Institution: Cardiff Metropolitan University		
Unit of Assessment: UOA32: Art and Design: History, Practice and Theory		
Title of case study: International design ecosystems: How Cardiff Met's research increased SME competitiveness.		
Period when the underpinning research was undertaken: 2011 - 2020		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	**Role(s) (e.g. job title):**	**Period(s) employed by submitting HEI:**
Dr Anna Whicher	Head of Design Policy, PDR	June 2009 – present
Prof Andrew Walters	Director of Research, PDR	July 2000 - present
Period when the claimed impact occurred: August 2013 – December 2020		
Is this case study continued from a case study submitted in 2014? No		

1. Summary of the impact (indicative maximum 100 words)

Whicher and Walters's research underpinned the development of a design ecosystem for innovation that had significant impact on policy and practice in Europe. The research was developed via multiple large-scale RCUK and EU-funded projects, contributing to **seven** policy instruments across **six** countries. These have influenced **€358,000,000** of structural fund provision and direct government investment of **€14,036,796** into more than **2,600** European SMEs. In Scotland alone (where one policy instrument was implemented) **618 companies** benefitted. This led to **£134,971,200** of additional sales for a governmental investment of **£3,090,000** – a taxpayer return on investment of over **4,000%.**

2. Underpinning research (indicative maximum 500 words)

Cardiff Met's International Centre for Design and Research (PDR) has led a succession of EU-funded knowledge exchange projects focussed on integrating design into business support programmes and innovation policies across Europe. They include Sharing Experience Europe (SEE, 2007-2015 – **€1,498,492**[1]), Design4Innovation (2017-2021 - **€1,624,774**) and User Factor (2018-2021- **€1,564,681**). **Whicher** used these projects to develop a framework for evaluating design innovation ecosystems as part of an examination of the impact of European design and innovation policies. The research advanced the notion of an innovation ecosystem, a theoretical construct used by policy makers and academics to understand innovation infrastructure to evaluate the supply of, demand for, and impact of design in a given country or region. This research was intended to inform design policy implementation in the UK.

The Design4Innovation and User Factor projects further developed the design innovation ecosystem notion which was also a key component in the development of the AHRC-funded 'Mapping Design Innovation Ecosystems' (**Walters** Principal Investigator (PI), Whicher Co-Investigator (CoI) [1]). These projects provided an opportunity to consolidate years of design-led practice into academic theory. It examined why and how design is increasingly recognised as a priority for innovation by government. Whicher investigated the different approaches European governments were taking to support innovation within SMEs, and the increased importance they placed on design [R1]. In the same way that innovation policy is based on an analysis of the innovation ecosystem, Whicher demonstrated that design policy should be based on an analysis of the design ecosystem, and account for each aspect of the ecosystem to ensure a balance between supply of and demand for design expertise.

[1] Total award figures presented

Subsequent research examined innovation support levels in Wales and Scotland to better understand how a design innovation ecosystem approach might work in a regional government context [R2]. Whicher demonstrated that while design was being considered at a national level, a gap in research-informed design policy existed at a regional level.

Building on the evidence that design ecosystems help inform policy makers on how to develop more appropriate innovation support for economic impact, Whicher explored how design might more broadly be used as a tool for policy development. Specifically, by investigating how a design action plan might influence the establishment of a circular economy in Scotland [R3], an exercise that had not previously been performed in the UK at either national or devolved levels. The research posited that for the implementation of effective policies and programmes for design, policy makers require insight into the design ecosystem to ensure all components of the system are operating cohesively. This cohesive engagement with all aspects of a system typically requires greater citizen interaction. Design brings particular processes for effective citizen engagement, including approaches for co-development. The lessons learned working with the Scottish government were later used to inform the implementation of the design ecosystem and other policy design approaches used with the Northern Ireland Innovation Lab [R4]. This work provided new insights into the ways in which the outcomes of the design ecosystems approach can be integrated into new and impactful policy development.

3. References to the research (indicative maximum of six references)

Research Outputs

Four of the outputs below are published in recognised double-blind peer-reviewed journals [R1, R2, R3, R4]. [R1] was an output from AHRC award AH/L013606/1 **(£39,849)**; [R2 & R4] were produced as outputs from AHRC award AH/P005934/1 **(£557,935)** while [R3 & R4] are further informed by AHRC Fellowship AH/P009263/1 **(£160,908).**

[R1] **Whicher, A.** (2017) Design Ecosystems and Innovation Policy in Europe, Strategic Design Research Journal 10(2), pp.117-125, doi: 10.4013/sdrj.2017.102.04.

[R2] **Whicher A.** & **Walters A.T.**, (2017) Mapping Design for Innovation Policy in Wales and Scotland, The Design Journal, 20(1), pp. 109-129, ISSN 1756-3062, doi: 10.1080/14606925.2016.1233006.

[R3] **Whicher, A.**, Harris, C., Beverley, K., and Swiatek, P. (2018) 'Design for circular economy: Developing an action plan for Scotland', Journal of Cleaner Production, 172, pp.3237-3248, doi: 10.1016/j.jclepro.2017.11.009.

[R4] **Whicher A.** and Crick T., 2019 Co-design, evaluation and the Northern Ireland Innovation Lab, Public Money & Management, 39(4), pp. 290-299, doi: 10.1080/09540962.2019.1592920.

Grants

[1] **Walters A.** (PI) & **Whicher A.** (CoI), 2014, AHRC Grant: Mapping Design Innovation Ecosystems, £39,849, AH/L013606/1, https://gtr.ukri.org/projects?ref=AH%2FL013606%2F1

4. Details of the impact (indicative maximum 750 words)

Whicher and Walters's Design Innovation Ecosystem research has impacted more than **2600** European SMEs [E1, E2], resulted in changes to **seven** European innovation policies [E1], and directly influenced **€358,000,000** of structural fund provision [E3]. Their research enabled policy makers to make decisions on how to best support SMEs in their regions and how to allocate

specific additional funding of **€16,757,567** [E1, E2] with **€14,036,796** going directly to SMEs to improve competitiveness.

PDR's design ecosystems approach formed the central component of two EU funded impact programmes: 'Design 4 Innovation' (Interreg Europe) and 'User Factor' (Interreg Atlantic Area). Partners within these projects were responsible for policy development and business support. PDR's role was to use research expertise to inform mechanisms to enhance innovation and appropriate policy in the partners' regions.

'Design 4 Innovation' partnered: Flanders Innovation & Entrepreneurship, Belgium; Galician Agency of Innovation, Spain; Barcelona Design Centre, Spain; Investment and Development Agency of Latvia; Marshal's Office of Silesia Region, Poland; KEPA - Business and Cultural Development Centre, Greece; and, Valletta Cultural Agency, Malta. 'User Factor' partnered: Scottish Enterprise; Enterprise Ireland; *Axencia Galega de Innovación*, Spain; *Sociedade Portuguesa de Inovação* CEFI S.A., Portugal; *Chambre de Commerce et d'Industrie de Région Bretagne*, France; Department of Finance Northern Ireland; and, *Asociación de Empresas Tecnológicas Innovalia*, Spain. The quotes below demonstrate how project partners utilised Cardiff Met's research to make policy decisions.

Head of the Creative Industries Division of the Ministry of Culture in Riga, Latvia reported: '*Design 4 Innovation took a systemic approach to policy improvement, mapping and analysing the whole constellation of interrelated elements of design innovation ecosystems in our partner regions, such as support and funding initiatives, promotional activities, policy documents, education and research, main design services buyers, designers and users.'* [E6].

Valletta Design Cluster Manager at the Valletta Cultural Agency in Malta stated: *'Mapping of the design ecosystem, carried out during the initial phase of the Design 4 Innovation Project, led to the Valletta Design Cluster reaching out, interacting, and for the first time in Malta, mapping the local design ecosystem. This also highlighted the key lacunas and the priorities for the sector, central among which is the lack of dedicated resources (both spatial, financial and expertise) and the weak networking currently existing between players in the sector.'* [E7].

These partnerships directly resulted in **seven policy instruments**[2]: (E1) The East **Wales** ERDF Operational Programme provided an additional **€2,807,653**[3] in design support to SMEs; (E2) **Scottish** Enterprise released the 'By Design' grant, distributing **€3,469,143** for SMEs to spend on design; (E3) the Silesian regional government in **Poland** made **€6,900,000** available to SMEs to spend on innovation activities; (E4) the Department of Finance of Regional Government of Galicia, **Spain** invested **€310,000** for SME spending on innovation; (E5) the Spanish regional Ministry of Economy, Employment and Industry made an additional **€505,000** investment; (E6) the **Latvian** Ministry of Science, Innovation and Universities released **€45,000** to SMEs for spending on innovation activities; and (E7) the **Maltese** Ministry for the Economy, Investment and Small Business invested **€2,720,771** in infrastructure to support the design industry[4]. In each of these cases, the nature of the support and the specific activities receiving investment was developed because of the Design Innovation Ecosystem approach developed at Cardiff Met [E1, E2, E4, E5].

As a result of the above investments, more than **2600** companies across Europe are benefiting from increased spending on innovation activities to increase their competitiveness [E1, E2]. As an example, of the **618** Scottish companies which received the By Design grant, 117 responded to an impact evaluation survey, with **91%** of respondents indicating that the support had directly led to the launch of a new product or service. These companies reported that they expected to achieve an average of **£240,000** in additional sales over three years as a result of the support. Across the beneficiaries, this totals **£134,971,200** of new sales of Scottish goods for a governmental investment of £3,090,000, a return of more than **4,000%** to the tax payer [E2].

[2] Policy instruments are government interventions to meet the outcomes of a policy
[3] All £ to € conversions based on exchange rate at 18 Jan 21
[4] Values totalled in the summary providing the figures of €16,757,567 with €14,036,796 directly funding SMEs

5. Sources to corroborate the impact (indicative maximum of 10 references)

[E1] PR6, PGI02083 Design 4 Innovation, Accepted progress report to the European Union, submitted 3 June 2020: A formal report to the EU on the impact of the Design 4 Innovation project submitted as a requirement of the programme, this report demonstrates the changes and investments made by partners and their government representatives as a result of the project.

[E2] By Design Grant Evaluation - Research Report: this report, commissioned by Scottish Enterprise, demonstrates the impact of the SME Design Voucher scheme that was developed in response to a Design Innovation Ecosystems exercise with PDR.

[E3] Monitoring D4I Targets.xls (total value of instruments with where Design4Innovation has led to a change in policy): This spreadsheet monitors the range of targets the D4I programme was required to achieve, including tracking the total value of innovation policies upon which D4I impacted.

[E4] Design Voucher Programme launched in Latvia (2020), https://www.interregeurope.eu/design4innovation/news/news-article/8631/design-voucher-programme-launched-in-latvia/, accessed and archived 19.01.2021: This is an official EU news release demonstrating the impact of Design4Innovation on innovation support in Latvia.

[E5] New programme for design in Galicia (2019), https://www.interregeurope.eu/design4innovation/news/news-article/5453/new-programme-for-design-in-galicia/, accessed and archived 19.01.2021: This is an official EU news release demonstrating the impact of Design4Innovation on innovation support in Spain.

[E6] Quote from Head of the Creative Industries Division of the Ministry of Culture in Riga, Latvia, PR6, PGI02083 Design 4 Innovation, Accepted progress report to the European Union, submitted 3 June 2020: The quote in section 4 is taken from an official report to the EU (pg4), demonstrating that the Design Innovation Ecosystem approach developed at Cardiff Met directly links to the innovation investment within Latvia.

[E7] Quote from Valletta Design Cluster Manager at the Valletta Cultural Agency in Malta, PR5, PGI02083 Design 4 Innovation, Accepted progress report to the European Union, submitted 14 October 2019: The quote in section 4 is taken from an official report to the EU (pg22), demonstrating that the Design Innovation Ecosystem approach developed at Cardiff Met directly links to the innovation investment within Malta.