



HM Government

Pro-innovation Regulation of Technologies Review Cross-cutting and Growth Duty Recommendations

November 2023



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This report was presented by Professor Dame Angela McLean, the Government Chief Scientific Adviser, to the Chancellor of the Exchequer and to HM Government, as part of the Pro-innovation Regulation of Technologies Review.

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Context

Well designed and properly implemented regulation is a critical part of a healthy innovation and technology ecosystem, which can help provide answers to society's biggest challenges and deliver sustainable economic growth.

The UK starts from a position of strength: our regulatory system is currently recognised as world-leading by the OECD, and the UK has often led the way in developing regulation and standards that have benefitted the public and made us a preferred place for invention and innovation. The Government articulated its vision for a future-facing and agile regulatory system in the White Paper on [Regulation for the Fourth Industrial Revolution](#)¹, which amongst other things saw the creation of the Regulatory Horizons Council.

The independence of UK regulators is central to the success of our regulatory system, and UK regulators have led the way in developing internationally recognised best practice. Successes include the world's first regulatory sandbox programme and the rapid approval of vaccines to fight Covid-19, while the government's adaptive framework for regulating Artificial Intelligence (AI) - which will encourage responsible innovation whilst identifying and addressing emerging risks - has won support from industry. In an age of ultra-rapid technological change, regulators will need to adapt to enable the safe and rapid introduction of beneficial emerging technologies.

Earlier work in this process has highlighted five major challenges which are common to many sectors covered by this review, namely:

Fragmentation – technology and its many applications often cross sectoral and territorial boundaries and do not align with existing regulatory remits, leading to gaps, overlaps, duplication and inconsistency;

Pacing – technological developments often outpace the speed at which regulatory systems can respond, while introducing regulations too early can hinder the development of emergent tech;

Skills – regulators report challenges in attracting relevant skills and talent, such as DDAT experts;

Incentives – regulators are subject to a complex set of incentives including statutory objectives and duties, with limited reward for taking risks in support of innovative products;

Capacity – pro-innovation programmes like sandboxes and innovation hubs are resource-intensive and regulators report challenges in sustaining these 'upstream' activities from existing resources.

We consider that change can be driven through existing structures, such that new bodies or additional 'layers' in the system are not required, if Ministers continue to set out innovation as a clear priority for our regulatory strategy. Appropriate governance and accountability are also critical for success. There are however a limited number of instances where new coordinating functions would help to ensure join-up and reduce fragmentation, for instance the Engineering Biology Regulators Network proposed in our Life Sciences paper. This builds on existing initiatives to promote

¹<https://www.gov.uk/government/publications/regulation-for-the-fourth-industrial-revolution>

collaboration and provide joined-up advice to innovators, including fora like the Digital Regulation Cooperation Forum and networks such as the UK Regulators Network.

In this report we make recommendations on how the government can better support pro-innovation regulation. We provide advice on the incentives for regulators to take risks in support of innovation and growth without compromising primary objectives on public safety, and we look at the specific resourcing challenges arising from regulating emerging technology. This report includes a review of the Regulators' Growth Duty, commissioned by the Chancellor at Budget 2023.

Recommendations

Part 1: DSIT and the NSTC as cross-Government focal points for pro-innovation regulation

Individual departments have responsibility for regulatory policy and sponsorship of independent regulators in their areas of expertise, for instance the Department for Transport sponsors the Civil Aviation Authority. The government's overall approach to regulatory policy is guided by the Better Regulation Framework led by the Department for Business and Trade. The establishment of the Department for Science, Innovation, and Technology (DSIT) creates an opportunity to establish a single point of strategic overview for 'pro-innovation regulation' across government. This includes leadership of the National Science and Technology Council (NSTC)'s Science and Technology Framework² which sets out regulation and standards as a key pillar in the UK's quest to become a science and technology superpower. Delivery of the Science and Technology Framework relies on a federated, cross government approach which maintains the sectoral expertise of individual departments, supported by a central coordination function which sets the overall vision and facilitates change on a system-wide level.

Recommendation 1: DSIT SoS should set out government's regulatory reform priorities in science and technology and oversee and support the implementation of a pro-innovation regulatory reform plan across government, working closely with DBT SoS on creating a broader pro-growth regulatory environment.

Recommendation 1a: A team within DSIT should assist SoS in delivering a pro-innovation regulatory reform plan and work across government to mainstream this approach.

This team should be supported by secondments from other departments, regulators and industry and by a network of industry champions. Specifically, the team should have responsibility for driving cross-government implementation of the Regulation and Standards strand of the Science and Technology Framework for the DSIT SoS, and report directly to the SRO for the Regulation and Standards strand. This should include developing metrics for a pro-innovation regulatory system with NSTC oversight, building on work from Innovate UK Knowledge Transfer Network (KTN) on a 'regulation index' which identifies how well countries across the globe are using regulation as a lever for innovation. The team should also provide guidance and best practice to policy teams across government on how to consider the impacts on innovation of new regulations and policies on economic growth and innovation when they are in development. This should include working with DBT to embed an 'innovation test' in the Better Regulation Framework guidance, to embed innovation-friendly regulation earlier in the policymaking process.

²<https://www.gov.uk/government/publications/uk-science-and-technology-framework>

Recommendation 1b: The government should provide a ‘concierge service’ or ‘intelligent front door’, which could potentially be AI-enabled, to help innovators navigate the regulatory landscape and ensure they receive the advice they need to bring their products to market.

We have heard that businesses can find it hard to navigate the complex and fragmented regulatory environment. To improve understanding and transparency, we recommend that an automated service is created on GOV.UK. To feed this service, regulations should be published in machine-readable, open formats with consistent metadata. This service could build on existing efforts led by DBT on the digital transformation of regulation and use AI to ensure that complete information on regulatory pathways is available on GOV.UK. This will be particularly important where regulatory pathways are complex, where they involve multiple decision points, or where the current regulatory system is not compatible with innovative technologies. Drawing on the Danish “one stop shop” model as an example of good practice, there should be a mechanism for innovators and regulators to flag where no clear regulatory pathway exists, and a team of officials reporting to the SRO for the Regulation and Standards strand should work with relevant policy teams across departments and regulators to provide solutions as the circumstances require; this could include setting up a task-and-finish group accountable to SoS DSIT to look into specific regulatory barriers or identifying opportunities for regulatory experimentation through sandboxes.

Case Study: Danish Business Authority’s One-Stop-Shop

In 2018, the Danish Government established a one-stop-shop (OSS) to help start-ups and companies developing new technologies to navigate the regulatory landscape and bring their ideas to market quickly. The OSS is a single point of contact to businesses on the Danish Business Authority’s website for submitting questions, seeking clarification on regulation, or flagging where regulation is a barrier to bringing new ideas to the market. Any company or entrepreneur working on a new business model or new technology may raise a request. The DBA typically receives around 75 queries per year and works to provide a response within 10 business days for ‘simple’ questions and a maximum of three months for more complex questions, working with regulators and other parts of government as necessary. Where the OSS identifies recurring patterns and identifies a regulatory barrier, it may suggest regulatory reforms proposals or the use regulatory sandboxes to the relevant agent bodies.

Recommendation 1c: The government should respond to advice from the Regulatory Horizons Council within a set timeframe and, where the recommendations are accepted, set out a clear implementation plan. Progress should be overseen by the NSTC as part of its oversight of the S&T Framework Regulations and Standards strand.

The independent RHC provides valuable recommendations to the government on regulatory reform to unlock benefits for new and emerging technologies where in-depth or system-wide insights are required. The RHC should continue to ensure that its advice is clear and actionable, and that its work aligns closely with the government's S&T priorities as set out by the NSTC. The government should respond promptly to the RHC's advice and issue a response with clear implementation timelines, to be published within 3 months of receipt of advice. To drive effective implementation, NSTC and its governance structures should be used to resolve any barriers to implementation and facilitate cross-government agreement, in particular with regards to balancing the benefits and risks of innovation and clarification of policy responsibility where needed. The Council should consider how it is set up to ensure it can respond in an agile manner to evolving priorities and reflect and capture industry expertise. The Council should consider how it is set up to ensure it can respond in an agile manner to evolving priorities and reflect and capture industry expertise

Recommendation 1d: the Regulators' Pioneer Fund should be put on a more sustainable footing and made more agile and responsive to changing priorities.

The Regulators' Pioneer Fund currently issues grants to regulators and local authorities to test new approaches to regulation that help encourage business innovation and investment. However, the RPF only provides a single, limited annual competition window, with funding committed until the end of the current spending round. We recommend that government should commit to continuing the RPF into the next Spending Review period, and that the funding window of the RPF is reformed to make it more agile and enable more individual funding opportunities in the course of a given funding round. Specifically, the RPF could support regulators to trial novel approaches such as sandboxes and transformative innovation opportunities.

Part 2: Supporting regulators to drive innovation-led growth

We have heard from industry stakeholders that regulators could do more to enable innovation-led growth. At the same time, regulators report challenges in balancing and trading off the various duties and objectives to which they are subject. Regulators also consider that they are more likely to be held responsible for any negative consequences of innovation, rather than being credited for positive consequences of pro-growth decisions. Regulator independence is a strength of the UK regulatory system that should be preserved. This places a premium on the government setting clear priorities for regulators and putting in place effective accountability mechanisms for regulators. Ensuring an appropriate pro-innovation mandate and support in trading off conflicting duties and priorities will be key.

The Regulators' Growth Duty

The Regulators' Growth Duty provides one mechanism for regulators to support innovation and growth, enshrining in law a duty for most but not all regulators to have due regard to economic growth in the discharge of their functions. In July 2023 the government consulted on the desirability of extending the scope of the Growth Duty to cover utilities regulators, which are not currently in scope. While this review does not make recommendations on any potential future extension of the Growth Duty to cover utilities regulators, we have engaged with utilities regulators as part of this work to understand instances of good practice. Some utilities regulators report that they already respond to duties which consider key drivers of growth.

Recommendation 2a: If Ministers are minded to activate reporting requirements under the Regulators' Growth Duty, we recommend that a flexible process should be set out in revised guidance, to ensure a proportionate approach to reporting, minimising burdens on regulators and business.

While the Growth Duty is accompanied by statutory guidance, our research suggests that the Duty is not widely known beyond the regulators to which it applies. A consultation on revised guidance (set out below) would help to raise awareness within industry. Section 110 of the Deregulation Act 2015 requires regulators to report on relevant activity but has yet to be activated. Ministers have indicated that they are minded to activate the reporting requirements of the Growth Duty.

We have found that there is currently no systematic reporting or monitoring of how well the Growth Duty is implemented, which calls into question its effectiveness. As drafted, the legislation is prescriptive in requiring regulators to prepare and publish a performance report for each reporting period. This includes their assessment of how effective businesses think the regulator has been in supporting growth, the associated impact on businesses, and a forward look on how the regulator intends to meet its Growth Duty obligations. We recommend avoiding a one-size-fits-all approach to

reporting, particularly to avoid new burdens on those regulators who already report on Growth Duty implementation through existing channels e.g., annual reports.

Rather than activating the formal reporting requirement in legislation, we consider that updating the existing guidance to set out a proportionate reporting regime would be a better approach. If implemented flexibly, this could help to provide the right incentives for regulators to support innovation and growth. A Minister should be given formal responsibility to review regulators' reports and drive best practice, providing support and challenge as appropriate.

Requiring regulators to report publicly on how they consider economic growth when making regulatory decisions is likely to support enhanced accountability, leading to greater transparency and confidence in regulatory decisions overall, and potentially also leading to enhanced Parliamentary scrutiny. Reporting provides regulators with an opportunity to evidence pro-growth activity and expose where they are obliged to trade off conflicting obligations. A public consultation on a revised set of guidance could help to raise awareness of the Growth Duty within industry.

Recommendation 2b: To ensure the relevant guidance underpinning the Growth Duty is up to date and effective, we recommend the guidance explicitly mentions the most relevant drivers of growth and includes a set of principles to ensure that regulators and industry have clarity on expectations.

The Ministerial foreword to the 2017 guidance states that regulators should “consider how legislation and enforcement frameworks could adapt to emerging technologies and innovative business models.” We support this aim, which is central to driving sustainable growth. However, we note that the guidance is primarily focussed on minimising burdens on business, allocating resources, and enforcement and sanctions regimes. Feedback from regulators suggests that the guidance could be made more effective in supporting pro-innovation regulation, given the increasing pace of technological change and expanding regulatory remits. The concept of ‘promoting economic growth’ is seen as too broad to give rise to meaningful reporting.

The guidance should be brought up to date and made user-friendly. This should include refining the definition of ‘growth’ to clarify that sustainable growth in the context of the UK’s Net Zero mission means that it will be important to safeguard natural capital. A specific sub-set of drivers of sustainable growth could be more clearly specified, including innovation, competition and productivity, to ensure that regulators can clearly assess the impacts of their work on growth. Metrics could include evidence on the speed of decision making, support for new market entrants, support for existing business to innovate etc.

The guidance should ensure that regulators prioritise principles-based and outcomes-based regulation, providing stability and certainty to innovators whilst remaining flexible and proportionate. This should include consideration of non-legislative measures and clarity on how compliance would be assessed in the absence of legislation (e.g., through standards, guidance, and best practice). The following additional principles should feature within updated guidance to measure compliance

with the intent of the Growth Duty, while acknowledging that other duties or objectives may take precedence:

- Where applicable, regulators should **focus on regulating the application** of a technology rather than the technology itself.
- Regulators should look to **engage at an early stage ('upstream') with innovators** to understand the enablers of commercial success and the role of regulation.
- Regulators should **adopt collaborative approaches** to overcome fragmentation of regulatory remits and provide guidance on issues that straddle different regulatory boundaries.
- Demonstratable use of **experimental approaches** (e.g., through sandboxing, including multi-regulator sandboxes) can be beneficial to position the UK as a 'first mover' in shaping the regulation or standards for early-stage technologies.

The revised guidance should include the approach to reporting as set out in 2a above. The government should put in place an appropriate evaluation framework, with a presumption that the formal reporting requirement in legislation will be activated if compliance with the approach set out in recommendation 2a is not sufficient.

Supporting regulators to make strategic decisions and take a proportionate approach towards risks

Regulators report a proliferation of duties. While some obligations on regulators are structured according to a clear order of priority, others are not. According to a recent government paper, the number of statutory duties in the energy sector has increased from 8 to 21³. Regulators therefore face trade-offs between multiple duties, objectives and competing priorities. Ensuring appropriate and timely strategic guidance from government will help to provide the necessary cover for regulators to take a proportionate approach to risk in support of innovation.

Recommendation 2c: To support regulators in taking a balanced and evidence-based approach to risk, the government should articulate in advance clear views of acceptable levels of risk for different types of risk and in different sectors.

Strategic Policy Statements (SPS) set out the government's priorities for a given sector and can provide a clear framework and parameters for regulatory decision-making. SPS can help regulators to balance the risks and benefits of innovation and guide their approach towards regulating a particular sector or technology. Building on the announcement made in the May 2023 regulatory reform package⁴ and efforts to make SPS more effective as part of the ongoing review of economic regulation, the government should issue SPS for a wider range of sectors, to provide political cover for pro-innovation practices without overriding duties relating to public safety. This approach should be tailored to reflect ownership of SPS by individual sponsor

³<https://www.gov.uk/government/publications/economic-regulation-policy/economic-regulation-policy-paper-accessible-webpage-html#fn:11>

⁴<https://www.gov.uk/government/publications/smarter-regulation-to-grow-the-economy/smarter-regulation-to-grow-the-economy>

departments, and given that appetite and tolerance for different types of risk is likely to vary from one sector to another.

Recommendation 2d: In conjunction with recommendation 2c, the government should facilitate an ‘evidence gathering pilot’ whereby regulators may seek clarification from the government on balancing strategic risks, if needed.

Providing guidance to regulators in advance is desirable and is likely to help regulators to prioritise and balance risks in most situations. However, we recognise that it may not cover every eventuality, particularly where technology is advancing at pace. There may therefore be a case for inviting regulators to seek strategic guidance from Ministers in exceptional circumstances, in instances where a clear and holistic articulation of the government’s risk appetite would help regulators to support innovative activities. This could involve seeking clarification on how to approach particular challenges or recurring situations which involve trade-offs between competing government priorities.

In the first instance, the government should consider an ‘evidence gathering pilot’ to determine whether strategic guidance from Ministers has a positive impact on promoting pro-innovation outcomes. This pilot would not be intended as a means for Ministers to opine on specific cases, but would instead cover a wider portfolio of risks. Regulators would remain responsible and liable for all regulatory decision-making. To safeguard regulators’ independence, requests for guidance would only be instigated by regulators and should be made public. Regulators would need to make clear why existing guidance from the government (including relevant SPS) was not sufficient to enable the right level of clarity. Ministers would be required to provide a response within a reasonable timeline or state publicly why Ministerial guidance is not required. In cases where no Ministerial guidance is required, regulators would be expected to balance priorities in the usual way. Any guidance given should focus on strategic policy direction and the government’s risk appetite. As part of this pilot arrangement, regulators would report publicly on any guidance sought. Following a pilot phase, the government should assess its effectiveness in providing guidance to regulators on strategic risks and whether such a process should be established more permanently.

In the longer term, we consider that a more impactful approach would be to rationalise the overall number of duties imposed on regulators, to lessen the likelihood of competing priorities.

Recommendation 2e: The government should make full use of the opportunities provided by the Data Protection and Digital Information (No 2) Bill to implement Smart Data schemes, by collaborating with regulators in priority sectors where a scheme has high potential to empower consumers and turbo-charge competition.

Smart Data has huge potential to benefit consumers, businesses, and regulators alike. Personal data mobility, where personal data flows safely and efficiently, could increase

GDP by an estimated £27.8 billion per year⁵ by enabling access for innovators, and Smart Data schemes could help unlock this. It involves mandating data holders to facilitate data sharing, at the customer's request, with authorised third parties to enable new and innovative uses of data, stimulating new levels of productivity and competition, with significant economic and societal gains.

Part 3 of the Data Protection and Digital Information (No 2) Bill will confer powers on Secretaries of State to create Smart Data schemes. We recommend that the Secretary of State for Business and Trade should lead work across government departments and regulators to determine how best to implement Smart Data schemes in priority sectors, making the best use of regulators' expertise. This will drive forward delivery of Smart Data and ensure that we realise the potential of sectoral schemes to boost innovation and unleash productivity gains.

⁵https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/755219/Data_Mobility_report.pdf

Part 3: Ensuring regulators can access the right skills and resources

As public sector organisations, many regulators report that they are subject to constraints which limit their ability to attract specialist skills and talent in emerging technologies. This is particularly true for data scientists and AI experts, while several regulators have told us that they cannot recruit people with expertise in niche areas such as hydrogen fuel technologies. Regulators that have greater pay flexibility report fewer issues with attracting and retaining the right talent. If regulators are unable to recruit individuals with the right technical knowledge and skills, it will limit their ability to regulate emerging technologies effectively.

Recommendation 3a: The government should support regulators to develop the specialist skills necessary to regulate emerging technology. This could include granting regulators greater flexibility to develop a cadre of technical experts and determine the right pay and conditions to attract talented individuals.

Regulators are set up and governed in a variety of ways, including the extent to which they are affected by public sector pay restraint and the Civil Service Pay Remit and employment conditions. As recognised in the GCSA report on Life Sciences⁶, it will be important for the government to consider how pay and other levers can be used to improve recruitment and retention for skilled roles in the regulatory system.

The same challenge applies to regulators across many sectors of the economy. We recommend providing greater flexibility to regulators. One approach to achieving this could be to design a new pay framework for specialist skills and talent across regulators, where mission-critical shortages are identified. A specialist technical cadre for regulators could be created, building on the priorities identified in the UK Science and Technology Framework, the DDAT Profession Capability Framework⁷, and as part of wider work to roll out the Government Science and Engineering (GSE) reward framework⁸ across government more widely. Sponsorship teams within departments would need to consider the most appropriate delivery model for individual regulators based on the sectors they regulate and considering the funding model of the regulator (including by considering funding through industry levies).

Recommendation 3b: The government should facilitate secondments between government departments, regulators, academia, and industry on a systematic basis, notably by working with bodies such as UKRI and the Whitehall and Industry Group and drawing on available good practice.

The Declaration on Government Reform⁹ sets out the benefits of secondments for government, industry, and the wider innovation ecosystem. A structured programme of secondments where regulated companies send technological experts to regulators

⁶<https://www.gov.uk/government/publications/pro-innovation-regulation-of-technologies-review-life-sciences>

⁷<https://www.gov.uk/government/collections/digital-data-and-technology-profession-capability-framework>

⁸<https://governmentscienceandengineering.blog.gov.uk/2022/01/31/reward-offer/>

⁹<https://www.gov.uk/government/publications/declaration-on-government-reform>

and vice versa would be likely to have mutual benefits. For instance, secondments could help private companies to understand the statutory environment within which regulators operate, while also providing public sector organisations with an understanding of commercial imperatives, critical success factors and risk appetite.

Beyond helping to address short-term skills shortages, wider benefits of secondments can accrue to both the individual and the organisation as well as promoting a cultural shift in terms of openness to new and innovative ways of working. It will be important for regulators that potential conflicts of interest can be identified and managed in a wholly transparent manner, providing appropriate safeguards against risks of regulatory capture and perceptions of bias.

Existing initiatives that could be leveraged include DSIT's recently launched Expert Exchange secondment scheme and Innovate UK and UKRI's range of collaborative work with industry. The Whitehall and Industry Group has experience of facilitating secondments between the public and private sector and has developed good practice which could provide a framework for model secondment agreements. While secondments between regulators and industry already happen on an ad hoc basis, a more systematic approach underpinned by a code of practice should be piloted and scaled up as necessary, according to the demand and impact achieved.

Case Study: Secondments into the Information Commissioner's Office

Recognising the speed of progress in technology and media platforms, the ICO has a long tradition of calling upon external expertise to help identify the implications for personal data and to help develop an appropriate, accessible skills and knowledge base to address associated regulatory risks. In recent years, ICO has used secondments on different occasions to complement in-house expertise in a flexible and response way. This includes a nine-month secondment of a legal expert to support an investigation into the use of data analytics during the EU Referendum campaign, a six-month seconded position for a risk analyst to assist in the development of the ICO's approach to the evaluation of Data Protection Impact Assessments (DPIAs), and a nine-month secondment for a technology consultant to assist in the refinement of ICO's academic work undertaken in the Artificial Intelligence space. These additional resources have allowed the ICO to exploit specialist knowledge in targeted areas whilst being able to maintain an ongoing focus on existing service delivery.



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