipatory
Regulation is
already being
adopted in the
UK by both
regulators and
policy makers.**

02.

The adoption

is emergent rather than deliberate and explicit. The **speed** with which AR is adopted in order to facilitate the timely realisation of the UK's Net Zero targets is predicated on a number of factors.

2.1.

Regulated sectors which codify the market behaviour in its conceived start state will maintain the status quo and by default stifle innovation. They will also fail to address systemic issues such as inequality, climate change, environmental degradation and Covid-19 which in turn results in **'Grey Zones' - i.e. the gaps and emergent interactions between regulated sector silos.**

For example, the lack of anticipation by Ofcom of the potential need for additional fibre optics and connectivity as meetings went online in the COVID-19 lock down. Connectivity has effectively substituted for transport - which accounts for **120 MtCO₂ pa and is one of the hardest to abate to attain net zero.**

2.2.

The National Infrastructure Commission (NIC)⁴ recommended that Ofgem, Ofwat and Ofcom should have a duty to promote the achievement of net zero. This will give them a clear legal remit and focus to act.

It is noted that Ofgem's existing duties are to protect the interests of current and future consumers including their interests in emissions reduction. Some elements of climate change and AR are being demonstrated in UK e.g. Ofgem through its Decarbonisation Action Plan⁵ and the Financial Conduct Authority (FCA) through its Green Fintech Challenge⁶ Sandbox.

2.3.

It is acknowledged that elements of AR are still unclear but that there is an undeniable need to regulate differently. This is salient in Ofgem's Network Price Controls which will be integral to the realisation of Net Zero and are expiring 2021. The next 5 years of price controls will be set with AR modes - Figure A1 - in mind. Co-ordination will ensure alignment with broader UK infrastructure plans; and Flexibility will allow technology developments to be accommodated.

2.4.

The speed with which AR will be adopted is likely to be **predicated on leadership** across the policy and regulatory institutional architecture. The Regulatory Horizons Council⁷ is looking to act as a force for good. It will develop a **pipeline of technologies** and assess how regulation should adapt by, for example, re-regulating or de-regulating or introducing standards.

AR's adoption will also be assisted by:

- » **Speeding up** the ongoing consultation on the regulation of decentralisation solutions;
- » **Area wide net zero schemes** being used as test beds to develop technology, business model and regulatory innovation;
- » **Joining up** regulation cross-sector; and
- » **Need to scaling and adapt** existing regulation

⁴ National Infrastructure Commission 2019 - [Strategic Investment and Public Confidence](#).

⁵ Ofgem [Decarbonisation Action Plan](#) dated 3rd February 2020.

⁶ <https://www.fca.org.uk/firms/innovation/green-fintech-challenge>

⁷ BEIS Policy Paper - [Regulation for the Fourth Industrial Revolution](#) dated June 2019.

To realise the potential of AR in meeting Net Zero by 2050 three key things are required.

03.



There is a need for:

(i) greater capacity within the UK institutional architecture to operationalise AR; (ii) for data to be regulated and shared across sectors; and (iii) the adoption of a broader array of decision support tools by regulators.

3.1.

Of the six modes of practice around AR (see figure A1) there are two which require capacity to be developed. These include the:

- ✓  **Experimental modes**
(e.g. Digital Twins, Demonstrators etc.)
- ✓  **Future Facing modes**
(e.g. Foresight Scenarios beyond 5 year regulated periods)

and two which jar with how regulators presently see themselves:

-  **Inclusive and Collaborative**
(i.e. co-creating how to realise possible futures)
-  **Proactive**
(i.e. engaging with market actors)

and **therefore** are in the role of shaping markets themselves rather than just setting the rules for the market.

3.2.

To build capacity around Experimental and Future Facing modes the regulation and harvesting of economy wide data will be fundamental. A **regulator**, an equivalent of a FCA for data, is required to ensure public trust around the **management of data** is maintained. The UK Regulators Network should enable data to be shared between regulated sectors to allow data to be standardised and joined up from across economy. The opportunity presented by information captured in one sector which is useful in another has been clearly established in the Covid-19 lock down response e.g. change in Wi-fi use and water consumption patterns - which a Digital Twin, once developed, would be able to anticipate for a multiplicity of stimuli.

This would ensure a whole of sector perspective. There are also effectively multiple physical experiments taking place which can augment these data derived insights e.g. Greater Manchester Combined Authority - Energy Transition Region Project⁸ is effectively a large sandbox with public and private sector and regulators experimenting together.

3.3.

Anticipatory Regulation will need a new decision support tools to better identify and quantify future option value and the benefits of values learning as a process. The existing regulators tool kit does not do this e.g. Cost Benefit Analysis and Proportionality Assessments tend to defer decisions via discounting and results in a lack of explicit recognition of the different forms of risks that need to be managed.

⁸ [Energy Transition Region ETR Strategic Outline Case Greater Manchester Combined Authority - dated 4th October.](#)

The role of a vibrant social dialogue that develops trust will be integral.

04.

Developing trust

between regulators, policy makers and society, via a vibrant social dialogue, will be integral to the realisation of AR. It will ensure data sharing is as frictionless as reasonably possible and that multiple value sets and types of innovation - **beyond technology** - are accommodated in the **shaping of regulated markets**. This will be vital in ensuring the promotion of social goods and mitigation of negative externalities in an increasingly disruptive and deeply uncertain future.

4.1.

Governments management of Covid-19 will have a substantive influence on the ability to create a trusting social dialogue. Governments considered competent, imparting social cohesion amongst society are likely to cultivate societal solidarity whereby trust and cohesion prevail. Governments seen to be incompetent and divisive will likely cultivate grievance, societal distrust and fragmentation.

4.2.

Anticipated post Covid-19 economic stimulus measures will likely be aligned with net zero agendas with infrastructure investment likely to form an integral component⁹. Whether short run economic responses following the relaxation of lockdown measures will align with historically applied economic stimulus measures¹⁰ is open to question as will the potential for these to spill-over into long run economic responses¹¹. An ongoing social dialogue will allow stimulus measures to be stress tested, to be calibrated and adapted.

4.3.

The lessons from the Covid-19 pandemic lock down social response should be harnessed to realise net zero. Realising net zero will require people to have a very different relationship with critical infrastructure and service providers. However, full insights have not been able to be developed as a function of the lack of integration and sharing of economy wide data.

⁹ World Economic Forum - [How Sustainable Infrastructure can aid Post-Covid recovery](#) dated 28th April 2020.

¹⁰ COP26 Universities Network Briefing - [A Net Zero Economic Recovery from COVID-19](#) dated May 2020.

¹¹ Economist dated 4th May 2020 - [Life after lockdowns: 90% Economy - It will be hard in ways that are difficult to imagine today](#)
(i) relaxation of Covid-19 lock down will be a drawn out process over many months (ii) uncertainty on whether another lock down will be implemented (iii) impact of prolonged social distancing; and (iv) the willingness for individuals and corporations to spend and invest will have macro-economic impacts.

Background Context to Achieving Net Zero in a Post Covid-19 Webinar Series

Annex 1.

ATKINS

convened a cross-industry workshop to develop consensus on the challenges, risks and opportunities in meeting the UK's 2050 Net Zero emissions target. It was articulated on a number of occasions that a new relationship between investors, innovators, regulators and policy makers will be needed in order to realise the UK's targets in an efficient and timely way. To realise this, there is likely to be the need shift from regulation which is advisory to one which is adaptive or even anticipatory. The geo-political and geo-economic implications of global Covid-19 response measures is likely to make the imperative to embrace AR all the more pressing.

Anticipatory Regulation¹² is a nascent concept which is being developed by both Nesta¹³ and the Better Regulation Executive in the Department of Business Energy and Industrial Strategy - see Policy Paper Regulation for the 4th Industrial Revolution¹⁴. It is suggested that within this construct innovation policy will involve a network-brokering, information-discovery and experimentation function with digital twins, demonstrators, living labs etc which in themselves will be integral to the scaling processes for technological diffusion. This will also allow business models to be tested including how incumbents might transition from their existing models to new ones and how that might be stimulated at scale. In this way risk and uncertainty will be managed for the array of actors seeking to deliver the multiple disruptive dimensions of achieving the Net Zero. The six modes practice which make up Anticipatory Regulation are articulated in **figure A1**.



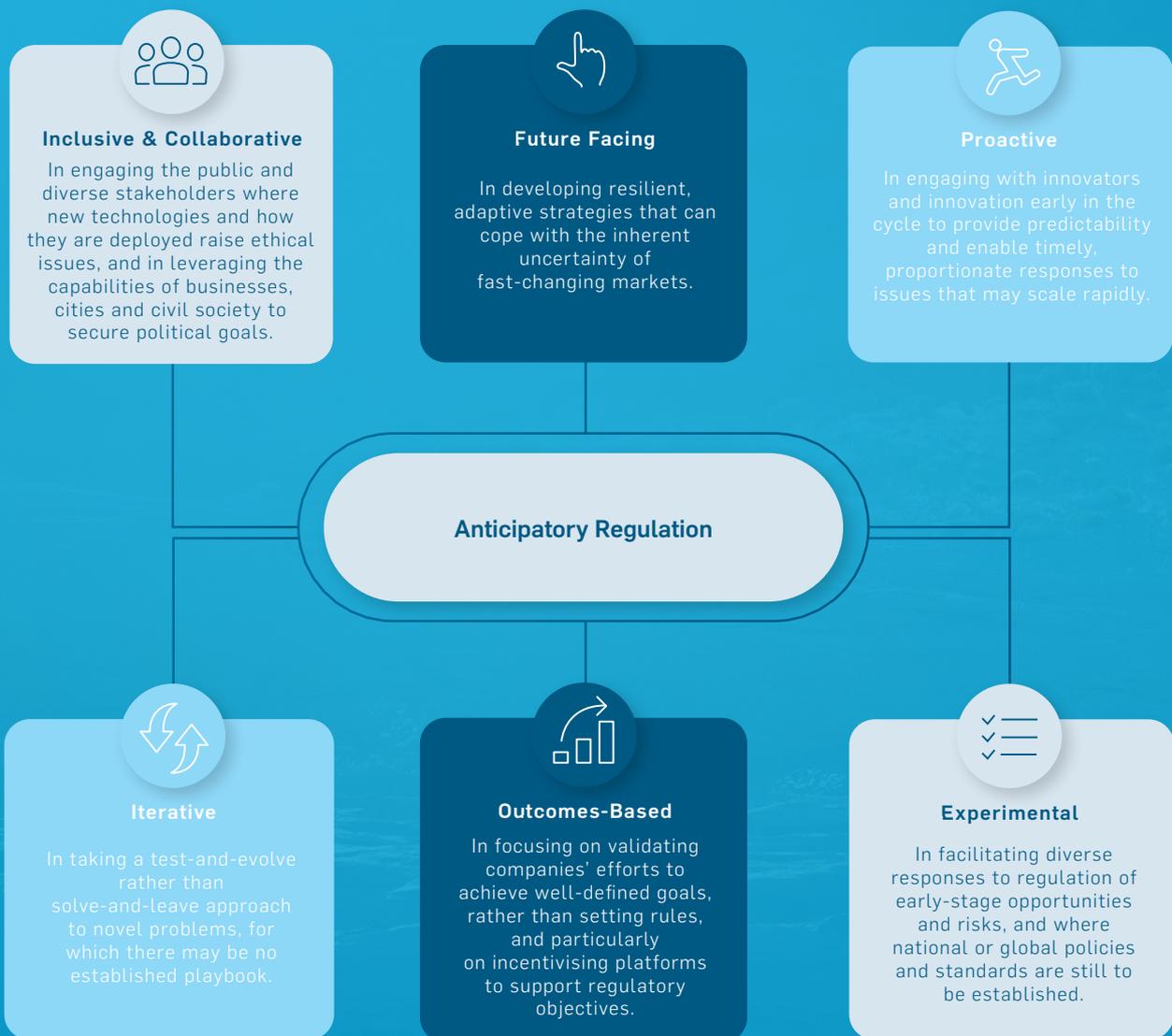
11 FEBRUARY

¹² Nesta, 2017: [A working model for anticipatory regulation](#); and [Renewing Regulation: 'anticipatory regulation' in an age of disruption](#).

¹³ <https://www.nesta.org.uk>.

¹⁴ BEIS Policy Paper - [Regulation for the Fourth Industrial Revolution](#) dated June 2019.

Figure A1:
The six modes practice which make up Anticipatory Regulation (after Nesta, 2019)¹².



¹² <https://www.nesta.org.uk/feature/innovation-methods/anticipatory-regulation/>

The roundtable

was hosted by **ATKINS** and made up of a panel of the following **specialists** who spoke in the following sequence:

Chair: **Stuart McLaren**, ATKINS.

Harry Armstrong

Nesta, Head of Futures and Emerging Technology.

Sarah Hayes

Independent consultant specialised in data, digital twins and infrastructure regulation.

Cathryn Ross

BEIS, Chair of Regulatory Horizons Council, Better Regulation Executive.

Jane Dennett-Thorpe

Ofgem, Head of Decarbonisation and Research.

Patrick Sheehan

European Transformation Fund Partners, Co-founder.

Steven Cowan

ATKINS, Head of Decentralised Energy.

Further information on the panel members can be found in **Annex 2**.

The panel was then opened up for a roundtable discussion amongst participants with 3 minute wrap up. It was also announced that the next iteration of the roundtable will consist of a broader debate on the impacts of the Covid-19 Pandemic Impact on the capacity to attain the Net Zero agenda.

Biographies of Panel Members.

Annex 2.

Sarah Hayes

Independent Consultant specialised in data, digital twins and infrastructure regulation. Sarah is an economist with 20 years of experience working across infrastructure sectors and has previously worked for Price waterhouse Coopers, Orange France Telecom Group and as a telecoms regulator. In 2016 she led a study for the National Infrastructure Commission and produced the "Data for the public good" report which promoted the benefits of sharing data and set out the vision for the National Digital Twin. She also led the NIC study looking at the need for regulatory change across telecoms, energy and water resulting in the report, "Strategic investment and public confidence". She is currently leading the Change Stream of the Centre for Digital Built Britain's National Digital Twin Programme.



Cathryn Ross

Chair Regulatory Horizon Scanning Council, BEIS, Better Regulation Executive. Current employment: BT, Group Regulatory Affairs Director. Career highlights: Ofwat, Chief Executive; Office of Rail Regulation, Director of Markets and Economics; Office of Telecomm, Economic Advisor; and Competition & Markets Authority, Director of Remedies & Analysis. At BT Cathryn is responsible for developing and implementing BT's regulatory strategy across the group, covering regulation in the UK and beyond. Cathryn was previously Chief Executive of Ofwat, the independent economic regulator for the water and waste water sector in England and Wales.



Harry Armstrong

Currently leads Nesta's futures and emerging technology work. His work explores the potential impacts of new technology and innovations, like Artificial Intelligence (AI), on industry, society and the economy with a goal to supporting responsible innovation in a wide range of sectors. His work has covered everything from machine learning, cyber security and the internet of things to nano satellites and the emergence of local energy systems. He leads Nesta's thinking on the ethical and responsible development of technologies like AI and the development of innovation-enabling approaches to regulation, helping to develop and shape policy in and outside of government.



Patrick Sheeran

Is a Co-founder of the Environmental Technologies fund. He represents the firm on the Boards of ELeather, Wirepas, Telensa, Zeelo and Tomorrow. Patrick has worked in venture capital since 1985, when he joined 3i. He was instrumental in founding 3i's venture capital practice, and later became the founding Managing Director of its Silicon Valley operation. Before this he was a research engineer for GEC and technical consultant for Marconi Space Systems. Patrick was a member of the Executive Committee and Board of Invest Europe from 2007 to 2010, during which time he also chaired the Venture Capital Committee.



Jane Dennet-Thorpe

Head of Decarbonisation at Ofgem, has worked on climate mitigation for nearly 20 years. She is Head of Decarbonisation and Research at Ofgem the GB energy regulator. She has recently led on Ofgem's Decarbonisation Action Plan, setting out – for the first time – the regulator's upcoming actions on decarbonisation. She has an interest in how risk and uncertainty is used in decision making by individuals and in public policy and is the lead author of a report on Public Understanding of Risk. She has previously worked in Department of Energy and Climate Change including as Head of Evidence, Deputy Head of Science and leading on industrial energy efficiency policies.



Steven Cowen

Sits within Atkins Nuclear & Power division and leads Atkins Decentralised Energy group. He has over 17 years' experience across the broad spectrum of energy, construction and infrastructure sectors. With a background in Mechanical Engineering he has led low carbon projects, ranging from strategic level initiatives such as the Scottish Government 'Local Heat & Energy Efficiency Strategies' (LHEES) pilot programme, through the design & delivery of major district energy projects, including the University of St. Andrews 20km biomass district heating network. Steven is currently leading a number of specific Net Zero projects, including: Net Zero Leiston, Modern Energy Partners (Energy Systems Catapult) and strategy work for AstraZeneca.





FOR MORE INFORMATION CONTACT:

STUART MCLAREN
Stuart.McLaren@atkinsglobal.com

MARK WORKMAN
mark.workman07@imperial.ac.uk

ATKINS

Member of the SNC-Lavalin Group

**Imperial College
London**