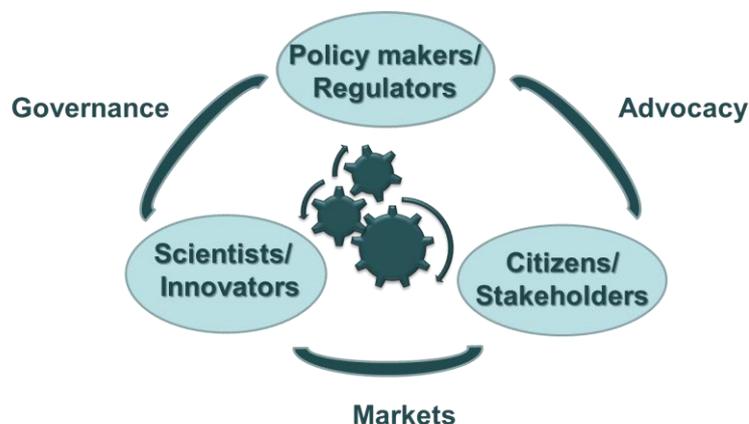


INNOGEN INSTITUTE

SUPPORTING THE DEVELOPMENT OF ADVANCED INNOVATIVE TECHNOLOGIES: SCIENCE INTO IMPACT

The Innogen Institute (Institute for Innovation Generation) is the successor to the ESRC Innogen Centre that, from 2002-14, published over 1000 articles (over 500 in peer reviewed academic journals), trained 40 successful PhD students, and gained funding of £12M for over 100 projects, in addition to the £7.7M from the ESRC (www.innogen.ac.uk). Our research programme focuses on the interactions between scientists/innovators, policy makers/regulators, and citizens/stakeholders in determining which innovative products and processes will succeed in the market place (Figure 1).



We conduct in-depth research within each of these constituencies, and integrative analyses of their interactions enables us:

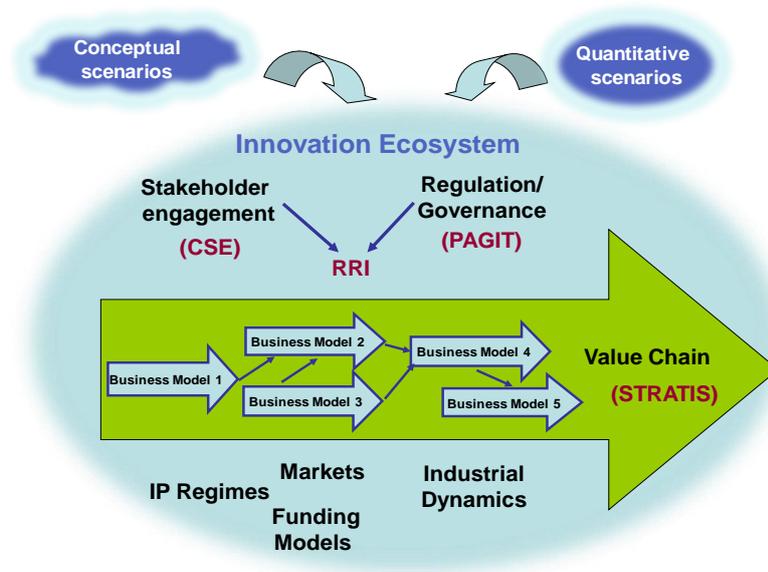
- (i) to understand how these interactions determine which products, processes and services are able to reach a market place, over what timescale, in which industry sectors, regions or countries, and
- (ii) to identify where change at particular pressure points in the overall innovation ecosystem could enable innovation to take place safely, more rapidly and more efficiently.

This combination of cross-disciplinary and cross-sectoral experience and expertise enables us to support company and policy-related decision making on advanced innovative technologies¹ across a diverse array of sectors, from life sciences (including energy related initiatives) to ICT and financial innovation.

The Innogen Institute is unique internationally in having these analytical insights across such a broad range of sectors, linked to a framework of methods and guidelines to support the development of future business models and value chains, policy and regulatory decisions on innovative technologies, and management of citizen and stakeholder engagement initiatives.

Our ability to shift perspective from that of the innovator to that of the policy maker or regulator, and/or to those of citizens and stakeholders, and integrate insights across these perspectives, enables us to locate the pressure points within a complex innovation ecosystem where efforts to improve innovation processes can most effectively be focused. Figure 2 illustrates our overall approach to supporting innovation, encompassing the following methods and guidelines that we have developed to contribute to conceptual and quantitative scenarios to aid decision making by innovators, policy makers, regulators, and third sector actors.

Figure 2. Innogen Institute framework of methods and approaches.



- *Strategic Planning for Advanced Technology Innovation Systems (STRATIS)ⁱⁱ* – supports analysis of current and future business models and value chains for innovative technologies by: enabling better decisions on technology development; being adaptive to emerging technology changes; understanding better where convergent innovations can generate or close off business opportunities; planning how to integrate business models along a value chain; and taking account of factors external to the value chain that can act as enablers or constraints on innovation.
- *Proportionate and Adaptive Governance of Innovative Technologies (PAGIT)ⁱⁱⁱ* – an important body of work funded by the UK Government Department for Business, Energy and Industrial Strategy (BEIS) and the British Standards Institution (BSI), developing a framework to support proportionate and adaptive governance of innovation across a broad range of industry sectors.
- *Constructive Stakeholder Engagement (CSE)^{iv}* – takes account of a broad range of public views and stakeholder perspectives, and includes the development of standards for responsible engagement as part of the PAGIT Framework.
- *Responsible Research and Innovation (RRI)^v* – incorporated within the PAGIT approach, improves on current EU and UK initiatives in RRI, gives greater consideration to innovation issues than is currently the case, and extends beyond ethics and stakeholder engagement to develop a broad practice oriented approach to the concept of responsibility.

Other issues including open source and intellectual property (IP) considerations, the need for more innovative funding models, industrial dynamics, and market related factors are considered where relevant within these frameworks.

This integrated suite of approaches and guidelines is the basis of the Innogen Institute’s contributions to policy and decision making on: industry innovation support; regulatory adaptation in support of incremental innovation; the development of standards and regulatory systems for new disruptive innovation; and new more constructive approaches to stakeholder engagement and dialogue.

ⁱ David Willetts (2013) *Eight Great Technologies*, London: Policy Exchange;
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<http://dx.doi.org/10.1016/j.techfore.2016.09.025>.

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ⁱⁱⁱ Tait, J. and Banda, G. (2016) Proportionate and Adaptive Governance of Innovative Technologies: the role of regulations, guidelines and standards. Short Report to British Standards Institution.
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^{iv} Tait, J. (2009) Upstream Engagement and the Governance of Science: the shadow of the GM crops experience in Europe. *EMBO Reports*. Vol 10, Special Issue, pp 18-22.
<http://www.nature.com/embor/journal/v10/n1s/pdf/embor2009138.pdf>

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^v Tait, J. (2014) Bringing it all Together. In *Annual Report of the Government Chief Scientific Adviser, 2014*. Innovation: Managing Risk not Avoiding It. Evidence and Case Studies, pp 129-136
<https://www.gov.uk/government/publications/innovation-managing-risk-notavoiding-it>

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