



# **Support Systems for Sustainable Entrepreneurship and Transformation (SHIFT)**

## **Work Package 5: The Role of Design Service Providers (DSPs)**

Background, literature review, interviews, surveys, analysis and recommendations

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## Preface

The project SHIFT – Support Systems for Sustainable Entrepreneurship and Transformation – was carried out in 2012-2016 within the first call of the EU research network ECO-INNOVERA, which enabled international collaborative projects on eco-innovation that were funded by the respective national funding organisations of the participating research institutions. The goal of the project SHIFT has been to analyse how public, intermediary and private support systems for entrepreneurship have to be changed in order to systematically boost the development and implementation of eco-innovation, and make realistic recommendations for policy makers and important actors of the support system on how to initiate a paradigm change in their supporting schemes.

This report contains the results of Work Package 5 of the SHIFT project: The role of Design Service Providers (DSPs). It has been written as a project report for the SHIFT consortium and selected stakeholders of the project. Work Package 5 report provides a much needed overview of the design support systems for eco-innovation in an EU context from a Multi-Level Perspective (MLP). Consequently, this report is of relevance for design policymakers, organisations from design industry and design education, and intermediaries, designers and design agencies delivering design support services to start/ups and SMEs.

Nowadays “design” has a rather pervasive, diffuse, meaning in society, although a common perception is that it involves styling, aesthetics and functionality. Here DSPs comprise professionally trained designers who offer diverse services complimentary to innovation activities. We adopt the definition of design incorporated in the EU’s first design policy report published by the European Design Leadership Board in 2012. We further elucidate on typical design services provided by DSPs. These services are diverse and so the literature is broadly spread in design and other fields across different levels of a MLP. Consequently, this work is a snapshot of the design support activities in Europe, across different levels, with different actors, and is supported by empirical work with experts, and demand and supply surveys in Germany, Finland and Sweden. We reveal the gaps between supply and demand, best practices and challenges from a MLP, then make general recommendations for the EU and more specific recommendations for Finland. We also generated a tool, called Design Acupuncture, enabling dialogue between SMEs and designers to deliver services to meet SMEs’ needs.

We hope that the potential readers of this report would find it enlightening and useful.

Porto, Portugal; Ulm, Germany; Cardiff, UK. 30 April 2016

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## **1 WP5 Introduction**

This report provides an overview of the design support systems for eco-innovation in an EU context from a Multi-Level Perspective (MLP). It therefore examines the role and impacts of design policy and other relevant policy fields in the EU (the macro level), of organisations from design industry and design education (the meso level), and the intermediaries, designers and design agencies who deliver design support services to (eco-)start-ups and (eco-)SMEs, as well as surveying these enterprises to determine how they access and use design support services (the micro level). Given the rather embryonic nature of a European-wide policy initiative for design, we adopted an evolving literature review as a number of EU funded projects looking at design policy and support were on-going through the life of the SHIFT project.

There are three phases to the research. Phase 1 frames the project from a MLP, generates the initial research questions and initiates the literature review. Phase 2 develops interviews with experts across the MLP, and supply and demand surveys in Germany, Finland and Sweden with actors at the micro level. Further intelligence is provided by a survey of existing design support programmes in the EU in 2014. This phase concluded by developing a workshop game format for designers and (eco-)start-ups and (eco-)SMEs to discuss how the latter's needs could best be met. Phase 3 synthesises the results of the research by providing a gap analysis between supply and demand, and by summarizing best practices and challenges from a Multi-Level Perspective. Finally, the report concludes with recommendations to improve and/or re-design the design support systems for policymakers in relevant EU Directorate Generals (DG GROW, DG Environment and DG RTD) and various meso and micro level actors. Further, specific, recommendations are made for the eco-innovation support system in Finland.

### **1.1 Objectives of the Work Package**

#### **1.1.1 What do we mean by 'design'?**

Design is a broad ranging activity integrated into complex contemporary political, economic, cultural, social and environmental activities (see for example, Papanek 1974, Whiteley, 1993; Fuad-Luke, 2002; Thackara, 2006; Cross, 2007; Best, 2009; Brown, 2009; Walker & Giard, 2013). Design acts on systems, things and people (Fuad-Luke, 2009), is an emergent and expanding field with diverse definitions and applications (Erloff & Marshall, 2008) and has a long and illustrious history since the Industrial Revolution to the Digital Age (Hauffe, 1998).

Design is currently seen as an integral part of the European Commission's DG Enterprise and Industry's strategy for innovation (European Commission, 2013; Thomson and Koskinen, 2012) and was defined by the European Design Leadership Board as:

*“Design’ is perceived...as a broadly-defined activity of user-centred innovation that focuses on people in the process of defining new products and services; as a sector in its own right of specialised professional economic activity by trained and qualified practitioners and as a tool for business and organisational growth at the highest strategic level.  
In addition to its economic benefits, design also encompasses sustainable and responsible behaviour contributing positively to an innovative society and improved quality of life.’*

(Thomson & Koskinen, 2012, 77)

As part of the empirical research in this work package we built upon an existing list of design services developed by Pitkanen (2012) to develop our own list for our survey work with eco-innovation MSME audiences. We feel this gives a good overview of typical design processes applied to develop new products and services and/or help communicate or market these products, services and the enterprises.

Below is our list of design activities with basic descriptions of the design services, for more thorough descriptions of these design services please see Appendix 1.

**Communication Design** embraces a combination of textural, figurative, formal and time-based elements to convey messages and meanings in an effective way. Closely related to graphic design and visual identity design.

**Concept Design** is about developing ideas which test what is (presently) acceptable, culturally or technically. It may involve using various ideation methods to generate lots of ideas then develop the best ones.

**Design Management** is integrating design activities with everyday management, operations, production and service practices in an enterprise with strategic decisions for competitive advantage and improved performance.

**Design Research** can include any design field, discipline, activity and approach as theory, practice and/or explorations. It frequently involves collaborations with for-profit and non-profit enterprises on specific projects or challenges around new technologies, materials, markets and communities.

**Ecodesign/Sustainable Design** involves developing products or services which minimize their impacts on the environment throughout their lifecycle. Sustainable design includes ecodesign but also embeds ethical, social and economic considerations.

**Spatial Design** (Exhibition, Interiors, Retail) is the design of specific spatial environments for exhibitions, retail outlets or any interior space where an enterprise does business.

**Graphic Design/Visual Identity/Identity Design/Brand Design** are inter-related design activities which organise text, images, icons, logos and

illustrations to communicate specific messages and stories. Closely related to communication design.

**Interface Design** is about improving experiences at the common boundary between an enterprise and its products or services and maximising the benefits to the user or customer by facilitating tasks.

**(New) Product Development** is about re-designing existing products or creating new products through a variety of processes where designers and others take a design brief with a defined challenge, create a solution and deliver it to the market.

**Product/Industrial Design** is the conceptualisation, design and making of objects, artefacts or products which are functional and useful while meeting contemporary aesthetic needs.

**Service Design** is the design of the functionality, form and experience of services from the perspective of the customer and through the analogue or digital interfaces they need to access to acquire the service.

**Strategic Design** aims to improve the performance of an enterprise in the eyes of its management, designers, customers and, even, competitors.

**User-centred Design/Usability** is an approach to designing which involves the users from initial conceptualisation to testing prototypes or models and delivering them to the market.

**Web Design** is about the conceptualisation of the 'look and feel' (graphic and visual design) of a web site and its integration with the underlying structure and functionality. (The aim of good web design is for users and customers to access information, products and services efficiently and that, overall, it is a satisfying experience.)

**Other Services** In addition to the above mentioned services there are additional design services not listed here. In our survey work we have given the MSME and DSP respondents the option to add services they use or offer.

For another way of seeing how diverse the professional field of contemporary design has become please see the classification of design activities developed by the Finnish national design policy in Appendix 2.

### 1.1.2 Design in the context of SHIFT and eco-innovation

As part of the European Design Innovation Initiative (EDII) promoted by the DG Enterprise and Industry, several recent applied research and development (R&D) projects have contributed to a much clearer picture of design in Europe at the macro and meso levels in a Multi-Level Perspective (see, for example, Whicher et al., 2015;

DeEP 2015). However, remarkably little is known about the current state of the art at the micro level i.e. the level where MSMEs interact with those providing design (support) services, the Design Service Providers (DSPs), many of which are also MSMEs.

When we 'designed' our research synopsis for this work package in November 2013, we saw our key aims as:

*...identifying Design Services provided to sustainable start-ups and eco-micro-enterprises, with a special reference to services supporting eco-innovation, and to show how these services are integrated into support systems and to show the impacts they lever, while 'revealing' their potential for more positive impacts on eco-innovation support.*

However, the range of DSPs, including actors, organisations and other 'design service' capabilities is, as reported in WP1 (Fichter et al., 2013, 90-91, Table 4) diverse. The early literature search for WP1 (Fichter et al., 65-74 & 87-91) indicated that eco-innovation for MSMEs requires support interwoven from three elements:

- DfS, eco-design support for more eco-efficient products, PSS or services
- Entrepreneurship support
- Eco- or green marketing support, often including branding and design communications

Design, as outlined earlier in this report, can contribute to entrepreneurship and eco-/green marketing support. So, we developed schematic diagram to indicate that our investigation should be aware of potential interaction of design with other support services (Figure 1) at three different levels – design as content or detail, design as operation or management, and design as vision or strategy and leadership.

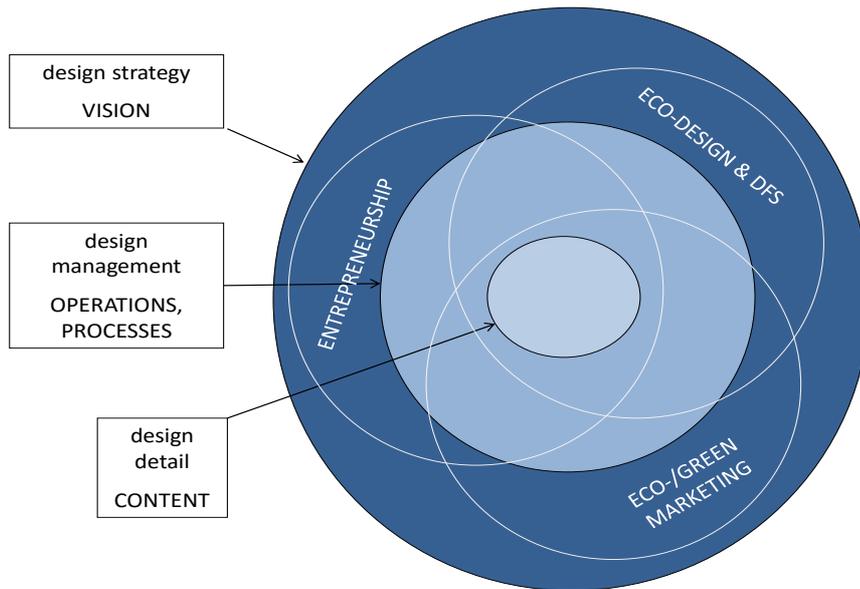


Figure 1. Integrated Design Service Provision for eco-innovation support at design content, operations and vision levels. (Source: Alastair Fuad-Luke, in response to WP1, Fichter et al., 2013).

By visiting our Finnish Micro, Small Medium Enterprises (MSME) partners in our local consortium (Table 1) as we signed them up to the Tekes/Aalto agreements during the first 12 months of the SHIFT project, and by talking and interacting them in several workshops through the duration of the project (Table 2) we also gained insights as to some of the design services they had used and which DSPs had provided them. We also tested some of our design service lists, frameworks and survey questionnaires with them prior to implementing empirical work. It should be noted here that these partners were generally micro-enterprises, with less than or equal to 10 employees. There was very little representation in empirical work for the project from 'small' and medium'-sized SMEs. However, many eco-startups are micro-enterprises so we felt our consortium partners provided a useful sample for the SHIFT project.

<b>Finnish MSME Partners</b>	<b>Description</b>	<b>Enterprise &amp; Sector</b>
Insinööritoimisto Ecobio	Corporate sustainability services	Environmental and social consultancy
Design Kuu	Ceramics, recycled stone & textiles designer maker	DSP
Poklossi Oy	Design & build timber construction	DSP & contractor
Muru / Juni Design	Children clothing & textile design	DSP fashion
Niin of Finland Oy	Heritage fashion & textile design	DSP fashion
Design+	Design thinking & strategic design practice	DSP
Makumaku Oy	Home delivery service for local food	Food industry
Tuneko	Fuel reduction technologies	Energy efficiency
Greenriders Rideshare	Online platform for car ride-sharing	Energy efficiency & mobility
Coreorient Oy	Online platform for ride-sharing for goods	Energy efficiency & goods distribution
Vegemesta Group	Specialist veggie burger restaurant & event caterer	Food industry
Natural Interest	Strategic sustainable development for organisations & companies under The Natural Step brand	Environmental & social consultancy
<b>Finnish BDOs</b>		
Culminatium Innovation Oy Ltd (now not operative)	Knowledge based BDO in Greater Helsinki & Uusimaa Region. Ceased trading 30.06.2014	Knowledge transfer
Lahti Region Development LADEC Ltd. (formerly <i>Lahti Science and Business Park</i> )	Helps companies operate & locate in Lahti area. Extensive networks and multi-platforms	Cleantech Design

Table 1. Finnish MSME & BDO partners. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)

<b>date &amp; attendees</b>	<b>workshop theme</b>	<b>key 'insights' and/or feedback</b>
06 March 2013 approximately 40 SMEs	opening workshop for the SHIFT project in Finland	<ol style="list-style-type: none"> <li>1. the importance of seeing how the SMEs view the innovation support system from their perspective</li> <li>2. we had early feedback too that there are key people (later we called them 'interagents' in WP7) who operate informally and/or formally to give support beyond the conventional support system(s)</li> </ol>
14 May 2014 4 of SME local consortium for SHIFT – Cororient, Green Riders, Design Kuu, Natural Interest/TNS	update on SHIFT activities and testing of the 'promoter x innovation cycle' framework and the application of design services during the innovation cycle	All four SMEs found the promoter x innovation cycle framework easy to use, and could specify what type of design services they used during the innovation cycle. This gave confidence to the NODUS Aalto ARTS team to develop their survey methodologies
26 November 2014 – 4 SMEs attended, including Cororient, Design Kuu.	update on SHIFT activities and further testing of WP7 frameworks and enquiring about 'needs' of SMEs	<p>SMEs easily completed the framework diagram for WP7 which was then used for the case studies.</p> <p>SMEs completed a needs questionnaire which aided in the design of survey questionnaires for WP5</p>
08 September 2015 4 SMEs and 8 designers/design agencies attended	Testing of the 'Design Acupuncture' game to encourage empathy and understanding between SMEs and DSPs	The prototype game created good dialogue between SMEs and DSPs and enabled SMEs to articulate their needs and DSPs articulate how design services could meet those needs

Table 2. Workshops with Finnish MSMEs to help inform the development of WP5 and WP7 by NODUS, Aalto ARTS. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)

What was clear from the outset was the necessity to understand what is happening between MSMEs and DSPs at the micro level while simultaneously trying to understand how macro and meso level activity was, or was not, influencing those micro level activities. The workshops with Finnish eco-MSMEs helped us develop our frameworks, methodologies and questionnaires for empirical work in WP5 and WP7.

## **1.2 The necessity of framing from a Multi-Level Perspective (MLP)**

As the field of design today permeates all facets of contemporary life, the value of a MLP is clear as it allows the actors, stakeholders and beneficiaries of design to be seen more clearly and helps distinguish how they do or do not relate to each other. In SHIFT Work Package 1, pp19-23 and pp108-110 the SHIFT consortium adopted the MLP approach to ensure that a systemic viewpoint, involving many actors, was more effective in enabling an understanding of dynamic interaction within support systems. This was deemed essential in order to make recommendations to transform the systems, and is especially so in the field of design which operates vertically and horizontally within MLP levels.

### **1.2.1 Macro level actors and context**

Given the scope of the SHIFT project, recent advancements in EU design policy and available resources at Aalto ARTS, we decided to focus our studies on Europe and in particular, the EU. This is also where we find the best concentration of literature. Macro level actors in this context include the European Commission, the Directorate General for Enterprise and Industry, the Directorate General for the Environment, pan-European project consortia under the auspices of the EDII (such as the SEE Platform, DeEP), the European Network of Ecodesign Centres (ENEC) and the Bureau of European Design Associations (BEDA), the latter being a key initiator in the process of catalysing EU design policy development from 2007 onwards.

### **1.2.2 Meso level actors and context**

The context for the meso level is generally defined within each EU member state by diverse organisations representing government and the public sector (national design centres, regional initiatives), the design industry, designers and design agencies (professional design organisations representing the sub-fields of design) and education (universities and their research centres).

### **1.2.3 Micro level actors and context**

The context for the micro level is MSMEs in general and, more specifically, eco-MSMEs and eco-startups and DSPs and their interaction.

## **1.3 Phase 1: The initial research questions**

NODUS, Aalto ARTS attracted a number of eco-MSMEs and two BDOs to support the SHIFT project for the agreement with the national funding agency Tekes (agent of the EU Eco-Innova programme in Finland) (Table 1). With SMEs forming 99.8% of the Finnish economy and responsible for 58.5% of GDP (Small Business Association SBA, 2012) their inclusion is essential in changing the eco-innovation support system. SMEs in Finland are represented by 212.508 enterprises, of which 195.446, or more than 92%, are Micro enterprises (SBA, 2012). Micro-enterprises and sustainable start-ups are the key focus of this work package at the micro-level in the eco-innovation support system.

A complimentary focus is the actors, agencies and organisations that operate in the system, at micro, meso and macro levels acting as Design Service Providers.

Our *initial* research questions therefore target both these groups.

Group A: Questions from the perspective of the (eco-)MSMEs , sustainable start-ups and micro enterprises:

- What kind of Design Service Provision are MSMEs accessing and what services are specifically focused on eco-design/DfS to enable eco-innovation?
- How effective are these services?
- Are these services combined or integrated with other support services (e.g. entrepreneurship, green marketing)?

Group B: Questions from the perspective of the Design Service Providers

- Who is providing what services and to whom?
- What does the overall system of design service provision look like and how are these services promoted?
- Where are the deficits of service and where can the overall system of provision, and therefore impacts, be improved?

Joining the results of both sets of questions from Groups A and B together, key questions are:

- What are the best practices and deficiencies?
- How can the design service provision be improved to enhance the eco-innovation support system?

A more macro level system question is:

- Policies have driven the support systems involved in eco-innovation, but there is little focus on DSPs – why is this?

However, we were conscious that these questions would need refining as we initiated our literature review and progressed the empirical work.

## 1.4 Phase 1: The evolving literature review

### 1.4.1 Macro level – Policy: Design, innovation, environmental resources

#### Introduction

The terminology is diverse in the policy fields which impact on-the-ground activities for Design Service Providers (DSPs) and MSMEs . The key fields are design, innovation and environmental resource management. We therefore apply specific definitions (see Glossary p. 152) to help contextualise our area of study.

This literature review develops an emergent ‘design policy landscape’ by referring to strategic policy documents (policies), defined policy actions or programmes resulting from a policy (initiatives), organisations relevant to design innovation policies or initiatives, published and peer-reviewed research and reports by the aforementioned organisations.

#### REGIME level: From the EU policy makers’ viewpoint

Different EU policy areas – environmental resource efficiency, innovation and design – inform the overall socio-technical regime in a MLP systemic view and, hence, the working environment for Design Service Providers (DSPs) – on the supply side – and (eco-)MSMEs – on the demand side– at the niche level of activities. It is therefore appropriate to ask a series of inter-related, exploratory, questions as to how ‘design’ and ‘sustainable design’ are or are not embedded in these policy areas:

#### Research questions:

1. Is ‘design’ embraced and promoted within the policy area ‘environmental resource efficiency’?
2. How is ‘design’ embraced and promoted within the policy area ‘design’ ?
3. Is ‘design’ embraced and promoted within the policy area ‘innovation’ ?
4. Is ‘sustainable design’ embraced and promoted within their policy area ‘environmental resource efficiency’?
5. How is ‘sustainable design’ embraced and promoted within the policy area ‘design’ ?
6. Is ‘sustainable design’ embraced and promoted within their policy area ‘innovation’ ?

Before answering these questions in detail it is necessary to give a broad sketch of how policy developed in these three key areas.

### 1.4.1.1 A brief history of EU environmental policy instruments, 1998-2014

It is important to differentiate between existing companies and enterprises who are trying to make their operations more eco-efficient and therefore less demanding of environmental resources (enterprises greening their operations – ‘greening enterprises’), and between companies and enterprises who invent, originate and develop eco-efficient products and services *and* want to make them even greener (‘eco-enterprises’). The environmental policy developments were largely aimed at greening enterprises but have probably encouraged, directly and indirectly, the emergence of eco-enterprises.

Since early discussions about Integrated Product Policy (IPP) from 1998 onwards combined with the impetus of the Lisbon Treaty in 1999 which made environmental policy a key political aim of the European Union, the story of environmental policy development in Europe for manufacturing (production) has tended to focus on encouraging ‘enterprises’ to become ‘green enterprises’. A wide variety of regulatory instruments (EC Directives and Regulations) and action plans have been generated to encourage this transition (Figure 2).

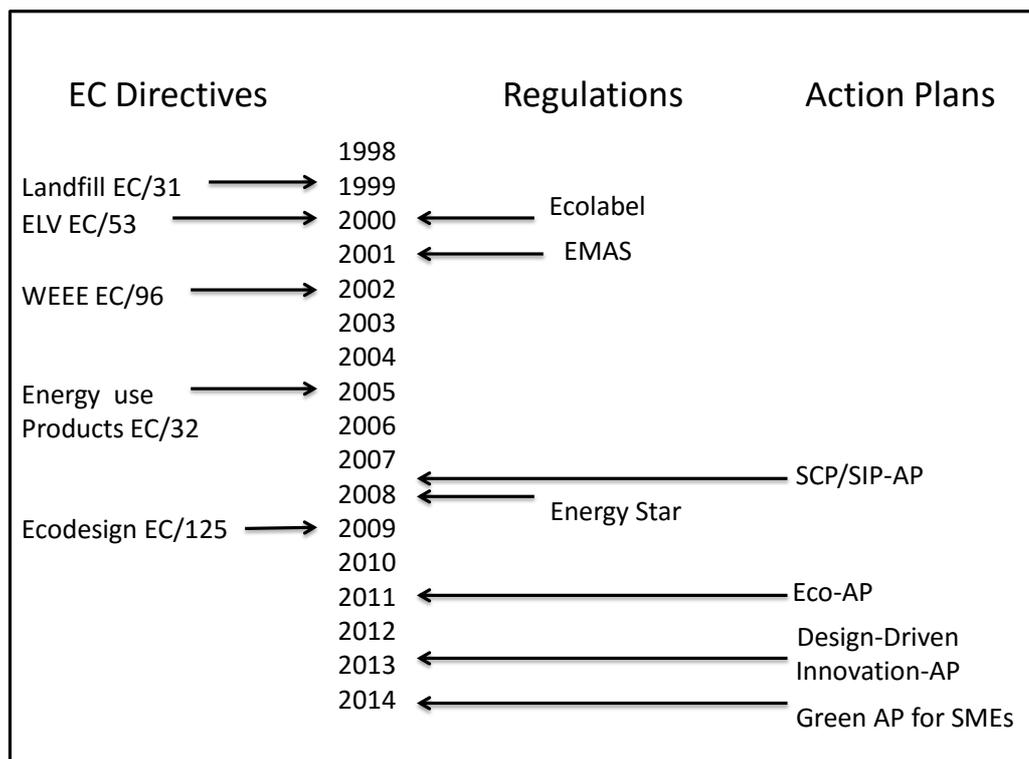


Figure 2. European Union environmental policy instruments, 1998 – 2014. (Source: compiled by NODUS, Aalto ARTS for the SHIFT project).

In Work Package 1: Theoretical Foundation, a preliminary and exploratory investigation of design and eco-innovation in a European policy context (see section 3.2.5.1.) revealed that eco-design/ecodesign activities were stimulated by a range of European Commission Directives targeting specific manufacturing sectors and types of products

between 2000-2005 (Figure 2). These initiatives were driven by environmental policy instruments focused on encouraging compliance of existing or new manufacturers. The need to integrate these different instruments in a more co-ordinated way was recognised earlier from 1998 to 2001 in the form of an Integrated Product Policy (IPP). IPP was subject to a broad stakeholder debate, but lacked a coherent and common understanding between the stakeholders (see, for example, Ernst & Young, 1998 and Charter et al, 2001). Over time the IPP debate helped initiate the Energy Use Products (EuP) Directive in 2005 which embraced a wider range of products and focused more effectively on their energy use. However, these diverse instruments failed to drive sustainable innovation (Charter & Clark, 2007) and it was not until the role of the producers was connected to the role of consumers under the Sustainable Consumption and Production/Sustainable Industrial Policy, SCP/SIP, Action Plan (AP) from the Directorate General for Enterprise and Industry that a new sustainable product policy emerged in 2008. Ecodesign was assigned a specific role in delivering some of the ambitions of the SCP/SIP AP (ref, see also Table 4 below). This AP helped generate momentum for the development and ratification of the 2009 Ecodesign Directive which brought together, in a more integrated framework, EuPs (Energy use Products) with ErPs (Energy related Products) , the latter being products that don't actively use energy during their lifetime but help to save it. The effectiveness of the Ecodesign Directive was reviewed in 2012 (Centre for Strategy & Evaluation Services, 2012). The evaluation team concluded that it was a well placed policy instrument - in the context defined by the SCP/SIP AP, EU sustainable industrial policy defined by Europe 2020, and its two Flagship Initiatives on sustainable growth ('Resource Efficient Europe' and 'An Industry Policy for the Globalisation Era') - but queried its effectiveness. The Ecodesign Directive is effectively linked with Energy Labelling, but is poorly co-ordinated with Green Public Procurement (GPP) and the European Eco-label scheme. Furthermore, the poor interface with the Waste Electronic and Electrical Equipment (WEEE) and Restriction on Hazardous Substances (RoHS) Directives was creating inaction or missed opportunities. In short, the 2009 Ecodesign Directive has, to date, only been partly effective.

New initiatives are emerging to deal with environmental resource efficiency from other policy areas, notably innovation, in the EC. The latest AP provides a significant positive development for the eco-innovation agenda and SMEs in general - The Green Action Plan for SMEs (GAP) (EC, 2014 - COM(2014) 440 final) - which 'gives a clear direction and framework for how the EU, in partnership with Member States and regions, intends to help SMEs exploit the business opportunities that the transition to a green economy offers'. The key aims of GAP are:

1. improve resource efficiency of European SMEs
2. support green entrepreneurship
3. exploit the opportunities of greener value chains
4. facilitate market access for green SMEs

#### **1.4.1.2 A brief history of emergent innovation, eco-innovation and design policy initiatives, 2007 to 2015**

These areas of policy initiative in the EU are driven especially by the Europe 2020 Strategy and, specifically, three out of the seven key Flagship Initiatives – the Innovation Union, Resource Efficient Europe and An Industry Policy for the Globalisation Era. The Innovation Union initiative specifically mentions ‘innovation’, ‘SMEs and innovation’ and ‘design’ in its guiding principles numbers 1,5 and 9, (EC, 2010).

##### **Emergent EU innovation and eco-innovation policy**

Innovation policy in the EU is presently driven most vigorously through the Europe 2020 Strategy (EC, 2010) which focuses on smart, sustainable and inclusive growth. In the EC’s own words:

*‘Europe 2020 puts forward three mutually reinforcing priorities:*

- Smart growth: developing an economy based on knowledge and innovation.*
- Sustainable growth: promoting a more resource efficient, greener and more competitive economy.*
- Inclusive growth: fostering a high-employment economy delivering social and territorial cohesion’*

In particular the Innovation Union (one of three ‘Smart Growth’ initiatives) has encouraged development of an EU design policy (see below), but its primary focus is on getting the European economy back on track, economic growth, creating jobs and increasing investment in Research and Development (R&D). Again, in the EC’s own words:

- “Innovation Union” to improve framework conditions and access to finance for research and innovation so as to ensure that innovative ideas can be turned into products and services that create growth and jobs.*

There are no specific caveats about protecting the environment or minimising resource depletion in the framing of the Innovation Union nor the policy initiative which emerged under the Design-Driven Innovation Action Plan (EC, 2013). For these it is necessary to look at other flagship initiatives under the Europe 2020 strategy – A Resource Efficient Europe and An Industry Policy for the Globalisation Era (both ‘Sustainable Growth’ initiatives). The Eco-innovation Action Plan (Eco-AP) launched in December 2011 (EC, 2011) compliments both these flagship initiatives. The Eco-AP focuses on *‘boosting innovation that results in or aims at reducing pressures on the environment and on bridging the gap between innovation and the market’* (EC, 2011, 2)

##### **Emergent EU design policy**

The relatively recent emergence of EU design policy begins in 2007 and is well charted by projects under the European Design Innovation Initiative (EDII) initiated by the Design-driven innovation Action Plan of the DG Enterprise and Industry. Two research consortia projects of particular relevance are the SEE (Sharing Experience Europe) Platform, and DeEP (Design in European Policy). The Bureau of European Design Associations (BEDA) played a key role by meeting the EC President in 2007 and initiating EC discussions by publishing 'Design Europe 2010 Manifesto'. SEE has made significant contributions to understanding current design policy and its implementation in Europe from 2008 onwards. Developments of European design policy are summarised in a timeline in Figure 3 courtesy of DeEP. It took five years to get a policy document for Europe, which was finally published by the European Design Leadership Board in 2012 (Thomson & Koskinen, 2012) and two more years to get a European wide initiative to develop a Design Innovation Platform, the Design for Europe/EDIP initiative co-ordinated by the Design Council in the UK.

Significant events include:

- September 2012 -the launch of the European Design Leadership Board (EDLB) report Design for Growth and Prosperity (Thomson and Koskinen, 2012) at the European Design Innovation Summit in Helsinki<sup>1</sup>
- September 2013 - the EC launches the Design-Driven Innovation Action Plan, via DG Enterprise & Industry
- March 2014 - the European Design Innovation Platform (EDIP) is launched. It is now called Design for Europe<sup>2</sup>.

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<sup>1</sup> one of the authors of this SHIFT document, Alastair Fuad-Luke, was moderator and master of ceremonies at the launch of the EDLB report in Helsinki in September 2012. This was the first time Europe had a comprehensive design policy document with broad reaching recommendations.

<sup>2</sup> Design for Europe, <http://designforeurope.eu/>

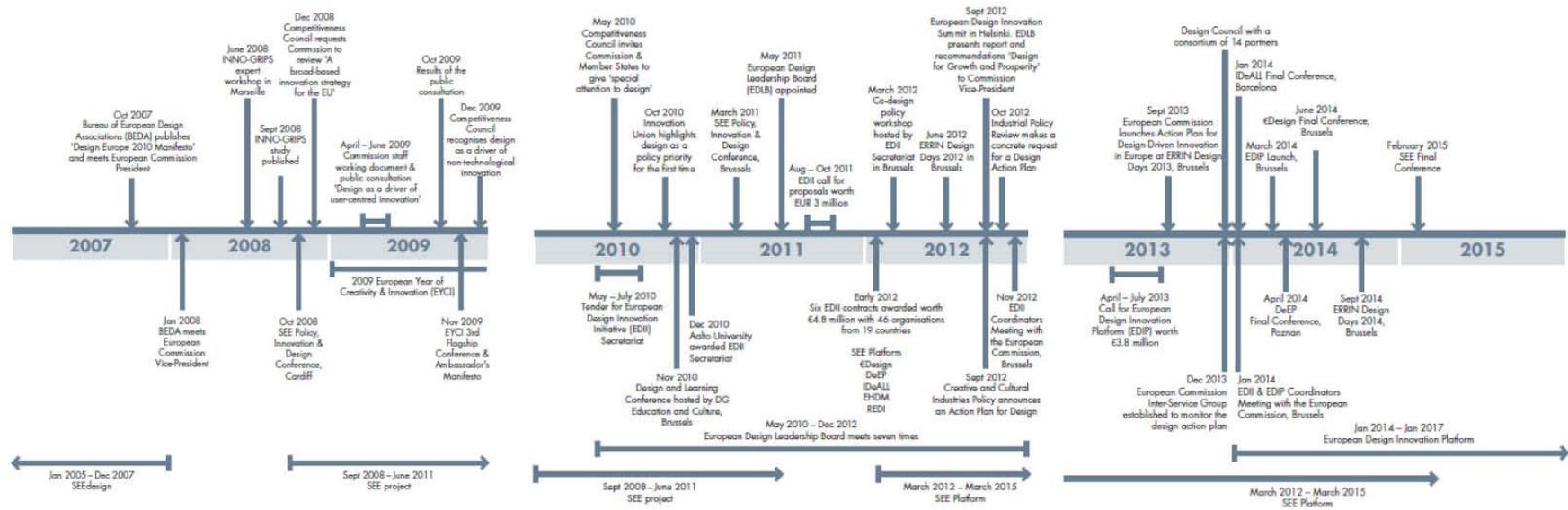


Figure 3. Timeline of EU design policy development 2007 - 2015. (Source: Whicher & Cawood, 2014)

### 1.4.1.3 Exploratory research questions and answers

Although our definitions of terms relevant to this Literature Review are given in the glossary we detail a little more discussion here prior to answering the exploratory research questions.

'Design' embraces a broad terminology defying a single or authoritative definition of design (Erlhoff & Marshall, 2008), has numerous adjectives to describe its sub-disciplines, approaches/frameworks and historical or contemporary styles, and is applied across diverse 'things and systems' (Fuad-Luke, 2009). So, as explained in the introduction, we will apply a definition recently posited by the European Design Leadership Board :

*"Design' is perceived...as a broadly-defined activity of user-centred innovation that focuses on people in the process of defining new products and services; as a sector in its own right of specialised professional economic activity by trained and qualified practitioners and as a tool for business and organisational growth at the highest strategic level."*

*(Thomson & Koskinen, EDLB, 2012)*

'Sustainable design' was first defined, in the arena of manufacturing, production and consumption, in terms of 'sustainable product design (SPD)' which is... *"ecodesign"* (see Glossary p. 153) *plus the integration of social and ethical aspects of the product's lifecycle alongside environmental and economic considerations'* (Tischner, 2001). Sustainable design is also described as... *'a design philosophy and practice in which products contribute to social and economic well-being, have negligible impacts on the environment and can be produced from a sustainable resource base. It embodies the practice of eco-design, with due attention to environmental, ethical and social factors, but also includes economic considerations and assessments of resource availability in relation to sustainable production'* (Fuad-Luke, 2002). Over the last decade, many definitions of design, including those used in EU policy documents, have started to embrace elements of sustainability. In the definition of design above by the EDLB, the authors also added a sustainability component – *'Design... In addition to its economic benefits design also encompasses sustainable and responsible behaviour contributing positively to an innovative society and improved quality of life'* (Thomson & Koskinen, 2012). Recently the EU expanded the notion of design to embrace innovation and sustainability - *"Design' is a tool for the realisation of innovation. It is the activity of conceiving and developing a plan for a new or significantly improved product, service or system that ensures the best interface with user needs, aspirations and abilities and allows for aspects of economic, social and environmental sustainability to be taken into account"* (EU, n.d. cited in Danish Enterprise & Construction, 2011).

Lastly, it is important to clarify what we mean by 'design policy'. The SEE Platform (which evolved from the SEE Policy, Innovation and Design conference in Cardiff, UK, in

October 2008), co-ordinated by Metropolitan University Cardiff, has undertaken significant research into the present state of EU Member States' national design policies support, centres and promotion. '*Design policy*' is defined as '*government intervention aimed at stimulating the supply and demand for design to tackle failures in the way that actors and components interact in the national or regional design system*' (SEE Platform, 2014).

## Research questions

### 1. Is 'design' embraced and promoted within the policy area of 'environmental resource efficiency'?

'No', not at an EU policy level as 'design' – see, for example, a summary of policy areas across Europe that include elements of resource efficiency (EEA, 2011: 22-23) – there are 32 policy areas sub-categorised under 'energy and climate; economy; materials; waste; government/infrastructure; environment; and agriculture', but 'design' is absent. However, 'design' has been and is invoked in eco-efficiency measures under 'ecodesign' or variants of 'sustainable design' for over a decade (see for example, Charter & Tischner, 2001; Charter et al, 2001). Research in academia and industry has responded to the evolving range of Directives from the European Commission, including the latest, the Ecodesign Directive 2009(see Figure 2). Product-orientated resource efficiency initiatives are reported in Belgium and the UK; eco-labelling initiatives in Austria, Denmark, Finland, France, Germany, Ireland and Slovakia; and the promotion of ecodesign, explicitly through the Ecodesign Directive, in Norway, Poland, Portugal and Turkey (EEA, 2011, 26). In summary, design is still weakly embraced and promoted in environmental resource policy.

### 2. How is 'design' embraced and promoted within the policy area of 'design'?

Yes, the concept of 'design' is, naturally, central to developing design policy in Europe, but it is largely framed by key stakeholders such as the design industry (e.g. represented by BEDA), design education and research (represented by the European Academy of Design, EAD, and Design Research Society, DRS) and government (represented by ministries and national design and promotion centres). As such it has specific dimensions and elements because of how these key stakeholders understand 'design'. Recently twenty-one policy recommendations were made by the European Design Leadership Board (EDLB) to the European Commission (Thomson & Koskinen, 2012). The EDLB was specifically set up as an initiative of the Innovation Union and the European Commission's DG Enterprise and Industry, to help integrate design into innovation policies in Europe. The report focuses on six areas:

- European Design on the global stage (recommendations 1 to 4).
- Design in Europe's innovation system (recommendations 5 to 10).
- Design in Europe's enterprises (recommendations 11 to 15).
- Design in Europe's public sector (recommendations 16 and 17).

- Design in Europe’s research system (recommendations 18 and 19).
- Design in Europe’s education system (recommendations 20 and 21).

Recommendation 1 specifically calls for the promotion of increased use of design in European Industry from an economic, environmental and social perspective. This is the only mention of an ‘environmental perspective’, otherwise sustainable design and/or sustainability are largely absent from the recommendations. Innovation and/or SMEs specifically feature only in recommendations numbers 7, 10, 12, 13, 14 and 16.

### 3. Is ‘design’ embraced and promoted with the policy area of ‘innovation’?

Yes. The EU definition of design embeds the word ‘innovation’ (see above). The Innovation Union initiated the formation of the EDLB in 2011, leading to their report on design policy recommendations in 2012 (Thompson & Koskinen, 2012). Reinforcing this first policy initiative in Europe on design, the EC DG Enterprise and Industry created its Design-Driven Innovation Action Plan in 2013, placing design as a core activity of innovation. An assessment of design and innovation policy in 27 EU member indicates that *‘Design policies can be explicit (design is included in policy or strategy documents as a priority for innovation or the creative industries) or tacit (design policy instruments exist such as design support programmes or tax incentive schemes but design is not explicitly included as a priority in government strategy)’* (Whicher et al, 2013: 15). A more recent report (Whicher & Cawood, 2014) indicates that the number of explicit design policies across Europe has not changed since 2012 and remains at approximately only half of the EU member states (15 out of 28) (Table 3).

Country Code	(explicit) Design policy
AT	
BE	*
BG	
CR	
CY	
CZ	*
DE	
DK	*

EE	*
EL	*
ES	*
FI	*
FR	*
HU	
IE	*
IT	*
LT	
LU	
LV	*
MT	
NL	
PL	*
PT	*
RO	
SE	*
SI	*
SK	
UK	*
Total	15 out of 28

Table 3. National provision of design policy in 28 EU member states. (Source: adapted from Whicher & Cawood, 2014, 4). Note: \* indicates member states has a design policy.

**4. Is ‘sustainable design’ embraced and promoted within the policy area of ‘environmental resource efficiency’?**

Yes, there is substantial evidence that sustainable design, especially as ecodesign, is seen as critical to delivering positive contributions to achieving improvements in environmental resource efficiency – for example, in the 2008 SCP/SIP AP (European

Commission, 2008) which enabled the development of the Ecodesign Directive (European Commission, 2009) (see Table 4 below) but also ecodesign was specifically mentioned in the Eco-innovation Action Plan (EC, 2011).

#### **5. How is 'sustainable design' embraced and promoted within the policy area of 'design'?**

Sustainable design is almost absent from the key contemporary pan-European design policy documents referred to in the sections above. Less certain is how sustainable design is presented and/or integrated into national, EU member state, policy documents.

This under-representation of sustainable design at the policy level in design is surprising given that ecodesign has been embedded elsewhere in policies aimed at environmental resource efficiency. It is also disappointing given over 15 years of progressive activity within design education & research and within parts of the design industry towards more sustainable design methods, tools and approaches. Sadly the poor state of integration of sustainable design in European design policy is also reflected through lack of understanding and support for sustainable design by the national bodies which represent design at a governmental and industry levels. For example, examining the web sites of national design centres or organisations responsible for promoting design in EU member states it appears that only three centres/organisations embed and promote sustainable design – Austria, Germany and Sweden (see section 1.4.3 below) This picture is only tempered with the knowledge that prioritisation and investment has taken place in ecodesign within certain regional locations within some EU member states – for example in the Ecodesign Centre in Wales, UK; in Flanders, Belgium; and other members of the European Network of Ecodesign Centres (ENEC) (SEE, 2012; Prendeville et al., 2014).

#### **6. Is 'sustainable design' embraced and promoted within the policy area of 'innovation'?**

No, it is almost absent from the key contemporary European innovation policy documents which reference design (see above). Even when recent EU initiatives on eco-innovation are examined, the field of design, and even less, sustainable design, is notable by its absence. As reported earlier in WP1 (Fichter et al., 2013, 88):

*'Policy recommendations to the European Parliament for eco-innovation, encouraging a more resource and energy efficient economy, did not specifically mention eco-design or Design for Sustainability (DfS) or perceive these approaches as necessary recommendations for transforming the innovation systems (Bleischwitz et al., 2009). Policy development under the EU ECO-INNOVERA programme from 2006, the FP7 Framework and more recently the 2011 Eco Innovation Action Plan EcoAP (European Commission, 2011), all seem to have failed to contextualise and/or prioritise the exploration of how eco-design and sustainable design can help integrate and encourage eco-innovation.'*

The European Commission’s Eco-innovation Action Plan (Eco-AP) 2011, originating from the DG Environment, just includes one mention of ‘ecodesign’ as a milestone ‘for implementing the ELV, WEEE, RoHS, Batteries and Accumulators and Packaging Directives’ (EC, 2011, 8). This seems to offer little real progress since the 2009 Ecodesign Directive, which is largely about compliance rather than encouraging eco-innovation. The situation gets worse when the cross over between design and innovation is examined, through the Design-Driven Innovation AP, originating from the DG Enterprise and Industry (EC, 2013), because ‘sustainable design’ (as ‘ecodesign’ or ‘eco-innovation’) is not even referred to (see Table 4 below).

EC ACTION PLAN	Number of keyword ‘hits’ in document		
	‘design’	‘ecodesign’	‘eco-innovation’
2008 SCP/SIP	0	20	4
2011 Eco-AP	0	1	99
2013 Design-Driven Innovation	198	0	0
2014 Green AP for SMEs	2	1	12

Table 4. Four European Commission Action Plans and their use of terminology. (Source: NODUS, Aalto ARTS for SHIFT, August 2015)

This lack of co-ordination between two key action plans for the Europe 2020 strategy generated from two flagship initiatives, the Innovation Union and Resource Efficient Europe, and promoted by two different DGs, shows that different perceptions exist in different EU initiatives about the usefulness of design and sustainable design. The Innovation Union seems intent on applying design to encourage growth and competitiveness with scant attention to eco-efficient use of resources or the wider environmental and social remit embodied within sustainable design. The Resources Efficient Europe initiative wishes to deploy ecodesign as a means of de-coupling economic growth from use of material resources. Neither initiative considers design as a field which can integrate economic, social and environmental well-being, and yet that is at the root of the green economy, according to the European Environmental Agency (EEA, 2014, 13) (Figure 4). However, the Green Action Plan for SMEs (EC, 2014) does forefront the green economy and is the first AP to embrace ‘design’, ‘ecodesign’ and ‘eco-innovation’ terminology (Table 4).

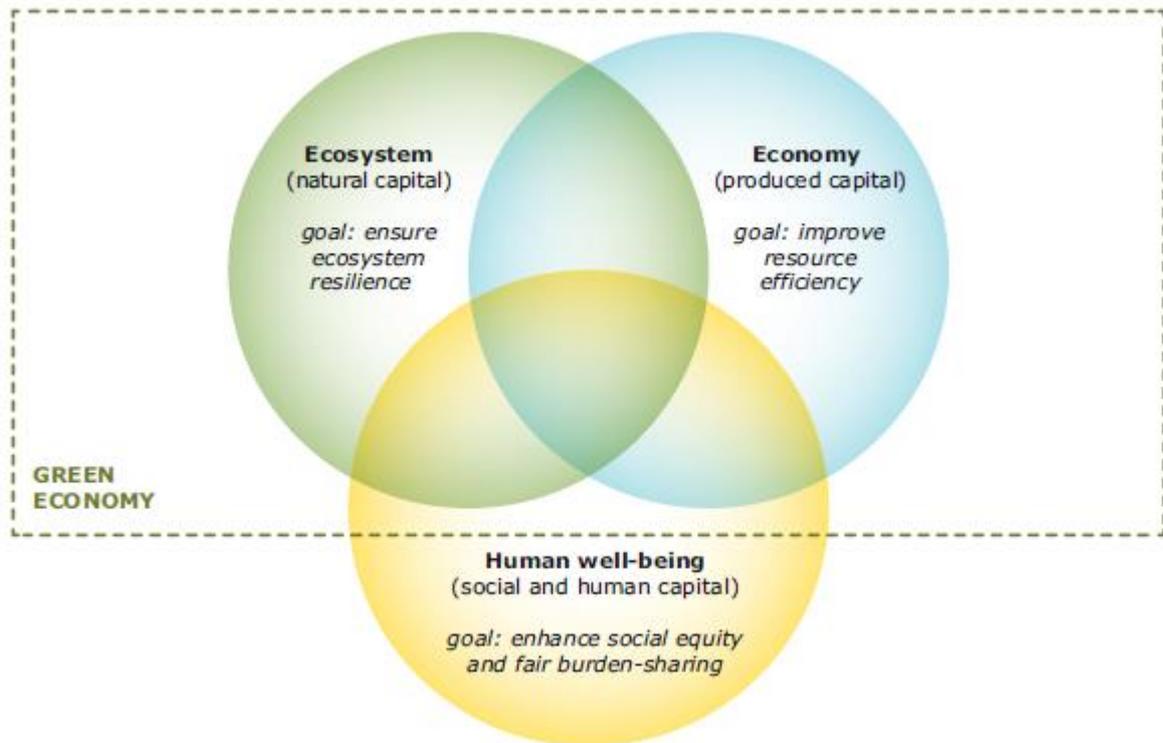


Figure 4. The green economy according to the European Environmental Agency (EEA) (Source: European Environment Agency, 2014, 13)

#### 1.4.1.4 Key findings

Environmental, innovation and design policy instruments and development have originated from different stimuli or triggers and have been championed by different Directorate Generals (DGs) in the European Commission. The net result is that there is a lack of co-ordination of these policy areas and, in the worst scenario they appear to have conflicting interests. For example, innovation policy is largely about increased economic growth and design policy is orientated to help achieve that growth, whereas environmental policy encourages growth in the context of a green economy and the application of eco-design. There is a clear fragmentation and lack of integration of EU policies in the fields of environment, innovation and design which does not give a coherent positive message about encouraging 'eco-innovation'.

The emergence of a coherent design policy in the EU member states is relatively recent, from 2007 onwards. The key policy document, produced by the European Design Leadership Board (EDLB), appears geared to expanding the design industry's capacity and capability in Europe to assist innovation growth (Thomson & Koskinen, 2012). It places much less emphasis on design support for SMEs and there is nothing concrete presented about the need to build capacity and apply eco-design/sustainable design to encourage eco-innovation. This might be because it has been tied to the Design-Driven

Action Plan produced by DG Enterprise and Industry in September 2013 which itself makes no mention whatsoever about ‘ecodesign’ or ‘eco-innovation’ or the green economy. As this is a key axis of design and innovation in the EU this seems a major omission and, perhaps, accounts for a lack of appetite across Europe for eco-innovation.

#### 1.4.2 Meso level – Design support systems

##### Introduction

The terminology is diverse in the policy fields which impact on-the-ground activities for design embedded within European, national, regional and local support systems that fit within the general EU innovation policy landscape (see section 1.4.1 above). We therefore apply specific definitions (See glossary) and expand the understanding of design support, promotion, centres and policy below in order to help contextualise our area of study.

Our focus in this section is to determine what is the current pan-European landscape for design and sustainable design and how is it embedded within national and regional support systems. In this context, two initiatives of the European Design Innovation Initiative (EDII), the SEE Platform and DeEP<sup>3</sup>, originating from the Design-driven Innovation Action Plan (EC, 2013), have both made a significant and recent contribution towards a pan-European overview of design as a part of specific design support systems and wider innovation support systems.

An assessment of design and innovation policy, by the SEE Platform, in 27 EU member states differentiates between design support, design promotion, design centres and design policy (Whicher et al., 2013, 15-16) where:

- *Design centres* are a ‘key design agent connecting the design sector to the private and public sectors. Where design centres exist they are often the actor delivering design promotion and support activities on behalf of the government’.
- ‘*Design promotion* activities exist in almost every country in Europe’...for example, design weeks, design awards, exhibitions and museums.
- ‘*Design support* programmes are a more interventionist approach to introducing design to companies and public authorities.’
- *Design policies* can be explicit (design is included in policy or strategy documents as a priority for innovation or the creative industries) or tacit (design policy instruments exist such as design support programmes or tax incentive schemes but design is not explicitly included as a priority in government strategy.’

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<sup>3</sup> Sharing Experience Europe (SEE) Platform, <http://www.seeplatform.eu/> and Design in Europe Policy (DeEP), <http://www.deepinitiative.eu/>

Our focus in this literature review is design support and design support programmes, but it is interwoven with activities involved in design promotion and the activities of national and regional design centres, and so represents Meso-Micro level interactions. Design policy is covered more detail in the previous section of this literature review, and is seen as a Macro-Meso level interaction.

*Design support* is seen as programmes and schemes ‘implemented to assist businesses to use design in order to improve themselves’ (Raulik, 2004; Sung et al., 2007 cited in Raulik et al., 2008, 122) often building ‘bridges’ between design and industry (Dahlin and Svengren, 1996 cited in Raulik et al., 2008, 122) and more latterly between design and government (for example, McNabola et al., 2013 and the on-going work of Design for Europe<sup>4</sup>).

The European Design Leadership Board (EDLB) also set a clear description of the capability and capacity of the existing European design industry, indicating its ability to supply design services (Thomson & Koskinen, 2012). Important facts include:

- Over 410,000 professionally-trained designers operating either within the design-services consulting sector as independent, external consultants, or ‘in-house’ in medium and large companies with a dedicated design function.
- Multi-disciplinary, national professional associations representing the interests of qualified, professional designers.
- In a number of EU member states there are also trade associations representing design businesses.
- Publicly-funded national and/or regional design promotion organisations.
- An extensive network of design schools, independent or embedded within universities, across Europe.
- A number of pan-European design organisations representing the industry and government, such as the Bureau of European Design Associations (BEDA)<sup>5</sup> and design research, such as the European Academy of Design (EAD) and Design Research Society (DRS)<sup>6</sup>.

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<sup>4</sup> Design for Europe is being delivered over three years from January 2014 as part of the European Commission’s Action Plan for Design-Driven Innovation by a consortium of public, private and educational organisations across the EU. See <http://designforeurope.eu/>

<sup>5</sup> Bureau of European Design Associations, BEDA, <http://www.beda.org/>, has 46 member organisations from 24 countries in Europe representing ‘leading design promotion centres (usually funded by Government/public money) or professional design and trade associations (usually funded by the design industry of that country)’.

<sup>6</sup> European Academy of Design, EAD, [http://www.ead.lancs.ac.uk/aca\\_index.html](http://www.ead.lancs.ac.uk/aca_index.html), and Design Research Society, <http://www.designresearchsociety.org/joomla/index.php>

There is a lot of activity in Europe which indicates that design is seen as important to innovation and growth. How does this activity constitute a support system to help companies to innovate, specifically how does it support MSMEs and in particular eco-MSMEs and eco-startups?

- Research questions:**
1. Is design embraced and promoted within a generic framework of support systems in EU member states?
  2. Is sustainable design embraced and promoted within a generic framework of support systems in EU member states?
  3. Is design embraced and promoted within a generic framework of support systems in Finland, Sweden and Germany?
  4. Is sustainable design embraced and promoted within a generic framework of support systems in Finland?

**Research questions and answers**

**1. Is design embraced and promoted within a generic framework of support systems in EU member states?**

A recently updated report (Whicher & Cawood, 2014) indicates that all EU member states are actively involved in design promotion, but that only about half the member states have created active design support programmes, have a design centre and/or an explicit design policy (Table 5.).

Country Code	Design Support	Design Promotion	Design Centre	Design policy
AT	*	*	*	
BE	*	*	*	*
BG		*		
CR		*	*	
CY		*		
CZ	*	*		*

DE		*	*	
DK	*	*	*	*
EE	*	*	*	*
EL	*	*		*
ES		*	*	*
FI	*	*	*	*
FR	*	*	*	*
HU	*	*	*	
IE		*	*	*
IT		*		*
LT		*		
LU		*		
LV		*	*	*
MT		*		
NL	*	*	*	
PL	*	*	*	*
PT		*		*
RO		*		
SE		*	*	*
SI		*	*	*
SK		*	*	
UK	*	*	*	*
Total	12	28	18	15 out of 28

Table 5. National provision of design support, design promotion, design centres and design policy in 28 EU members. (Source: Whicher and Cawood, 2014, p4 and Whicher et al. 2015, 19). Note: \* indicates member states offer design support, promotion, policy and/or a design centre.

Design support is not evenly distributed across Europe and the agencies involved are varied. Some of the best design support, as evidenced by the SEE Platform is local and/or regional. The SEE Platform has built up a worldwide database of 98 case studies about initiatives which include design support for the private and public sectors, of which 88 are from EU member states (summarised in Appendix 3.)

The most active design support countries in Europe are UK (28 cases), Belgium (10), Finland (10) and Denmark (9). Keyword descriptors for these design support programmes indicate that the foci are varied. Of the 98 case studies 73 predominantly focus on design support for the private sector, 16 for the public sector and 9 across both sectors. 'SMEs' are specifically mentioned in 18 case studies (highlighted in yellow in Appendix 3), 7 case studies specifically mention 'innovation' (keywords highlighted in turquoise and 8 case studies mention 'ecodesign/sustainable design (highlighted in green). None of the case studies mention 'eco-innovation'.

However, many of the case studies cited in Appendix 3 were short-lived, from one to several years, and are now historical. In 2014 there were only 12 active design support programmes in Europe (Table 6) and only one specifically focused on eco-design and waste management– the Redesign + programme, 2012-2014, jointly delivered by Austria and Hungary (Whicher et al., 2015, 16).

Nine of the 12 programmes are operative at the time of writing. Most of these design support programmes are part of larger programmes funded by various government bodies (Ministries, Agencies) or Design Centres. These programmes are focused upon innovation, entrepreneurship, manufacturing companies, exports, service design and design leadership. None explicitly provide design support for eco-innovation.

Programme name	Dates	Region / country	Delivery body	Programme description	Operation cost 2014	Cost to participants	Annual number of participants
Redesign+	2012-2014	Austria & Hungary	Austrian Office for Sustainable Development, Design Austria & University of West Hungary	Enabling companies and social enterprises to collaborate in ecodesign and waste management.	€258,000	Free	
SME Wallet	2009-present	Flanders, Belgium	Enterprise Flanders	Providing SME subsidies (50%) to a maximum of €2,500 for design advice or €25,000 for design management.	€80,000	50% of design invoice (€100 to €25,000)	39
Design for Competitiveness	2008-present	Czech Republic	CzechTrade	Integrating design into Czech manufacturing enterprises for higher export value.	€160,000	€400	96
ChangeWorks	2013-2014	Denmark	Danish Design Centre	Establishing collaboration between industry and innovation agents.	€1.47m	Free	
Design Bulldozer	2012-2014	Estonia	Estonian Design Centre	A 20 month pilot project to increase economic and export potential of 10 Estonian companies and 10 design managers.	€240,000	€3,000 for 3 staff	10
Design Feelings	2013-2018	Finland	Tekes: Finnish Funding Agency for Innovation	A short intensive course focused on design methods for industrial SMEs.	€666,000	25-75% of the intervention cost	14
Design Innovation Tax Credits	2013-2015	France	Ministry for Economy, Directorate General for Enterprise	Design has become an eligible cost within the innovation tax credits for SMEs	€400,000	50%	
Extraversion Competitiveness of Enterprises	2011-present	Greece	Ministry for Development & Competitiveness	Strengthening entrepreneurship of small companies by improving the production base for goods and services.	€50,000	55% of innovation invoice	
SME innovation stimulation programme (MIT)	2013-present	Netherlands	Netherlands Enterprise Agency	Providing a wide range of innovation support, including design, for top sectors.	€30m (all innovation support not just design)	Free	
Design, Business, Profit	2014-2015	Poland	Institute of Industrial Design	Creating an environment for industrial design in enterprises through workshops and online support	€686,000	Free	113
Service Design Programme	2010-2015	Wales, UK	PDR / Cardiff Metropolitan University	Improving service design understanding in the traditional manufacturing sector and designers	€146,000	Free	30
Design Leadership Programme	2002-present	UK	Design Council	A package of three types of design support and coaching.	€1.6m	50% intervention cost (€2,400 to €8,000)	152

Table 6. Design Support Programmes in operation in Europe in 2014. (Source: Whicher et al., 2015, 16.)

### MESO-MICRO level: How is the design support provided?

Design support programmes of a collaborative nature tend to be free to the enterprises – the programme brings together enterprises with collaborating partners, industry, innovation partners through workshops, online support and projects. Alternatively, some of the costs of having a designer or design mentor/consultant are paid for by direct government subsidy or through ‘innovation vouchers’ and the enterprise meets the remaining costs.

Often high quality design support has been developed in specific locations or regions within Europe, with several design support programmes entering a second or third cycle (Whicher et al., 2015). Examples include the SME Wallet (Flanders, Belgium),

Design for Competitiveness (Czech Republic), Design Feelings (Finland), Design Business Profit (Poland) and Design Leadership (UK). Whicher et al. (2015) report that the initial approaches tended to be light-touch intervention (mentoring, assistance in writing design briefs, procurement of design services and managing the design process) but nowadays the focus is on long-term interventions within specific sectors, high-growth enterprises or high-export companies. While, earlier the focus was product design now there is increasing support for service design and design management in order to encourage companies to move up the (Danish) Design Ladder (Figure 5) and integrate design competences within their businesses.

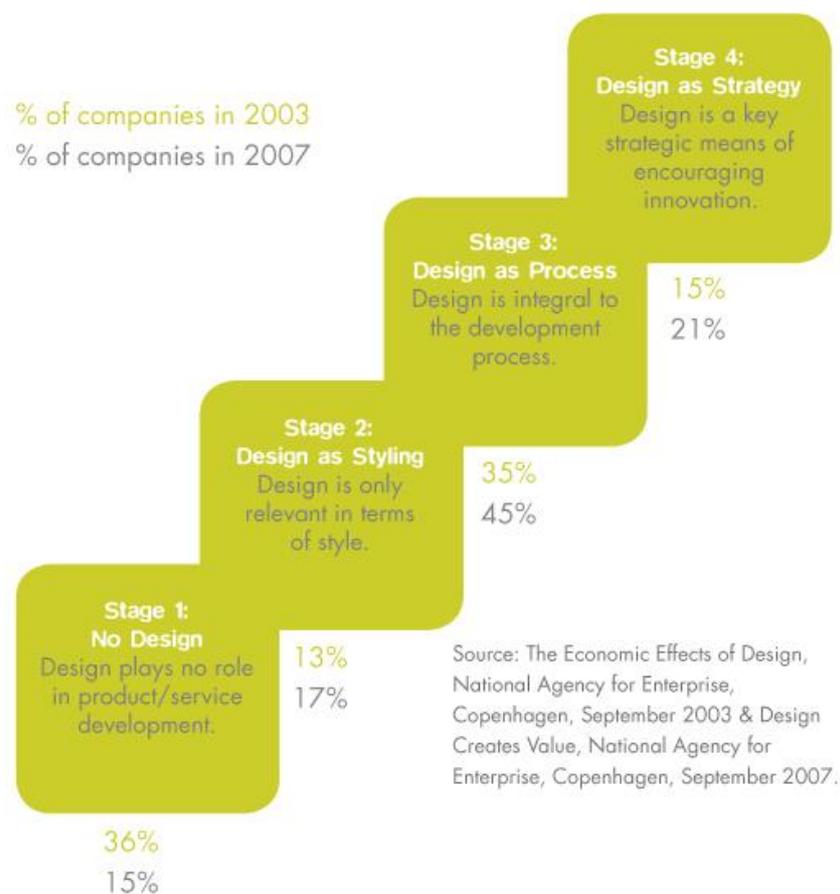


Figure 5. The Danish Design Ladder showing how companies begin with basic design services and progress to design being an integral and strategic company management approach. (Source: National Agency for Enterprise, Copenhagen, Denmark, 2003, 2007, cited in Centre for Design Innovation, 2007).

Certain regions, such as Wales and Scotland in the UK and Flanders, Belgium have well established design support programmes for SMEs, **Design Wales** is an independent service provider, offering advice on all aspects of design to manufacturing, service and craft companies located in Wales. They offer support through experienced designers in the areas of product development, materials selection, fashion and textiles, graphics and branding, eco-design, and website development. They are financially supported by the regional government, the Welsh Assembly (Cawood et al., 2004, 74). A recent report explored the 'design innovation ecosystems' of Wales and Scotland (Whicher and Walters, 2014) which revealed that design was being more embedded in broader innovation or business support schemes with partnering by the Welsh Design Advisory Service, PDR in Cardiff Metropolitan University and Bangor University in Wales and through Scottish Enterprise for design mentoring or new product development (NPD) in Scotland.

Other successful programmes work at a national level. For example, the **Icebreaker Program from Denmark**, which works with Design Virgins: enterprises which had no design support during the last 5 years. Their program lasted for over 3 years. During this period, over 400 SMEs participated and the actual design work was spread to over 120 design consultancies. 57% of these design agencies continued working with their clients beyond the span of the program. The Czech **Design Program** is focusing to improve the performance of SMEs in the Czech Republic. It is managed by the Design Center of Czech Rep. (DCCR), which aims to enhance the "*competitiveness of manufactures and deliver improvement in the working and living environment.*"

The program is running since 1999, supported by the Ministry of Industry and Trade. About 150 projects have been assisted each year. Since 2004 they strongly focus on product development. They evaluate each proposal, and then assign a design consultancy from their database. They also offer support in IP protection issues of the design work (Cawood et al., 2004, 75).

The Design Leadership programme in the UK is one of the longest running design support programmes in Europe. It has operated between 2002-2014 and services 1.976 companies. See section 1.4.4 below for more details about how this support programme has added value to these businesses.

## **1 Is sustainable design embraced and promoted within a generic framework of support systems in EU member states**

In the case study database developed by the SEE Platform searching the keywords reveal only 6 case studies in four EU member countries, Belgium (2), France, Italy and UK(2) implementing design initiatives with the keywords 'eco-design', 'sustainable design' and/or 'sustainability' (highlighted in green in Table 7). These are summarised in the final column, Table 7, alongside those EU countries with a specialist ecodesign/sustainable design centres. Members of the European

Network of Ecodesign Centres (ENEC) are indicated, other organisations are independent of any formal association or larger network structure.

Country Code	Design Support	Design Promotion	Design Centre	Design policy	Regional 'sustainable design' (mainly 'ecodesign') initiatives within EU Member State
AT	*	*	*		
BE	*	*	*	*	The Henry van de Velde Awards and OVAM Ecodesign awards PRO  The Public Waste Agency of Flanders  OVAM Flanders (ENEC)
BG		*			
CR		*	*		
CY		*			
CZ	*	*		*	
DE		*	* S		Efficizienz-Agentur NRW, North Rhine Westfalia (ENEC)
DK	*	*	*	*	
EE	*	*	*	*	
EL	*	*		*	
ES		*	*	*	Ihobe Basque (ENEC)

FI	*	*	*	*	
FR	*	*	*	*	4-Tuesdays on Ecodesign programme  Pôle Eco- conception Rhône Alps (ENEC)
HU	*	*	*		
IE		*	*	*	
IT		*		*	Green Home Label for furniture
LT		*			
LU		*			
LV		*	*	*	
MT		*			
NL	*	*	*		
PL	*	*	*	*	
PT		*		*	
RO		*			
SE		*	*S	*	
SI		*	*	*	
SK		*	*		
UK	*	*	*S – Design Wales	*	C2C, Cradle-to- cradle programme  Ecodesign Centre, Design Wales (ENEC)  Centre for Sustainable

					Design, CfSD, UCA Sustainable Design Network, Loughborough University
Total	12	28	18	15 out of 28	

Table 7. National provision of design support, design promotion, design centres and design policy in 28 EU members showing those with more active eco-design and/or sustainable design activities (shaded in green). (Source: adapted from Whicher & Cawood, 2014, 4 combined with data from the European Network of Ecodesign Centres, ENEC and NODUS, Aalto ARTS).

**Note:** ‘\*S’ indicates that ‘sustainable design’ is embedded in design activities. \* indicates member states offer design support, promotion, policy and/or a design centre.

Our own desk study of national/regional design centres or organisations in Europe through their web sites (snapshot taken in August 2015) reveals that only three countries– Austria, Germany and Sweden– have really attempted to embed the language of ‘sustainable design’ into their promotion and support of everyday design activities (Table 8).

Country	Design centre or organization	Database of designers & search criteria for ‘ecodesign’ or ‘sustainable design’ and / Links to sustainable design projects & resources	Search hits for ‘ecodesign’	Search hits for ‘design for sustainability’	Search hits for ‘green design’	Search hits for ‘design for environment’
Finland	Design Forum Finland	No/No	0	0	0	0
UK	Design Council	No/No	97	97	97	97
Sweden	Swedish Industrial Design	Yes/Yes	-	-	-	-

	Foundation					
Germany	Design Center Berlin	No/Yes	808	889	801	889
Denmark	Danish Design Center	No/No	0	0	0	0
Austria	Design Austria	No/Yes	42	6	18	8
Estonia	Estonian Design Center	No/No	0	0	0	0
Spain	Design Center Barcelona	No/No	136	9	1	0
France	APCI	No/No	1	5	0	

Table 8. Design centres or organisations promoting ‘ecodesign’ and ‘sustainable design’ via their web sites. (Source: NODUS, Aalto ARTS for SHIFT, August 2015)

Some of the aforementioned design councils and regional design organisations promote expertise in sustainable design or at least have this category within their directories. Some examples are:

**Design Wales** which offers a directory to find design agencies for specific services including a tag for “Eco”, which gives 37 results for the entire area.

The **Swedish Industrial Design Foundation** generally seems on a first site very user-centered and service design driven, but they have a section called *design and sustainable development* and also the search-categories they offer “*experience in sustainable design*” as a choice.

**International Design Center Berlin** has very good search results regarding ecodesign and offers within their main menu access to further links in sustainable design, which brings an introduction with further links to e.g. the *Bundespreis Ecodesign, Sustainable Design Forum, Shades of Green, Support*.

Maintaining consistent support for eco-design or sustainable design within a regional innovation support system for SMEs is fraught with challenges, as is the case with the Ecodesign Centre Wales, and requires action and intervention by many stakeholders (O’Rafferty et al 2008). From a micro level perspective SMEs perceive managerial, organisational and system barriers but can also see strategic, internal and external benefits of eco-design; at the meso level capacities need to be built into the design sector

at industry and educational levels and suitable platforms and networks need to be created; at the macro level there needs to be consistent support from policymakers and the Welsh Assembly Government because sustaining regional innovation requires a longer-term view and commitment.

### **3. Is design embraced and promoted within a generic frameworks of support systems in Finland, Sweden and Germany?**

All three countries promote design to the business and public sectors and have acknowledged 'design centres', but Finland is the only country with a current design support programme (Design Feelings supported by Tekes) and Germany lacks a formal design policy. However, the Design Feelings programme is part of a larger programme encouraging companies to explore the adoption of design for adding intangible value to their activities, with a special focus on the digital industries aiming for high export growth. It does not have a specific focus on design for eco-innovation or SMEs.

Germany's design support system is not clear because design promotional activities are being shared between the German Design Council and the more proactive International Design Center Berlin.

Sweden's activities for design promotion are mainly taken up by the Swedish Industrial Design Foundation and Svensk Form and the latter is linked to Swedish Design Cooperation as a means to promote the competitiveness of Swedish Industry.

### **4. Is sustainable design embraced and promoted within a generic framework of support systems in Finland, Sweden and Germany?**

In Finland there is not a national wide campaign or organisation which champions sustainable design, however, one of the local Finnish consortium for SHIFT recruited by NODUS, Aalto ARTS, has been and is an active centre for design and cleantech industries – this is LADEC, a regional development company (formerly Lahti Science and Business Park) initiated by the city of Lahti. LADEC has had an active CleanTech Co-design Center since 2011. Tekes, the Finnish Funding Agency (through whom SHIFT funding is received) also has an active Green Growth programme since 2011 but neither 'design' nor 'sustainable design' are featured or integrated, as yet, in to this programme.

There are national centres/organisations in Germany (the Design Center Berlin) and in Sweden (the Swedish Industrial Design Foundation) which both support the language and vision of sustainable design but, as yet, do not have formal design support programmes in these areas.

#### **The emergence of 'design ecosystems'**

Recent explorations of (design) innovation support systems have looked at the contribution of different actors in different levels of the systems to view them as an active 'ecosystem' to include the 'users of the system' (e.g. Whicher et al. 2015, LADEC 2012). An ecosystem view asks, 'What are the needs of a healthy, effective, innovation support system?' This approach has been adopted by those trying to optimise the

application of EU design policy, for example, through the SEE Platform project (Whicher et al. 2015) and by initiatives in Europe at a regional level, for example, Wales and Scotland in the UK (Whicher and Walters, 2014) and LADEC, Lahti in the Päijät-Häme region of Finland through its co-design CleanTech Center (LADEC, 2012).

### **EU Macro-meso level model**

The 'design innovation ecosystem' developed by the SEE Platform is a recently developed macro-meso level EU view which sees the support system 'users' as just one component of the system (Figure 6.) Key contributors to the innovation ecosystem include:

- the users – private sectors companies and public sector organisations
- the designers – 410,000 professionally trained designers in Europe
- (design) actors – European national design centres (18 out of 28 EU members in 2014) and other European design industry networks
- (design) support – mentoring and subsidy support for private and public sectors
- (design) promotion – initiatives and awards
- (design) policy and government – EU and national design policies and government initiatives e.g. MindLab, Denmark; Cabinte Office Policy Lab, UK.
- (design) funding – EU and national funding ranging from R&D projects to tax credits and innovation vouchers
- (design) research – research projects, networks and knowledge exchange
- (design) education – 38 top design schools in EU member states in 2014 and CUMULUS International Association of Universities and Colleges of Art, Design & Media.

Once the actors have been mapped, the strengths and weaknesses of such ecosystems can be assessed (e.g. Whicher & Walters, 2014), however it is less clear in the 'EU Design Innovation Ecosystem' as to the primary function of each actor and how this ecosystem meets the needs of companies, especially those without an 'in-house' design capacity and/or SMEs who can not afford to engage designers or design consultants. This ecosystem appears geared to the interests of the macro and meso-level actors, the latter including design industry associations, design centres and universities. It provides a means to map the overall 'capacity' of European design support organisations and mechanism but seems to place less emphasis on how to meet the needs of SMEs and the designers themselves (many of whom are also SMEs).

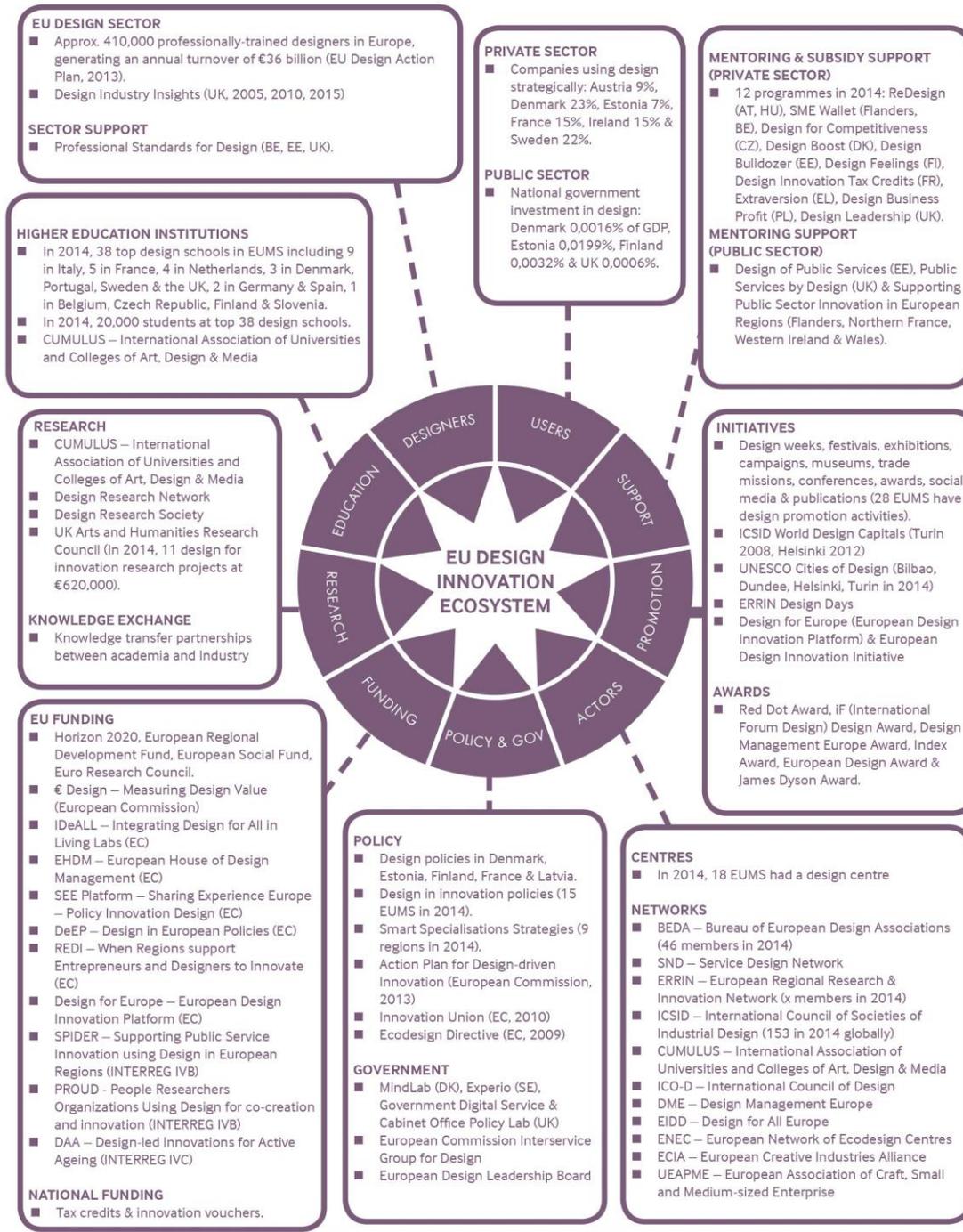
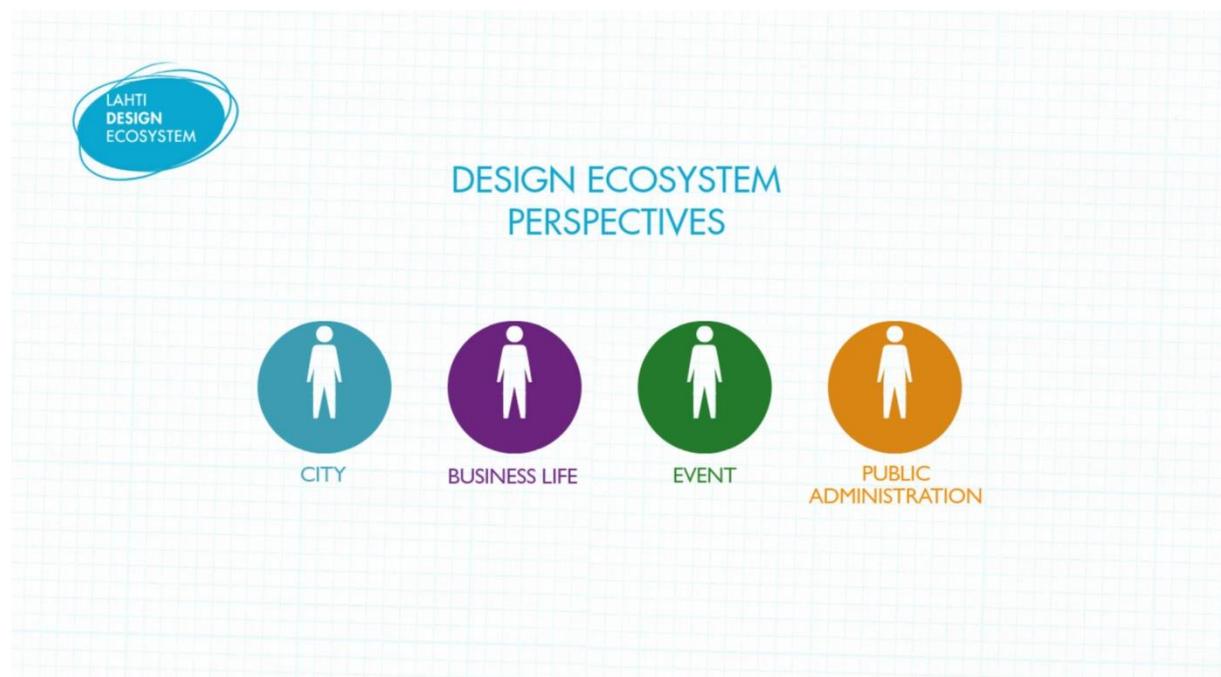


Figure 6. Mapping stakeholders and initiatives for a European Design Innovation Ecosystem proposed by the SEE Platform. (Source: Whicher et al., 2015, 9)

## Finland meso-micro level

The city of Lahti, just north of Helsinki, provides an example of a meso-micro level design support system. Lahti 'design ecosystem' emerged from a series of co-design workshops in October and November 2011 initiated by Rikka Salokannel, Design Development Director of the Lahti Science and Business Park (now LADEC) and facilitated by Aalto University's Dept. of Design, Aalto ARTS<sup>7</sup>. This ecosystem puts the 'users' and other key 'beneficiaries' in the centre of the system and the actors and support organisations in relation to how they might provide for the needs and benefits of the users and beneficiaries (Figure 7a-e). The outer two layers of the ecosystem, the infrastructure, is seen as relatively fixed – representing national and regional organisation, whereas the actors orientating next to the users and beneficiaries change according to the type of users and beneficiaries identified from four perspectives – the City (citizens, visitors, immigrants), the Business life (producers/manufacturers), Events (spectators, participants and organisers) and the Public Administrators (municipality) (Figures 7a-e). The Business Life and Events perspectives are relevant to SHIFT as they represent private sector companies. This way of viewing the ecosystem is critical to actually creating one that maximises support and *re-frames the innovation support system from the perspective of the entrepreneurs, MSMEs and start-ups and their users/customers*. This contests the usual top-down approach where the recipients of support are seen as being at the bottom of the innovation system hierarchy.



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<sup>7</sup> These workshops were facilitated by Prof. Alastair Fuad-Luke, manager of the SHIFT project for Aalto ARTS. The workshops, their outcomes and how they informed development of a co-design culture in the city of Lahti are summarised in a recent publication: Fuad-Luke et al. (2015). *Return on Giving: Best Mindset and Practices for Co-designing*. Lahti, Finland: LADEC.

Figure 7a. LADEC's design ecosystem from four perspectives. (Source for Figure 7a-e:: LADEC 2012).

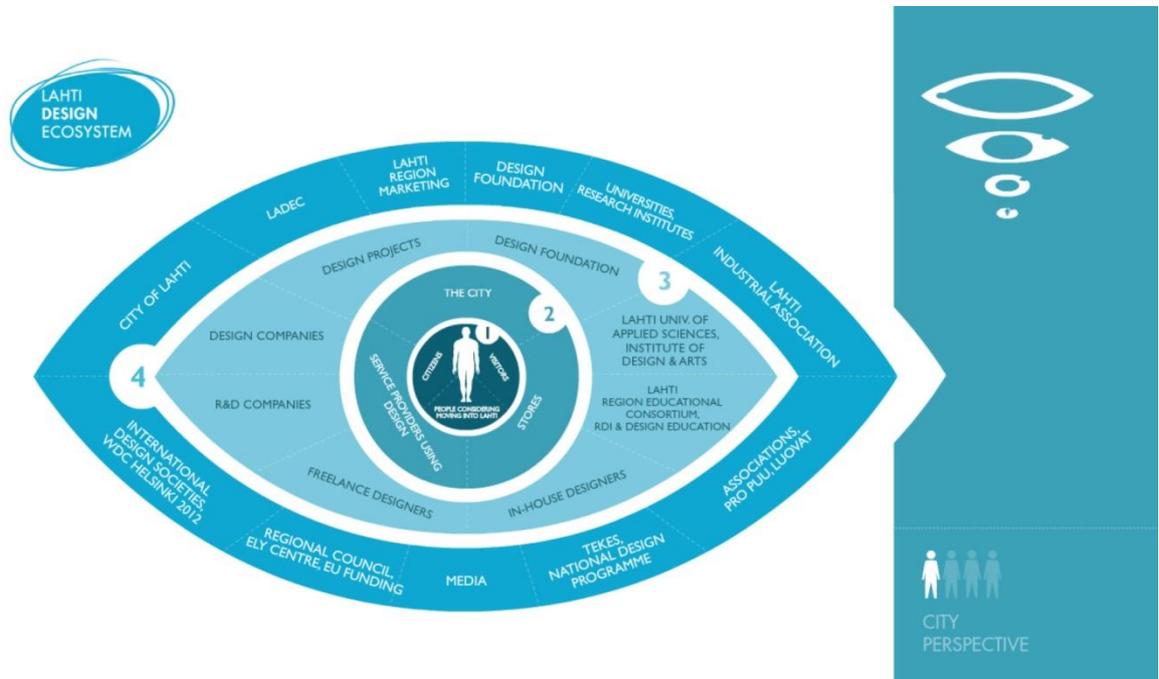


Figure 7b. LADEC design ecosystem from the City perspective – Citizens, visitors and people intending to move to Lahti.

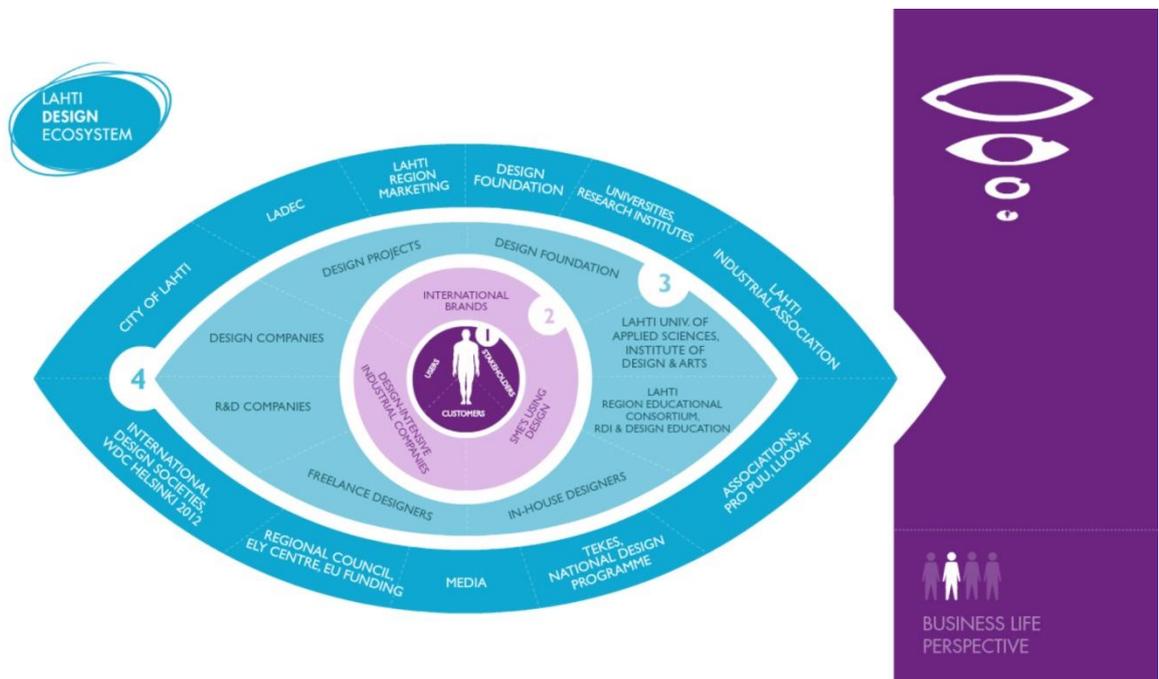


Figure 7c. LADEC design ecosystem – Business perspective

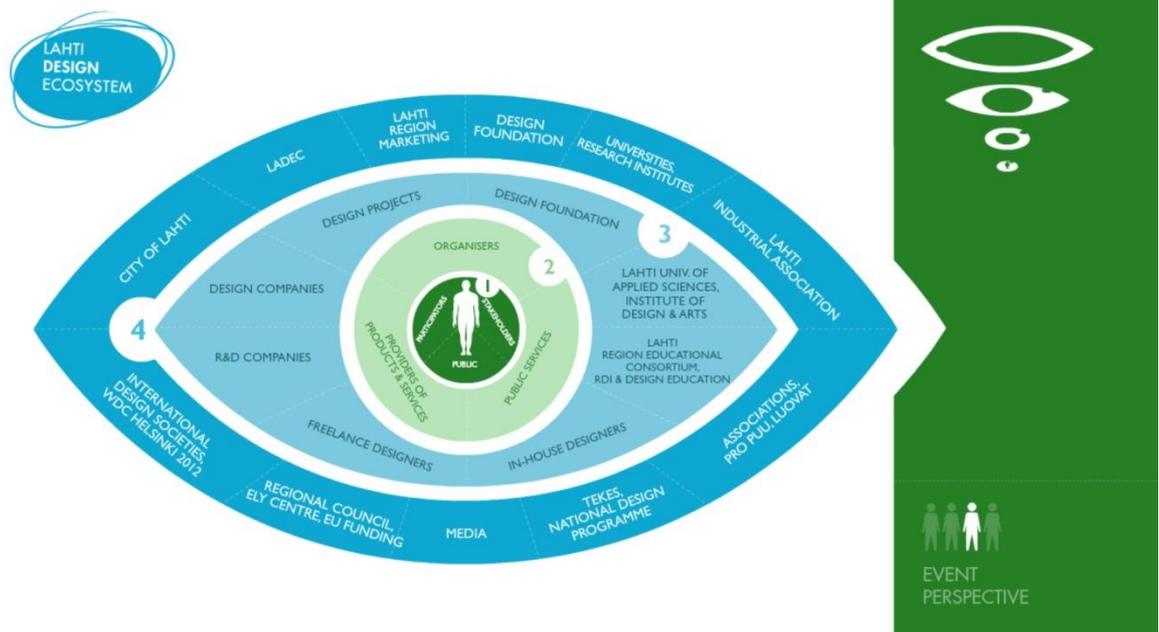


Figure 7d. LAHEC design ecosystem – Events perspective.

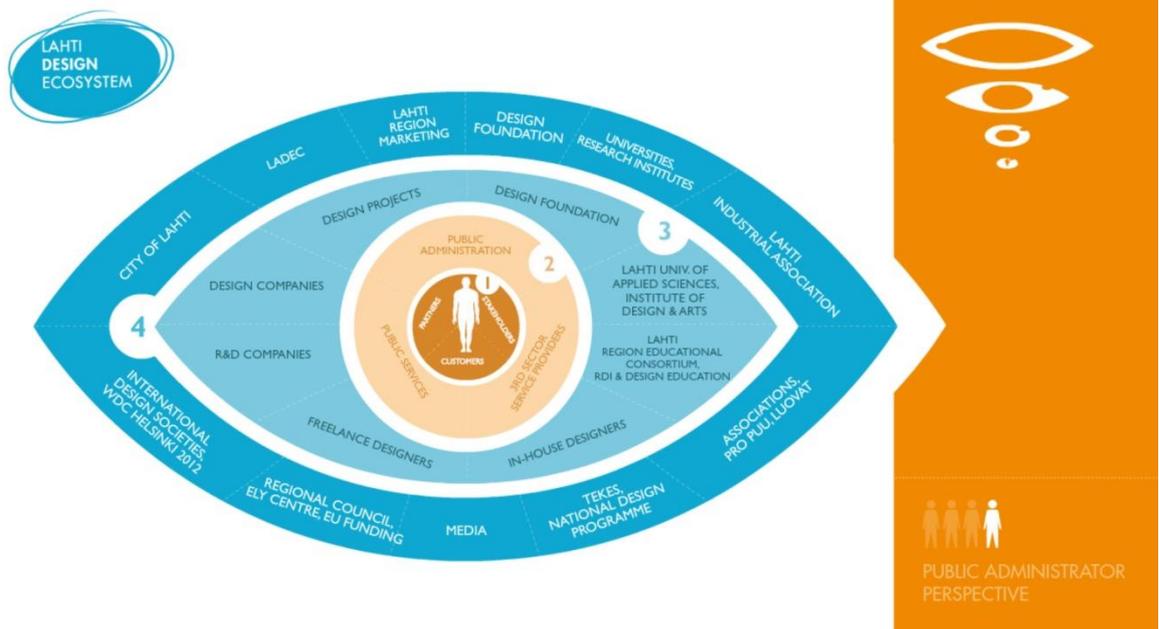


Figure 7e. LAHEC design ecosystem – Public administrator (municipality) perspective.

### UK meso-micro level

An example of a design support system operating at the meso-micro level in the UK is the PDR and the Ecodesign Centre Wales at Cardiff Metropolitan University – it provides an example of evolution of support systems in a local/regional context

Part of the Welsh Assembly’s commitment to sustainable development in Wales, UK was to help encourage a resource efficient region. Two early initiatives were the Materials Action Programme (MAP) and the establishment of the Ecodesign Centre Wales (EDC) in UWIC, Cardiff University (O’Rafferty et al., 2008, 94). The EDC, set up in 2006, was seen as an organisation to help support and raise innovation capacity in the region’s manufacturing and service SMEs by providing ecodesign support through collaborative projects. EDC successfully supported tens of SMEs, encouraging them to develop new products and services and raised capacity (O’Rafferty & O’Connor, 2010). By 2013 the EDC’s activities were being co-ordinated by PDR – the National Centre for Product Design and Development Research, set up in 1994 by UWIC (now Cardiff Metropolitan University) - as an applied design research centre. PDR’s activities are spread across materials research, new product development, service design, design management and design policy and innovation, as well as ecodesign<sup>8</sup>. Today, PDR and its research clusters contribute to diverse regional, national and international projects with private and public sector organisations with a focus on collaborations and/or knowledge transfer, training and workshop programmes and other initiatives for research supported design. For example, the design management cluster of PDR set up Design Wales in 2000 for the Welsh government as a means to promote design and its business benefits through local and regional business support offices. PDR also set up and operates the Design Wales Forum connecting 900 designers across Wales in one network and platform. In this sense PDR along with other Higher Education support centres in Wales (Table 9) provides key eco-innovation support services. While some of these government funded projects (EU and national funding) have supported SMEs, the design elements are integrated into collaborative, applied research projects which exclude SMEs which have little time or money or a person who can dedicate themselves to a research-based project.

Name of support service	Support Organisation(s)	Website
Advanced Sustainable Manufacturing Technologies (ASTUTE)	Eight Welsh universities and/or Higher Education institutions.	<a href="http://www.astutewales.com/en/">http://www.astutewales.com/en/</a>

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<sup>8</sup> PDR, Cardiff Metropolitan University, Wales, <http://pdronline.co.uk/research>, accessed 10.08.2015

Institute for Sustainable Design (SD)	University of Wales Trinity Saint David with Cardiff Metropolitan University	<a href="http://www.isdwales.com/en/">http://www.isdwales.com/en/</a>
National Centre for Product Design and Development Research (PDR)	Cardiff Metropolitan University	<a href="http://pdronline.co.uk/">http://pdronline.co.uk/</a>
Enterprise by Design (PONTIO)	Bangor University	<a href="http://www.bangor.ac.uk/careers/students/enterprise.php.en">http://www.bangor.ac.uk/careers/students/enterprise.php.en</a>
Transational Ecosystem Laboratory and Actions (TESLA)	Bangor University	<a href="http://www.icps.bangor.ac.uk/tesla.php">http://www.icps.bangor.ac.uk/tesla.php</a>

Table 9. Higher Education support in Wales for design and (eco-)innovation. (Source: Adapted from Whicher & Walters, 2014, 20-21).

### Key findings

There is a broad awareness across EU member states that design is an important factor in innovation and business activities in general, as demonstrated by the existence of design promotion activities in all 28 countries. However, the European landscape is more varied in terms of design centres, policy and support with only 18 member states having design centres, only 15 having explicit design policies and only 12 having current design support programmes. Presently there are only 12 active design support programmes (2014 data) in Europe and only one of those is specifically orientated towards ecodesign/sustainable design and eco-innovation - Redesign+, a joint programme between the Austrian Office for Sustainable Development, Design Austria and the University of West Hungary, 2012-2014. To our knowledge there are no national design support programmes for eco-innovation operative today in the EU. Furthermore, only countries with organisations belonging to the European Network of Eco-design Centres (ENEC) – Belgium, Germany, Spain, France, Italy and the UK – indicate that ecodesign, and hence eco-innovation, is an activity at a national level. The UK has a particularly high number of regional centres in England (CfSD, SDN), Wales (EDC) and in Scotland active in ecodesign largely through specialist research units attached to universities and supported by local or regional government activities. Other notable centres of activity around ecodesign and/or design for cleantech are OVAM, Flanders, Belgium; Efficienz-Agenteur North Rhine Westfalia; and LADEC Cleantech Co-

design Center, Lahti, Finland. New perspectives are emerging as to how design can be integrated into innovation and business support. For example, the SEE Platform's proposal for an 'EU Design Innovation System' (Whicher et al., 2015) and, at a more local/regional level in LADEC's Lahti design ecosystem (LADEC, 2012; Fuad-Luke et al., 2015) and the EcoDesign Centre, Wales (O'Rafferty & O'Connor, 2010) and Scotland (Whicher & Walters, 2014). However, a workable model for such a 'design ecosystem' is still in the early stages of development.

### 1.4.3 Micro level –Supply side: Design Service Providers

A wide range of organizations from the public, private, hybrid public: private and not-for-profit sectors were identified in an emerging typology of Design Service Providers (DSPs) in WP1 (Fichter et al., 2013, 87-88, Table 4) as providing design services as a potential means to support (eco-)innovation. As a reminder we define Design Service Providers as:

*... designers, design agencies/consultancies, design researchers, other professionals and their organisations offering services for the application of design practice and knowledge.*

For the supply side at the micro-level we are focusing on the design industry (designers, design agencies/consultancies) as other sectorial support through the Meso-level organizations is covered in sections 1.4.1 and 1.4.2. above.

In this section we are looking at the DSPs who are offering design services for MSMEs and startups in Europe. We aim at creating a picture on how DSPs work with MSMEs, what services they offer, and how they offer them. We focus on how MSMEs can access design services and what are the challenges for MSMEs and DSPs. We then look into more detail on the knowledge and implementation of eco- and sustainable design practices through DSPs and conclude with identified barriers where, for example, government driven interventions could improve the support system.

Specifically how does it support MSMEs and in particular eco-MSMEs and eco-startups?

#### Research questions:

1. Who are the DSPs offering design services for MSMEs and startups in Europe?
2. Who are the DSPs offering expertise in sustainable design for MSMEs and startups in Europe?
3. What services do they offer?
4. Are their services being promoted to MSMEs and startups ('eco' and 'non-eco')?
5. What are the barriers to implement eco-design/ sustainable design in MSMEs from a DSP perspective ?

#### 1. Who are the DSPs offering design services for MSMEs and Startups in Europe?

The European Design Report by BEDA delivers an overview on what the design sector looks like in Europe (BEDA, 2006). It is significant, that the majority of DSPs who offer

services to MSMEs, are small- to microenterprises themselves. “Design is one of the traditional fields of activity dominated by entrepreneurship and self-employment within a rapidly growing service industry” (Bartenstein in BEDA, 2006, 1). For example in Germany, the average design service provider has about 3 employees. Sweden and UK also have a majority of design offices with less than 5 employees (BEDA, 2006). The biggest sector of the industry is still graphic design/communication design with 56 %, then “followed by industrial design/product/fashion design and interior design/spatial design”(BEDA, 2006, 3). Design services are usually defined by the field of production (see, for example, Pitkänen, 2012). However, these categories are being challenged by emergent design approaches which transcend or go across these fields, such as design thinking and strategy (e.g. Brown, 2009) design management (e.g. Best, 2009, 2012); service design (e.g. Stickdorn & Schneider, 2012) and ecodesign (Fuad-Luke, 2002).

## **2. Who are the DSPs offering expertise in sustainable design for MSMEs and Startups in Europe?**

In regard to the DSPs offering services in eco- and sustainable design, they usually have a background in traditional design disciplines, such as industrial- and product design, graphic design, concept- and strategic design, service design and other design areas (Otto, 2002; Richardson et al., 2005). Several authors (e.g. Woolman & Veshagh, 2006; de Eyto et al., 2008) indicate that designers with knowledge in eco-/ sustainable design can have strong impact on a company’s ecodesign and innovation performance. Of course, the diverse range of SME companies and sectors generates a huge variety of needs which have to be addressed with different design expertise, ranging from easy to apply ecodesign tools and design support programmes, to in-house designers, as well as experts in specific areas such as Life Cycle Assessment, eco-materials and clean technology.

However, the majority of DSPs do not promote ecodesign services as evidenced via their promotional materials on their websites (Behirsch et al., 2011). Behirsch et al. claim that industrial design (ID) consultancies could become strong agents driving forward ecodesign implementation in companies, on a strategic and an operational level but do not presently do so. They investigate the development of ecodesign services in three countries: Germany, Australia and China and look at the way these ID consultancies promote ecodesign on their websites. They compared about 100 ID consultancies in each country, finding that although Germany’s legislation has a stronger focus on ecodesign implementation in comparison to Australia, Germany’s designers only had the second highest environmental awareness among the three countries, and China still has the lowest (Figure 8) (Behirsch et al., 2011, 1785). From the 100 ID consultancies reviewed in each country, 27 in Australia, 10 in Germany and 0 out of 100 in China offer ecodesign services on their website. (Behirsch et al., 2011) point out that these companies offering ecodesign still represent a minority in the design industry.

A critical finding by Deutz, McGuire, & Neighbour (2013) is that “many designers are not following good design practice, which limits the possibilities for radical environmental innovation” (Deutz et al., 2013, 117). This also partly reflects in the environmental

design behaviour of companies, as they often depend on the designers' knowledge in the area of ecodesign. However, it depends also on the impact the designer can take in the companies processes as well as "legal requirements, economic and supply chain constraints" (Deutz et al., 2013, 117).

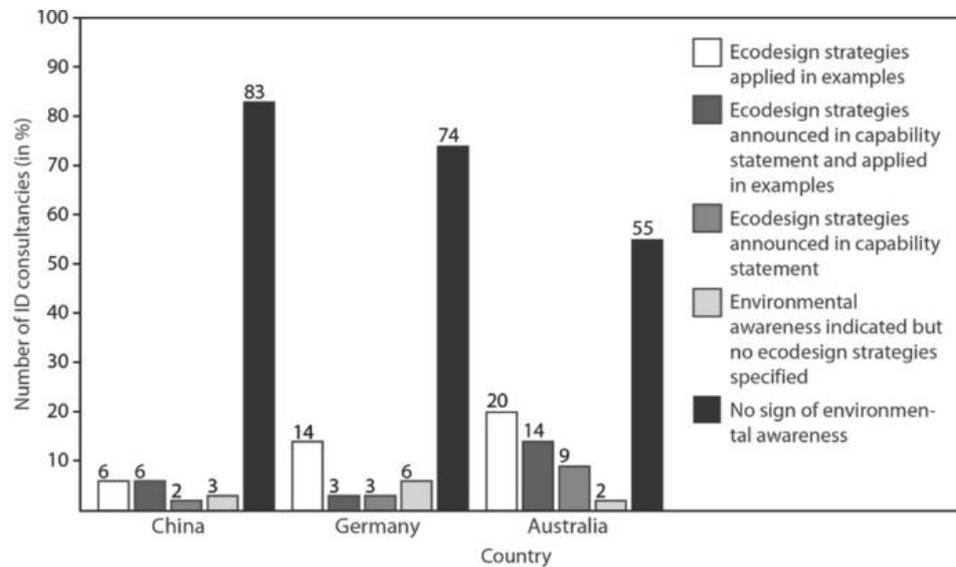


Figure 8: Comparing environmental awareness amongst the ID consultancies. (Source: Behrisch et al., 2011)

A study by Woolman & Veshagh (2006) investigating the design of the support system for SMEs in the UK, focusing on ecodesign and cleaner manufacturing has discovered a challenge for the support system in the UK. They found that the commercial design agencies, providing services in ecodesign and cleaner manufacturing, rather prefer offering their services to bigger clients with better chances for funding, than working with small or micro businesses (Woolman & Veshagh, 2006). This creates a gap in the support system for smaller enterprises. It is possible that similar issues are also experienced in other European countries, despite having active national design councils with design promotion and support programmes.

While eco-design is seen, alongside cleaner production and lifecycle assessment, as a core eco-innovation practice, especially for SMEs engaged in Sustainability Orientated Innovations (SOIs) (Klewitz & Hanson, 2014), it is clear that the design industry, especially the DSPs are less convinced about the need to provide eco-design or sustainable design services. This might indicate an uncertainty about the state of the market for these services (lack of demand) and/or a lack of interest in the green market or economy.

### 3. What services do they offer?

As stated above, the European design industry is still strongest in offering graphic design (56%) followed by industrial and product design, fashion design and interior design/spatial design (BEDA, 2006, 5).

In the Finnish context we can see through the study “Design ROI<sup>9</sup>” that the majority of design agencies see their future in more intangible services, such as concept design and service design. The activities which they are currently practicing most include: Concept Design, Product Design, Product development, Graphic Design and Strategic Design (Pitkänen, 2012). Besides these they generally offer: Exhibition Design, Visual Identity Design, Service Design, Environmental/Interior Design, Package Design, Clothing and textile Design, Technical Design, Communication Design, Interface Design, Model Construction, Usability studies (See Figure 9) (Pitkänen, 2012) . It is interesting to note that the fields of ‘ecodesign’ or ‘sustainable design’ were absent from this survey, perhaps indicating a lack of awareness of these design services and/or lack of demand for these services in Finland.

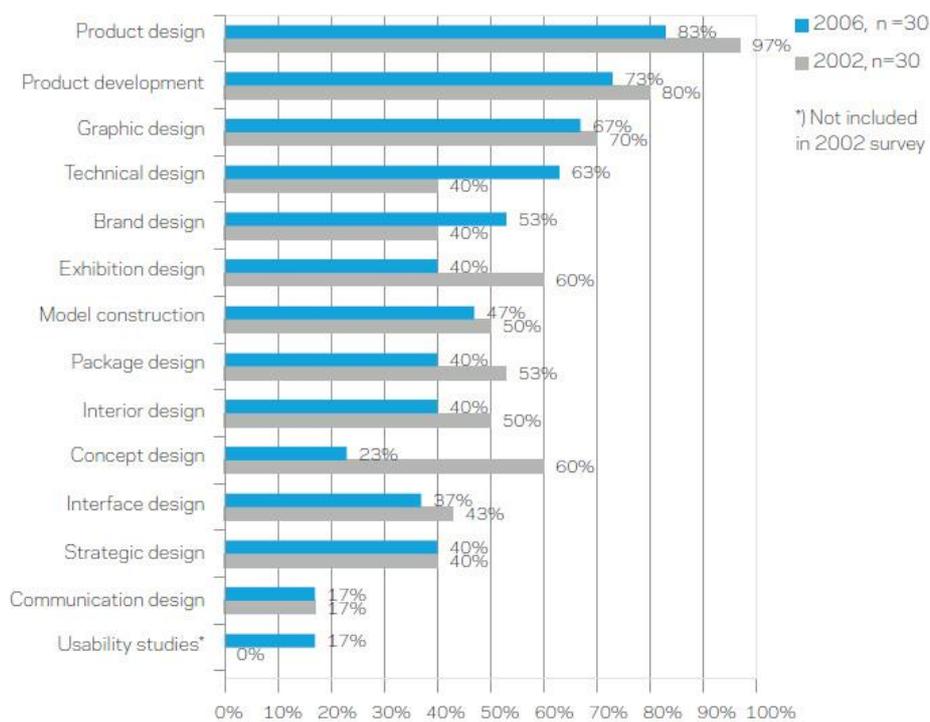


Figure 9: Design services offered according to Design ROI. (Source: Holopainen and Järvinen, 2006 in Pitkänen, 2012 )

<sup>9</sup> ROI stands for 'Return on Investment'

#### 4. Are their services being promoted to MSMEs and startups ('eco' and 'non-eco')?

Behirsch et al. (2011) note that the majority of industrial design agencies do not recognize the economic potential in advertising ecodesign services. Currently ecodesign tools and methods are still strongly located within an engineering environment rather than being applied by designers (Behirsch et al., 2011). Many studies (e.g. Lindahl, et al., 2003; van Hemel & Cramer, 2002; de Eyto et al., 2008) illustrate that ecodesign tools in general are too complicated to be applied by the staff of the SME or by a product designer. However, ecodesign and sustainable design are still believed to have a strong possibility in finding “space for change” in SMEs and impact on better services and products (de Eyto et al., 2008, 340-341). There is a lack of studies on the general characteristics of ecodesign practice and its implementation, as most papers tackle case specific issues and best practices in respect to certain methods or products (Deutz et al., 2013). However, a recent report compiled by the European Network of Ecodesign Centres (ENEC) founded in 2012, reviews the motivations for and barriers to ecodesign in SMEs (Prendeville et al., 2013). It reveals that internal factors such as the SME's business culture and capability interact with external factors, such as infrastructure, networks and institutions in controlling motivation and raising barriers. As most designers and design agencies operate as micro-SMEs perhaps they face similar motivational and infrastructural challenges.

We also did a small desk study in August 2015 looking at design centres in Germany, Sweden, Finland, Austria, Belgium and the UK to see how they presented 'ecodesign' and 'sustainable design' and whether we could easily find access to design agencies offering ecodesign services. The main focus through these design centres is on the promotion of value and benefits through design, and it is only a secondary focus to provide contact between design agencies and possible clients. We only found two examples of designer directories on these organisations' websites where it was possible to locate specialist designers and agencies for eco-/sustainable design. The Swedish Industrial Design Council – SVID<sup>10</sup> offers a directory for finding a DSP including: the choice of “Experience in sustainable design” and “Experience in academic research”. Design Wales<sup>11</sup> offers support programs for ecodesign implementation through projects, but also has the option to search the designer's directory by the term 'ecodesign'.

If an MSME was looking for a design service they might intuitively go to the organizations in their national territory representing professional designers. We tried searching for designers through four professional design associations in the UK and Finland<sup>12</sup>, two countries with well-developed design policies and active design centres

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<sup>10</sup> <http://www.svid.se/en/>

<sup>11</sup> <http://www.designwales.org/>

<sup>12</sup> In the UK we looked at the Chartered Society of Designers, [www.csd.org.uk](http://www.csd.org.uk) and the Design Business Association, [www.dba.org.uk](http://www.dba.org.uk), both not-for-profit organisations. In Finland we looked at Ornamo, the Association of Finnish Designers, [www.ornamo.fi](http://www.ornamo.fi) and Design Forum Finland, [www.designforum.fi](http://www.designforum.fi).

promoting the value of design. In the UK, the Chartered Society of Designers website had a 'find the designer' link where you can search by discipline (design management, exhibition, fashion, graphic, interactive media, interior, product and textile) but no category for ecodesign or sustainable design. The Design Business Association in the UK had a link to 'Find me a design agency' but, again, none of the subject fields mentioned ecodesign or sustainable design (the fields were branding, digital, exhibitions, graphic, interior, internal communications, packaging, product and service/wayfinding or 'other'). The situation in Finland was even more challenging. Ornamo, the Association of Finnish Designers, despite having over 2000 members, has a portfolio of just 30 designers/artists but they are not classified by category. Design Forum Finland does not have a directory of Finnish designers but instead publishes a Yearbook featuring the best designers. In this snapshot investigation it seems that organizations representing designers in two leading 'design' EU countries, which have a well-developed policy, and significant design promotion and support activities (see Section 1.4.2), do not make it easy for prospective clients, including MSMEs, to locate a designer for specific tasks, such as ecodesign or sustainable design.

We also looked at an example of a worldwide design directories and chose "core 77", a very popular online magazine and international community. In their directory it is possible to choose between fields and countries such as Germany, Sweden, Finland. Though ecodesign or sustainable design is not in their direct list of expertise provided by DSPs. However, if we consider fields such as strategic consulting and research as part of the ecodesign process, one can find IDs which have e.g. ecodesign in their capability listings, but this requires certain kind of knowledge of the terminology, which the majority of MSMEs, and even designers, might not have.

##### **5. What are the barriers to implement eco-design/ sustainable design in MSMEs from a DSP perspective ?**

A recent survey by the European Network of Ecodesign Centres (ENEC), shows that economic factors remain a consistent constraint and decrease motivation in business to apply ecodesign (Prendeville et al., 2013, 7). Significant barriers to ecodesign are found in the business culture and capability within MSMEs – internal factors – and this is compounded with external factors such as lack of international markets and networks, poor institutional coordination and lack of infrastructure (Prendeville et al., 2013,13). Even though, the industry has seen some adoption of ecodesign, one of the major issues identified here, is the complexity of the ecodesign tools, which are often rooted in the engineering field. This creates a challenging process for the designers, often lacking the expertise to implement ecodesign within a MSME. The processes are highly complex, and combined with a lack of knowledge in the field, this creates a barrier to designers *and* MSMEs (de Eyto et al., 2008, 1). The designers are also facing a challenge by working within a strictly framed design space (Deutz et al., 2013). This leads to the practice of "favouring familiar solutions to problems" and thus reduce the chance of breaking from the current practice towards new sustainable solutions (Deutz et al., 2013, 127).

Also in respect to the national design education, the level of awareness about design services can affect to the “perceived importance of design at governmental level”, which responds to for example the implementation of design support services programs for MSMEs (Cawood et al., 2004, 75). Cawood et al. (2004, 76) also state, that there is a lack of design management in SMEs, which makes it even more challenging for designers, to first of all prove that “design support does make a difference”. Related to this is the challenge of misunderstanding the terminology, due to a lack of knowledge and awareness about design services (Pitkänen, 2012).

Evans, Wood, & Harrison (2010, 3) also found a mismatch in business strategy by the two parties: DSPs and MSMEs, as designers point out that they had to “maintain or increase the value of their work in order to maintain and grow their business”, where the companies in comparison aim to reduce the “design costs on any new product design development in order to maximize the business efficiency of their new product”. This finding clearly relates to the issue of small DSPs providing services to small or micro businesses. They are equally aiming to create value, strongly challenging each other in price and offer, as both are likely to struggle with day-to-day challenges of small companies.

### **Key Findings**

Eco- and sustainable design still seem to be applied as a minor discipline amongst a small selection of DSPs (Behrisch et al., 2011). This can first of all relate to the lack of experienced designers with knowledge in ecodesign and secondly that the majority of tools for ecodesign is very complex and time consuming to apply, for designers as well as within the companies production processes (e.g. Lindahl et al., 2003). For ecodesign to become more effective, “sustainability needs to be established as a formal functional requirement within a structured design process for all products” (Deutz et al., 2015, 117). Besides that, the biggest challenge for ecodesign implementation is recognized as the “small-small” problem, which refers to the challenge that micro DSPs, provide services for micro business, both facing the challenges of small enterprises on a daily basis. This may lead to low investment in design from a MSME perspective, and thus low opportunity for deeper design impact towards developing innovative sustainable solutions. The lack of perceivable economic benefits might be restricting uptake of ecodesign/sustainable design in the MSMEs but also in many DSPs which are also MSMEs themselves, because they can’t see a ready market for these services.

Through the literature review, it also became clear, that the majority of studies and papers in regard to ecodesign implementation in MSMEs are related to specific case study examples of products or methods. There has been certain country specific studies on the implementation of ecodesign, mostly where they have a stronger agenda for design already, such as Sweden, UK, Belgium, Denmark, the Netherlands and Germany, but an up to date holistic overview of the European market is urgently needed as the last study on ecodesign capacity in Europe, “Eco-design - European State of the Art” report, is from the year 2000 (Tukker et. al., 2000).

The apparent lack of ecodesign/sustainable design capacity in the European design industry at present might indicate that DSPs:

- Lack expertise and/or the expertise is being currently provided by specialist design engineers
- Lack demand from MSMEs
- Lack belief in a growing market for these services e.g. signals from government and industry about the 'green economy' are weak
- Lack incentives, from government or industry or clients, to extend their present design services

Since ecodesign is a core eco-innovation practice (Klewitz & Hansen, 2014), this situation must be a concern to (eco-)innovation policy makers.

#### **1.4.4 Micro level – Demandside: MSMEs and eco-startups**

##### **Introduction**

In this section we examine the demand side: eco and non-eco MSMEs and startups, their needs and perception regarding design and sustainable design as well as the opportunities and barriers for its implementation.

As a first step we identify the differences in the kind of enterprise we are aiming to support. Is it a standard *enterprise*, which is a business organisation directed towards profits or, is the enterprise already trying to become greener, then we speak about a *greening enterprise*. A *greening enterprise* is an already established enterprise which is aiming or trying to implement eco- and/or design strategies within their current processes to become greener, usually by developing more eco-efficient / eco-effective products and/ or implementing environmental management practices across their operations. The next level in eco-development is an *eco-enterprise* which was already founded with an eco- purpose, or is already focused upon eco- activities, that wants to be even greener. These eco-enterprises already work with eco- and/or eco-design strategies, but want to improve their performance to become front-runners in developing eco-innovative products and services. (see e.g. Bocken et. al., 2014; Fichter et al., 2013, 143). Over that an *eco-enterprise* has similar or different needs for further development of its performance than a *greening enterprise*, which is improving their eco-efficiency or environmental performance. Generally we can say that *enterprises* and *greening enterprises* have a stronger need to gain a general understanding for the benefits of implementing eco- and sustainable design strategies to form a vision for their enterprise which can be supported throughout the company and be introduced to appropriate tools and methods suitable for their specific business practices (see e.g. Woolman & Veshagh, 2006.; Charter & Clark, 2007). We can see a general need for support among all MSME's, no matter if "eco" or "non-eco", in networking and collaboration, advice and consultation in upcoming greener business areas, support in eco-marketing and market research, information on recent developments in the sector

for materials and services, as well as support in finding suitable funding resources for eco-product/service development (Charter & Woolman, 2012).

With this research we aimed to identify more specific design support needs, according to the kind of enterprise we are dealing with. It is most important to have clear picture about the needs and wants of different kinds of enterprise in order to offer sufficient support, although, there seems to be a gap in the literature about the needs of MSMEs for design and/or sustainable design. A very recent study by Klewitz & Hansen (2014) identified a research gap regarding sustainability oriented innovation and the role of SMEs in industry and transformation. They also mentioned that the literature is very scattered across different disciplines and research communities (Klewitz & Hansen, 2014, 58).

For gaining a sufficient overview on the needs, perception and current support provided in the area of design and sustainable design for MSMEs, we pose the following questions:

**Research questions:**

1. How do MSMEs perceive 'design' and do they see it as beneficial to their enterprises?
2. What design services do MSMEs want/need?
3. What sustainable design services do MSMEs want/need?
4. What design services are they accessing and when in the innovation cycle?
5. What sustainable design services (eco-design, DfE, DfS, SPD etc) are MSMEs accessing and when in the innovation cycle?
6. What are the motivations, opportunities to take up of design?
7. What are the barriers to take up of design?
8. What are the motivations and opportunities to take up of sustainable design?
9. What are the barriers to take up of sustainable design?
10. How effective are these design services?
11. Are the design services combined or integrated with other support services (e.g. entrepreneurship, green marketing)?

## 1. How do MSMEs perceive 'design' and do they see it as beneficial to their enterprises?

### The European View

When enterprises start investing in design, it is shown that it results in a greater profitability of up to 50% increase in turnover (Design Council UK, 2012). However, even though design has clearly illustrated its beneficial impact on company and national performance (Walsh, 1996; Hertenstein and Platt, 1997 in Boja de Mozota, 2002), the industry is struggling to communicate the added value of design to MSMEs (Evans et al., 2010). At first, companies consider involving design for marketing purposes, to distinguish their enterprise from its competitors, on second stage is the launching of a brand, design leadership or the arrival of a new technology (Boja de Mozota, 2002).

A study from 2001 by BEDA - Bureau of European Designers' Associations shows that the perception about the advantages design can bring differs according to the size of the enterprise, mainly if the firm has more than 200 employees. "Between 65 % and 73 % of larger companies believe it can help develop new markets, improve quality and image and increase profits and turnover. However, in smaller firms only between 40 % and 47 % share those feelings" (BEDA , 2001, 5). This change in perception especially in MSMEs is often related to the owner-manager who is unwilling for change or unaware of the benefits of design (Millward et al., 2006). A study by Woodcock et al. (2000) indicates that SMEs "typically avoid formal design procedures" and lack determination "to bring about change due to the SME managers' 'over-optimistic view of their own performance'" (Woodcock in Millward et al., 2006, 4). Beyond that, smaller enterprises are facing several day-to-day struggles, which prevent them from seeing the long-term benefit when investing in design (Lindahl et al., 2003). A paper by Dorothy Evans and others discovered, based on interviews with six UK based SMEs and Designers, that the perception where design adds value, differs between designer and enterprise and that the "added value is a complex one and the perception of added value is variable depending on the type of company and limited purely to financial matters" (Evans et al., 2010). The above observations suggest that it is generally understood that design *can* contribute to financially measured value (e.g. reduced costs, increased profits, increased market share etc.) but that design's contribution of value to other less tangible and long-term returns (e.g. around 'brand value', brand penetration in the market, company image and engagement of customers through better products, services and/or communication, improved new product development (NPD), increased efficiency of production or service, etc.) is less well perceived.

### The Finnish Perspective

According to a research study on the Return on Investment (ROI) through Design – Design ROI (Pitkänen, 2012), facilitated in Finland, companies perceive design as mainly concerning product design and graphic design. This may explain the reasons identified in a study by the Association for Finnish work that companies see no reason to implement design services, as they do fine without them (Figure 10) (Pitkänen, 2012, 40). The majority (59%) of MSMEs in Finland, see design as not relevant for their industry. The most recent report by the Finnish Design Association *Ornamo* points out

that only about 20% of the Finnish enterprises make use of design and about 60% to 70% of the MSMEs state that they do not actively use design in their everyday operations (Ornamo, 2013). For the majority of Finnish companies the financial benefits of investing in design remain unclear, and are difficult to prove to customers. They feel that the services are too expensive and the benefits too vague. Again, it was mentioned that a problem was justifying the application of design to the management (Pitkänen, 2012, 40).

### Why is design not relevant to your company? (n=174)

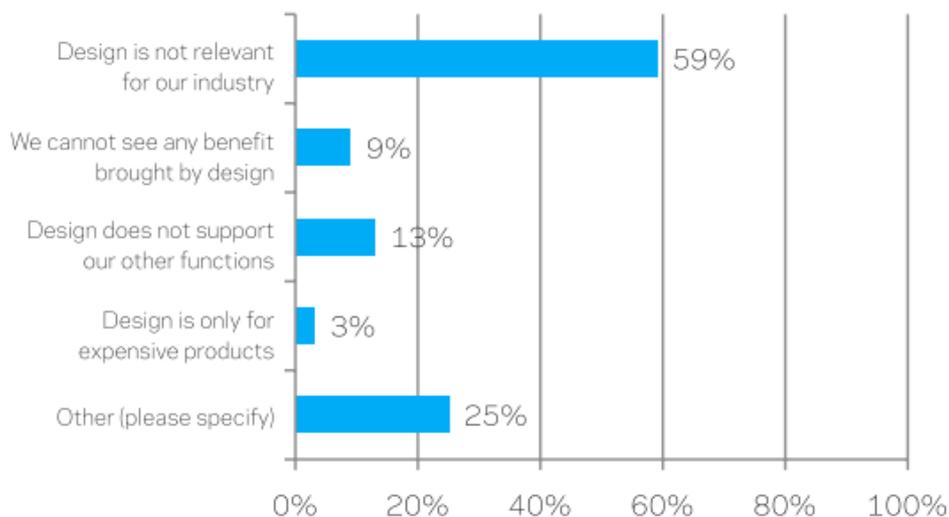


Figure 10: Reasons stated by Finnish SMEs for not using design services. (Source: Association of Finnish Work, 2012 in Pitkänen, 2012)

## 2. What design services do MSMEs want/need?

This question is rather difficult to answer, one reason for this could be, because the terminology used about design, varies widely. The same applies when talking about the different design fields and services. Therefore, it might be difficult to pinpoint certain areas established e.g. by the design research or the professional design community, as they use different terminology for methods or services than used or needed by the SMEs (Klewitz & Hansen, 2014). Another issue is that there is little information on SMEs' specific needs and how they can be addressed to improve performance (Muller et al., 2014). When it is available it focuses on what SMEs see as the most challenging problems, which in turn, can be translated into generic rather than specific needs (Muller et al., 2014) such as access to markets, financial capital and skilled labour. This however does not refer to specific design services needed. One of the key issues is that SMEs originate from diverse backgrounds and sectors and greatly vary in size, resulting in them having unique, bespoke needs as well as generic needs and 'the distinctiveness of SMEs affects their support needs and how such support is delivered if it is to be effective' (North et al., 2001).

Another interesting aspect is the lack of knowledge about the possibilities the design industry can offer (Evans et al., 2010), this can also lower the actual need and request for certain services, as MSMEs are simply not aware of the services, and what they could do for their companies (Lindahl et al., 2003). In their paper Evans et al. (2010) are discussing the “Value added through the Design Process”, they find out based on a survey and interviews with designers and SMEs, that the majority of SMEs have started to request design services mostly in the past five to ten years (Figure 11) much later than it was offered by the designers (Evans et al., 2010). This could lead to the assumption that the need for those services has been there before, but the knowledge among MSMEs about the benefits of design (as opposed to other support services or options) was missing.

Services	The last 20 years	The last 15 years	The last 10 years	The last 5 years	No Response
Sourcing (components, suppliers, manufacturers)	●●●	▲	▲	▲●●	▲▲▲
Prototyping (samples, rigs, mock-ups)	●●●	●	▲▲	▲▲▲ ●●	▲
Research (market, competitors, end-user)	●		▲▲▲▲	▲●●●	▲ ●
Strategy (Design, NPD, brand)	●		▲▲	▲▲ ●●	▲▲ ●●
R & D ('blue sky', new technology, materials, processes)	●●		▲	▲▲▲▲	▲ ●●
Concept design	●●●	●	▲▲	▲▲▲ ●●	▲
Testing (consumer, technical, performance)	●●		▲▲▲▲	●●	▲▲
catalyst for change	●●		●	▲ ●●	▲▲▲▲▲ ●
Project management /team leadership)	●●●	●	▲	▲ ●●	▲▲▲▲
Related business process improvement (marketing, NPD, etc)	●	●	▲ ●	▲▲ ●●	▲▲▲ ●
Design development (detail design)	▲ ●●●	●	▲▲	▲▲ ●●	▲
Problem-definition (brief-writing)	●●●		▲	▲▲ ●●●	▲▲▲
Manufacturing liaison ('product ionization' and management)	▲▲ ●●●		▲ ●	●●	▲▲▲
QA/QC (of final product and production process)	▲ ●●	●●	▲	●●	▲▲▲▲
Idea generation (brainstorming, invention)	▲ ●●●			▲▲▲ ●●●	▲
Identifying and scoping the project	●●		▲	▲▲ ●●●	▲▲▲ ●
Marketing Liaison	●●●		▲▲	▲ ●●	▲▲▲ ●
New Technologies	▲ ●●	●	▲	●●●	▲▲▲▲

▲ = SME's response  
● = Designers response

Figure 11: Design services offered by DSPs and requested by SMEs over the span of 20 years. (Source: Evans et al., 2010)

Note: NPD = New Product Development; QA/QC = Quality Assurance/Quality Control; R & D = Research and Development.

### 3. What sustainable design services do they want/need?

For the sustainable design services, it is likely that the same requirements apply as for traditional design services. Generally speaking, the industry and the DSPs fail to communicate their value, to create a demand from the MSMEs (Lindahl et al. 2003). Based on a series of interviews conducted with fifteen persons at ten SMEs in Sweden, Lindhal et al. (2003) found that due to a lack of knowledge within the area of Design for the Environment (DfE), a lack of demand or need is resulting. They analysed the use of different DfE tools and methods, and came to the conclusion that the majority of tools are too complex to be applied in the everyday use and practices of the SMEs. In the interviews they also found out, that the SMEs themselves would wish for tools that are first of all “easy to use”, be able to be adjusted and integrated “into the company’s existing working procedures”, “give structure to the product development process” and be flexible enough to react to the company’s needs (Lindahl et al. 2003, 726). They recognised as SME needs, for example, qualified designers with knowledge in DfE, but also the need for more time and resources for a long-term strategy development (Lindahl et al. 2003, 727). Additionally, the lack of customer request for sustainable products, reinforces the low interest towards changing the way the companies are working, they still perceive DfE as a costly investment with uncertain return on investment (Lindahl et al. 2003, 726).

A paper by Woolman & Veshagh (2006) comparing the results of different UK wide surveys in regard to the design support system for manufacturing SMEs for ecodesign and cleaner production showed the majority of manufacturing SMEs in the UK wish for sustainable design services which are flexible in access, such as self- study manuals, information via the internet, but supported through local workshops or experts (Woolman & Veshagh, 2006).

The report on the European State of the Art in ecodesign practices (Tukker et. al., 2000), has identified one important key aspect for a successful implementation especially in regard to SMEs. SMEs are smaller enterprises which are rather closed and thus take advice towards more eco-innovative processes most likely from people they trust. This suggests a “hands-on approach over a longer period of time” within a good network and best practice enterprises to act as advisors (Tukker et al., 2000, 19). This finding can also be translated into a need for good networks to exchange on best practices and a trustful advisor which is on the same level with the SMEs, this conclusion is also supported by the findings of the CfSD below. The Centre for Sustainable Design in the UK offered from 2009 to 2011 one-to-one support for 30 SMEs responding to their needs with different programs. Charter and Woolman (2012) summarise findings from these programs, namely: EcoMind and SUSCIN (Sustainable Supply Chains through Innovation) projects. Profiling the most present needs of SMEs in EcoMind showed that 69% wanted to develop new markets and 49% needed finance for commercialisation.

SUSCIN’s top three benefits of the programme [including training workshops, one to one business support, meet the buyer events, Greenthink for lining resource and energy

efficiency to product and service innovation and forward commitment procurement public services] based on 267 participant comments, were :

- Networking/collaboration (33%)
- New business/product/services ideas (19%)
- Applying sustainability to products/services/business (10%)

Other benefits included: Further motivation, assistance with focus, proposal for developing business strategy and comments on the ability to better apply 'intellectual property', buyer engagement, improvements in marketing, and planning of next steps.

Boks (2006, 1341) points out a list of success-factors to successfully implement ecodesign in an enterprise. These actors can also be interpreted as needs for support and are in line with what was identified by Lindahl et al. (2003) in Sweden such as:

- *Customized ecodesign tools tailor made for company's needs*
- *Good international network*
- *Environmental design guidelines, rules and standards that are very specific to a company*
- *Training consumers and customers in environmental issues*
- *Good environmental education and training programs for all product development personnel*
- *Presence of a so-called 'environmental champion'*

#### **4. What design services are they accessing and when in the innovation cycle?**

This question is a challenging one, as we stated before, the design needs depend on the type and size of SME, and therefore we can only point out that there is great potential for increased use of design amongst SMEs which has not yet been exploited enough (Pitkänen, 2012, 34). The Return on Investment study amongst Finnish companies indicated that 53% have invested in Design Services in the year 2012 (Association for Finnish Work 2012 cited in Pitkänen, 2012, 35). They discovered based on a study by the Association for Finnish Work (2012) that the majority of companies doing business outside of Finland is more likely to invest in design services, especially focusing on branding and visual identity (Pitkänen, 2012, 46). In general they illustrate a trend towards investment in design services for branding, online presentation and the development of future products (See Figure 12).

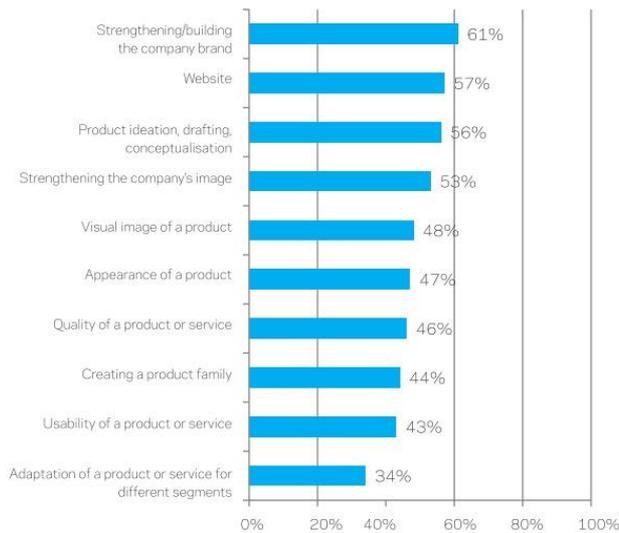


Figure 12: What will future design investments focus on. (Source: Association for Finnish Work 2012, in Pitkänen, 2012)

Deutz et al. (2013) point out in their study on UK based manufacturing companies and SMEs, that the designer is often only able to work within a small design space, resulting in similar product design with small improvements. More than half (60%) of the new products on the market include elements from already existing products. They also facilitated detailed interviews which showed evidence that it is rather unusual to have a formal concept design process and that there is a stronger emphasis on the final stage of the design instead of refining the earlier concepts (Deutz et al., 2013, 122). This can also lead to the issue that environmental aspects are left out at the early development process (Deutz et al., 2013, 127). Some of the companies they interviewed had developed great environmental designs, however they seem to have created these through fixing issues on already existing products and thus limiting the chance for real innovation (Deutz et al., 2013, 127).

##### **5. What sustainable design services (eco-design, DfE, DfS, SPD etc) are they accessing and when in the innovation cycle?**

We are addressing 'sustainable design' as 'any design activity such as ecodesign, Design for the Environment (DfE), Design for Sustainability (DfS), sustainable product design (SPD), sustainable service design (SSD), or sustainable Product Service System (PSS), whose main priority is to reduce environmental impacts and improve resource efficiency while giving simultaneous attention to ethical, social and economic considerations.' (*SHIFT, Nodus, working definition* – a composite definition compiled from Tischner, 2001 and Fuad-Luke, 2002). Based on the findings from Bocken et al. (2014) we can point out that it is best to implement ecodesign methods at the first stages, so the Front-End of Eco-Innovation, to reduce the environmental impacts from the beginning, the further in the development, the harder it gets to implement changes. However there has been little research conducted in this area (Bocken et al., 2014).

## **6. What are the motivations, opportunities to take up of design?**

The National Centre for Product Design & Development Research (PDR) at Cardiff Metropolitan University, Wales, UK has gathered material based on over 20 successful Knowledge Transfer Partnerships (KTPs) with SMEs. Based on these case studies they published an analysis, which indicates different factors for a successful implementation of design in SMEs. Generally there is a great potential for SMEs to apply design in their practices, as they are flexible enterprises, with horizontal structures, which can allow fast decision making (Millward et al., 2006). However, they often lack the resources or skilled employees to change and take an emerging opportunity. The main motivating or restricting factor is in most cases the (lack of) interest in design implementation by the owner/manager. With him/her the successful execution stands or falls. Other factors are a good culture for change and innovation within the company as in the majority of cases the staff benefits from the retraining, processes are made more efficient quality is driven forward. "SMEs are inventive organizations, and, as such, are receptive to the use of in-house design capabilities to control their product development activities" (Millward et al., 2006, 11). They conclude, that in order to effectively implement a design framework within SMEs, a two-phase approach is recommended. On the first phase, acknowledging the owner/managers point and the possible resource constraints the enterprise is facing, to enable ways for overcoming those barriers. In a second phase, it is important to implement a nourishing environment and culture for innovation and embed effective design and development processes (Millward et al., 2006).

## **7. What are the barriers to take up of design?**

SMEs often benefit from a strong owner/manager personality. However, in the case of design driven innovation, this strong personality can also be a primary barrier, preventing a successful implementation of design practices in the enterprise. This might be due to a lack of knowledge, or unrealistic expectations what design can do. This lack of capabilities is a key barrier (Prendeville et al., 2013). The majority also perceive design as mainly concerning product design and graphic design. According to Holopainen and Järvinen (2006) there is a major lack of understanding of design in Finnish enterprises and the potential of design to improve business, has not been spread very well among the companies. SMEs and low-tech firms especially lack information on how and where to find design services (Pitkänen, 2012, 40). It appears to be unclear what benefits design can bring especially to SMEs, which is well illustrated in the Figures 12 and 13 from the study: *Design ROI*. Enterprises feel that design is not relevant for them, as they do fine without it (Pitkänen et al., 2012).

## Obstacles to applying design

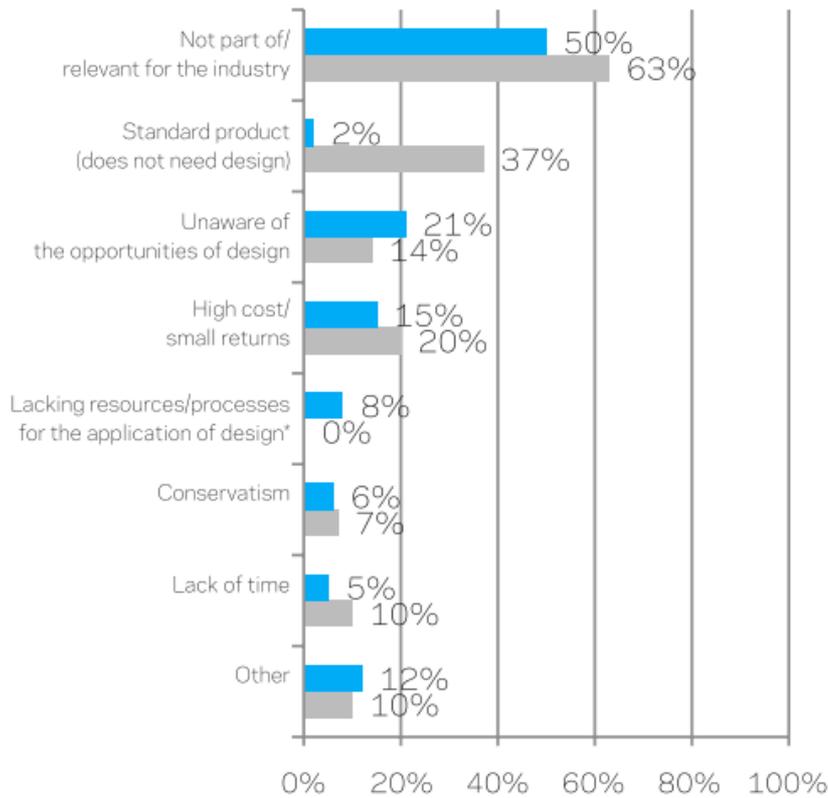


Figure 13: Obstacles to applying design in SMEs. (Source: Holopainen and Järvinen, 2006 in Pitkänen, 2012)

## Why has your company not invested in design in the last two years? (n=578)

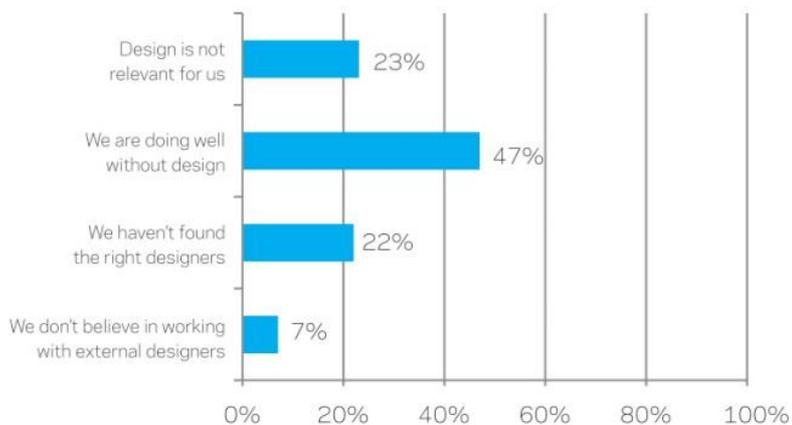


Figure 14: Reasons for not investing in design. (Source: Association for Finnish Work, 2012 in Pitkänen, 2012)

Resource limitations are another challenge identified by the National Centre for Product Design & Development Research (PDR) in the UK. Sometimes, SMEs also rather aim for a short-term survival instead of investing in the long-term benefits of design (Millward et al., 2006).

In a study by Bocken et al. (2014) 42 self-defined eco-innovative companies in the Netherlands were interviewed regarding the *Front End of Eco-Innovation process*. One question was tackling which skills they perceive as most important for a successful eco-innovation team. The ranking was the following: 1) Creativity skills 2) Engineering skills 3) Environmental knowledge 4) Design skills 5) Project management. Design is not perceived as among the most important skills when forming an innovation team, whether it is related to ecodesign or standard new product development (NPD).

### **8. What are the motivations, opportunities take up of sustainable design/ ecodesign?**

Through the literature we could identify certain areas where ecodesign is able to support the development of more sustainable products within the companies. Generally speaking, these are internal stimuli, such as innovation potential, product quality and market potential build a stronger driving force for ecodesign, than external factors, such as customer demands or legislation (van Hemel & Cramer, 2002). Similar results were published by The European Network of Ecodesign Centers (ENEC)<sup>13</sup> who identified three motivating factors for Ecodesign: the **business culture**, where a feeling of ownership and responsibility among the company owners is most important and the **business benefits** implying cost savings and increased sales and **financial benefits** for the company (Plouffe et. al., 2011). It implies a prioritization of cost reductions through for example improved waste management systems as well as seeing ecodesign as a tool to foster innovation such as improvements in product quality and new market opportunities. The main external factor is **legislation**, which is not seen as a motivating factor, as it relies on external pressure. Bocken et al. showed in a study from 2014, conducting a survey of 42 SME eco-innovators in the Netherlands, that the main reasons for these companies are (1) potential revenues and (2) technological advancements (Bocken et al., 2014). In his paper: *Success Factors for Integration of Ecodesign in Product Development*, Johansson (2002) points out that competence (for example education and training) and motivation (for example a new mindset) are very specific to ecodesign and its successful integration in companies. He identified, based on a literature review six areas of concern and 20 different factors for a successful integration of ecodesign in product development. The areas of concern are the following: management (e.g., clear goals); customer relationships (e.g. training of customers); close supplier relationships, development process (consideration of eco-design at the beginning of product development), competence (e.g. education, training, experts) and motivation (e.g. mindset) (Johansson, 2002). Boks (2006) illustrates that support from the management, customized ecodesign tools, environmental checkpoints and several other success factors are highly important for a sustainable product development process. Besides

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<sup>13</sup> <http://www.ecodesign-centres.org/>

those, it is key to integrate sustainability goals in the design brief, and offer education and training for the use of ecodesign tools (e.g. Petala et al., 2010).

Van Hemel & Cramer (2002) explored the internal stimuli including reasons why the ecodesign option is interesting, regardless of the influence of external parties. They observed that the company:

1. expects a reduction of the environmental impact (commitment to reduce the environmental impact)
2. expects a reduction of costs (lower cost-price of the product)
3. expects an image improvement (leading to competitive advantage)
4. expects new market opportunities (competitive advantage: increasing actual market share/access to new markets)
5. expects an increase of the product's functional quality
6. expects a synergy with product requirements other than functional quality demands or low costs
7. expects a commercial benefit, other than those mentioned in 2, 3, 4, 5 or 6 (e.g. synergy with care systems, risk reduction, increased efficiency in production, storage, distribution, etc.)
8. regards the option as an interesting long-term innovation opportunity
9. perceives another internal stimulus

#### **9. What are the barriers to take up of sustainable design?**

Barriers identified for a successful implementation of sustainable design, are on the first level internal factors (culture & capability) and external factors (infrastructure, network, institution) (Prendeville et al., 2013). Boks (2006) identifies the internal factors as the main obstacles to effectively implement ecodesign in a company. He refers to them as the soft side of ecodesign: social, psychological and intangible processes (Boks, 2006). Such can be for example missing communication skills e.g. lacking collaboration between different departments. The soft side of ecodesign addresses “the presence of socio-psychological factors that play a role in the internal value chain of a company (Boks 2006, 1348)”. Boks (2006) points out, that this has not been identified or researched in depth within the literature. The majority of references found in the area of motivations and barriers to ecodesign are written mostly from manufacturing SMEs perspective and only a few with studies have been investigating on design consultancies and larger companies (Prendeville et al., 2013). For example Woolman & Veshagh (2006) published a paper on how to design support for manufacturing SMEs approaching eco-design and cleaner production. They based their findings on diverse surveys conducted in the UK. The three main barriers for manufacturing SMEs in the UK

were identified as “lack of capital”, “long pay-back period and high costs” and a “lack of customer demand” (See Figure 15) (Woolman & Veshagh, 2006).

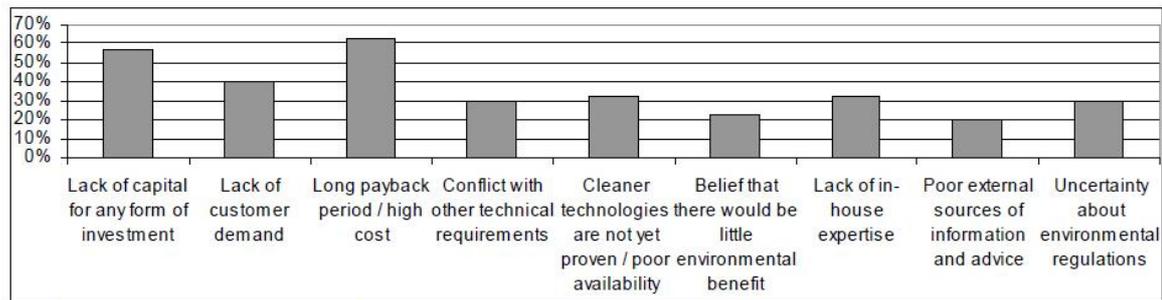


Figure 15: Barriers to adopt cleaner production or eco-design processes in manufacturing SMEs in the UK (Source: Woolman & Veshagh, 2006)

Even though, there are a great variety of ecodesign tools, they currently are not planned for an easy integration in enterprise structures, therefore they remain tools for experts (Le Pochat et al., 2007). Baumann et al. counted more than 150 ecodesign tools just for the design process (Baumann et al., 2002 in Le Pochat et al., 2007). These eco-design tools are not useable without certain expertise. Therefore they require adaptation for non-experts, to ensure a full integration of ecodesign methods within the company practices (Le Pochat et al., 2007).

Another challenge is the terminology. Even though, there are various design approaches for more sustainable solutions, the language and terminology is diverse, which can create certain confusion. Generally, SMEs can benefit from these different sustainable design services, but it requires a more systematic framework of support to identify the suitable sustainable design methodology for the diverse types of SMEs (Coley & Lemon, 2009).

van Hemel & Cramer (2002) also looked at ecodesign barriers in assessing the motivation to either realise or reject the company’s suggested ecodesign improvement options. They found that the key barriers standing in the way of the suggested ecodesign improvement options were:

1. Doubt about the environmental benefit of the option suggested
2. The company does not feel responsible for realising the option
3. The option only becomes relevant if supported by environmental legislation
4. The option only becomes relevant if supported by market demands
5. The option creates a commercial disadvantage for our company
6. The option creates a conflict in connection with actual functional product requirements
7. The option is not a challenging technological innovation opportunity for our company

8. Realisation depends on available technical possibilities; at the moment there is no proper alternative

9. The company regards new investments in redesigning the product in question as fruitless

10. The company lack sufficient time to realise the option in question

11. The company lacks sufficient knowledge to realise the option in question

12. The company perceives another type of barrier (van Hemel & Cramer, 2002)

In conclusion we summarise the main barriers and opportunities for ecodesign/sustainable design found in the literature for an SME internally and externally (Table 10).

Barriers		Opportunities	
Internal: social, psychological, culture & capability	External: infrastructure, network, institution	Internal	External
missing communication & lack of cooperation	tools too complex, difficult to implement	innovation potential, technical advancement	customer demands
lack of knowledge	lack of infrastructure	product quality	legislation
lack of management commitment	lack of external cooperation	market potential	close supplier relationships
lack of vision	lack of qualitative data	ownership and responsibility feeling e.g. by the owner, clear goals	
	not enough legislative incentives	financial benefits trough: cost savings & increased sales	
	lack of customer demand	competences: education & training	
	high costs and long pay-back period	motivation/mindset	

		development process, early integration	
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Table 10: Barriers and Opportunities to implement ecodesign practices identified within various papers. (Source: NODUS, Aalto ARTS for SHIFT, June 2015)

## 10. How effective are these design services?

The UK Design Council established in 2007 the *Design Leadership Programme*. It “is a national coaching programme that promotes the value of strategic design to business to help boost their commercial performance.” In their evaluation report from 2012, they summarize the major impacts of the program, which show evidence that design can be a boost for business growth, improve capability and confidence of the company as well as having a longer lasting impact on a positive business performance. The evaluation was conducted among 130 SMEs, with detailed research in 2012 and additional data from 119 companies, mostly SMEs and high-tech start-ups.

*“The Design Leadership Programme has helped businesses to identify their biggest strategic challenges and create new opportunities to overcome them by using design effectively.”*

They show that:

- *Design increases turnover: For every £1 invested in design, businesses can expect over £20 in increased revenues*
- *Design is linked to profit: For every £1 invested in design, businesses can expect over £4 increase in net operating profit*
- *Design boosts exports: For every £1 invested in design, businesses can expect a return of over £5 in increased exports (Design Council UK, 2012)*

The program claims to have brought more knowledge to the companies about the value of design and what design can deliver to them. It helped to raise the perceived need of design for being integrated in the business from 55% before and 98% after participation.

Evans et al. (2010) point out that through their research amongst UK based SMEs and Designers, that Design has “opened new markets for 39% of companies where design is integral to their business” (Evans et al., 2010, 2). They also discovered that 67% of the companies implementing design in their processes have brought new products or services to the market within the last 3 years. Comparing this to the average in the UK which is only 32%, it indicates a strong argument for design as supporting new product or service innovation and reaching new markets (Evans et al., 2010). However, they also state that the majority lack the ability to appropriately evaluate the value gained from their design innovations (Evans et al., 2010).

### **11. Are the design services combined or integrated with other support services (e.g. entrepreneurship, green marketing)?**

The design services are often integrated in support programmes funded by e.g. national or regional design councils. Cawood et al. (2004) investigate in their paper: “International Perspectives on Design Support for SMEs” how different countries manage their design support and point out that the councils have move beyond the promotional activities to ensure SMEs are “receiving the message” (Cawood et al., 2004, 73). Additionally, they found out that design support services, are often initiated on a national level – supported by national or regional design organizations.

For example in the UK, the Centre for Sustainable Design (CfSD) has a variety of design services clustered in different programmes which include support in networking, sustainable product design, marketing... Also the Design Centre Wales or the UK Design council’s Leadership program combine design support with entrepreneurship support. This illustrates that very often, the design support networks and sustainable design research centres aim to integrate the design services with other support services (see e.g. Charter & Woolman 2012).

#### **Key findings**

This literature review showed that there are clear indications that design services bring value to MSMEs in innovating and accessing new markets. However, it appears that the design industry is not yet able to communicate these benefits to the MSMEs. One reason for this might be, that the challenge of “small-small” problem i.e. that the design agencies are predominantly MSMEs, just like some of the MSME clients they are trying to attract and that both struggle to meet daily challenges of a typical small company. There is the additional challenge of finding a common language and identifying the most suitable (design) support (e.g. Evans et al. 2010, BEDA 2006). It might also be that MSMEs perceive other non-design support services as more vital and as bringing better and/or faster returns on the investment of time and money.

It is also clear that the development and integration ability of eco- and sustainable design tools needs to be advanced further as the literature indicates a gap between academic research and the industry application (Lindahl et al., 2003; Le Pochat et al., 2007).

In general, there has been put little attention to the actual needs of MSMEs depending on their area of business and size and how these needs could be met with design or sustainable design services. This might be due to the great variety of size and field of work the MSMEs comprise. To really understand the different needs of the respective MSMEs seems to be one of the most important factors when designing suitable, effective and individual support services.

#### 1.4.5 Key findings from the evolving literature review

##### Policy and design support in the Macro-Meso levels

A summary of the gap analysis from a Macro-Meso level perspective is in Table 11. Between 1999-2009 EC Directives set the eco-efficiency and resource efficiency agendas leading to a series of EC Action Plans addressing sustainable consumption and production, (SCP/SIP 2008), EcoAP 2011 and the Design Driven Innovation AP 2013. While the EC Directives encouraged compliance and generally targeted existing 'enterprises' and 'greening enterprises' they only promoted ecodesign as a solution, and didn't see other design services as important in encouraging companies to become greener. The Action Plans inform EU policy development so it is unfortunate that they do not have a consistent approach to eco-innovation and the green economy and the roles of design and ecodesign/sustainable design. In fact, the Design Driven AP, supported by DG Enterprise and Industry, does not address ecodesign, eco-innovation or the green economy. This is a substantive omission and sets conflicting signals from the policy makers – it seems innovation for economic growth is ignoring any attempt to encourage enterprises to aim to be 'greening enterprises' or 'eco-enterprises'. Furthermore, the role of design is tied to the imperative of economic growth and a competitive Europe on the world stage, but is not linked to the possibilities of the green economy.

- MACRO LEVEL
- MESO LEVEL
- MICRO LEVEL

# GAP ANALYSIS DIAGRAM

WORK PACKAGE NO.

5 Design Service Providers (DSPs)

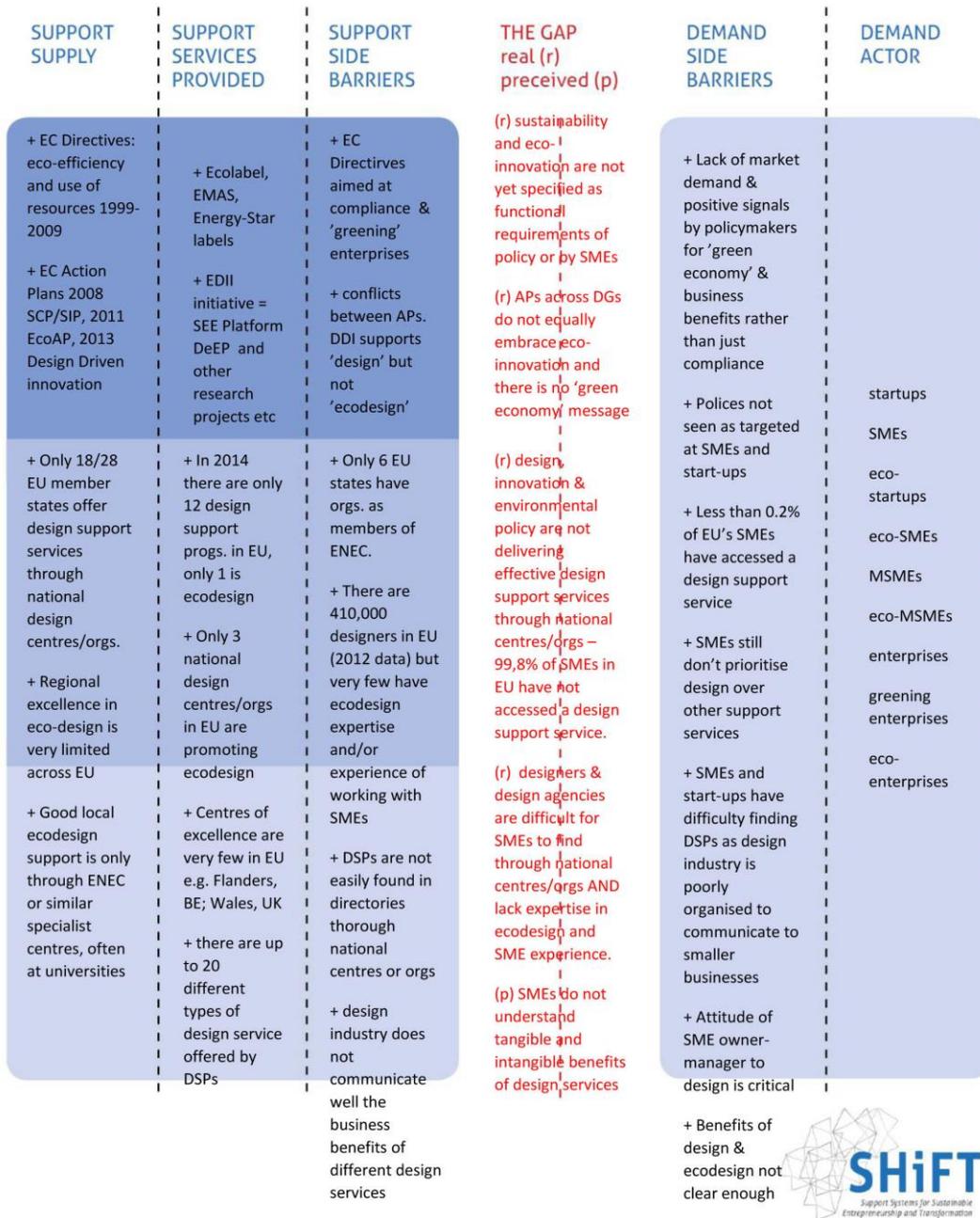


Table 11. Gap analysis diagram for Macro-Meso level perspective, EU policy and national design centres or organisations. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)

Design support services within EU member states vary considerably. For example, only 18/28 member states have a recognised design support programme and in 2014 there were only 14 active programmes across the EU. Within these programmes very small numbers of SMEs were supported – amounting to less than 0.02% of Europe’s 23 million SMEs i.e. 99.98% of SMEs were *not* accessing a design support service arranged by a national design centre, national design trade or member organisation or a regional/local actor.

There is a huge lack of capacity within designers/design agencies to provide ecodesign/sustainable design services (an estimated 95% don’t have expertise in the area) and also many of them lack experience in working with MSMEs. In addition MSMEs looking for DSPs through national design centres or organisations find it difficult to locate one as there are few directories and very few advertise designers/design agencies with ecodesign/sustainable design expertise. In short, the European design industry is not reaching out and communicating with SMEs and start-ups, and especially not with eco-SMEs and eco-startups. Those enterprises looking for DSPs might also be very confused as to how the different types of design services add tangible and intangible value to their business. It seems the meso-level organisations representing the design industry, like the policy makers, also do not see eco-innovation and the green economy as a priority.

In summary, present policies at EU level, especially those tied to with new design policy initiatives such as EDII and its projects, and the design industry at national member state level, seem unable or unwilling to recognise the necessity and value of promoting eco-innovation and/or the opportunities for growth in the green economy. This is compounded by MSMEs and start-ups struggling to find DSPs who can provide appropriate ecodesign and/or other design services AND bring expertise in working with MSMEs.

There are some emergent ‘design ecosystem’ developments at the EU and regional/local level that merit more attention as possible ways to improve access to design services in general and, in the regional/local examples, to ecodesign and design services to support eco-innovation.

### **Supply-Demand at the micro level**

A summary of the gap analysis from a Micro level perspective is given in Table 12.

The EU and national governments of member states are initiating policy and practical initiatives at the macro and meso levels. However, they are unaware of the real needs of MSMEs or how few MSMEs are actually receiving design support services of any sort, and/or what kind of services are needed at the micro-level where MSMEs *and* DSPs have a similar ‘small:small’ set of challenges and problems. MSMEs often see the EU and their own government innovation support systems as distant and more pre-occupied with giving funding and support to larger companies. Where design support services do exist

at national levels they only reach a very small number of MSMEs and even less start-ups. The national design support services seem to lack coherent and consistent collaboration with support organisations on a local level. There are some exceptions based around ecodesign centres of excellence (e.g. Wales in UK, Flanders in Belgium and Lahti in Finland) but in general design support programmes are simply not reaching most start-ups and MSMEs and even less so for eco-startups and eco-MSMEs.

At the interface between DSPs and MSMEs or start-ups the picture gets even less encouraging as most DSPs often lack expertise in ecodesign and/or do not see a market for this service and/or for eco-innovation or the green economy. The MSMEs or start-ups lack financial resources to invest in design, think it is expensive and are not sure what benefits and value-added design brings. While there is some free design support, it is largely training or coaching through facilitated workshops, mentoring or through a voucher scheme. Other key barriers for MSMEs and start-ups include the negative attitudes of owner-managers to design and/or eco-innovation or eco markets, lack of skilled personnel to manage the design projects and/or ecodesign tools and lack of vision to see the opportunities in the green economy and applying design as a more strategic part of their enterprise.

In summary, uptake of design services by MSMEs and start-ups looks quite ad hoc and uptake of ecodesign services seems to be a marginalised activity. There are significant demand side barriers that are compounded by supply side barriers such as the lack of capacity within DSPs for genuine experience of working with MSMEs and an absence or paucity of ecodesign skills, the latter because DSPs don't see the incentives or market potential of developing these services.

- MACRO LEVEL
- MESO LEVEL
- MICRO LEVEL

# GAP ANALYSIS DIAGRAM

BASED ON THE LITERATURE REVIEW ON MICRO LEVEL DEMAND & SUPPLY SIDE

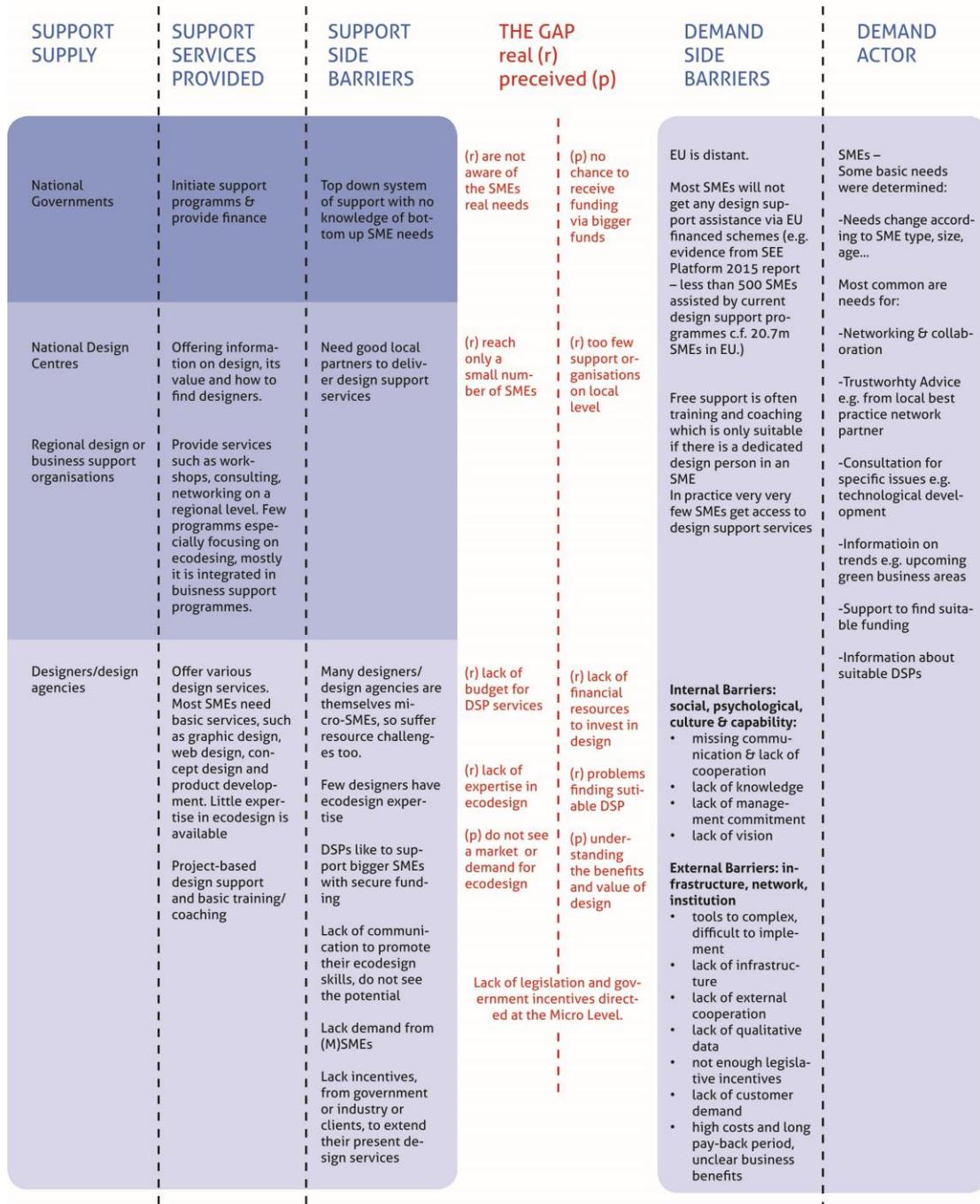


Table 12. Gap analysis diagram for the Micro level perspective on Supply: Demand sides. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)

## **1.5 Strategy for empirical work**

### **An evolving literature review**

Given what appeared to be a paucity of information in the chosen contextual area for design in the literature surveyed in WP1 (Fichter et al., 2013), we implemented a literature review that could evolve over the lifetime of the project, as opposed to making an initial 'snapshot' literature review. This proved to be a good research strategy as significant studies were published in 2014 and 2015 from ongoing European R&D projects, for example, the SEE Platform and DeEP projects (see section 1.4 above).

### **Interviews of experts in the UK**

In order to understand how the various MLP levels operated we needed experts that had worked within and vertically across these levels and yet also had experience at the micro level working with MSMEs and design. The United Kingdom (UK) was chosen as it has a long track record of green design (Burrell 1991, Mackenzie, 1999, Datchefski, 2001), eco-design (Fuad-Luke, 2002, 2009) and sustainable design (Charter & Tischner, 2001; Bhamra & Lofthouse, 2007; Walker & Giard, 2013) with the UK Design Council undertaking extensive reports in 2003 and 2006 into sustainable design (Otto, 2002; Richardson et al, 2005) and with strong regional activities in eco-/sustainable design in Wales (O'Rafferty and O'Connor, 2010) and Surrey, England (Charter & Woolman, 2012). So, our experts came from specialist research centres working in collaboration with or situated within universities, with expertise ranging back over 20 years, and also from the UK Design Council who are leading the consortium responsible for the Design for Europe (DfE) project funded by the DG Enterprise and Industry through EDII. We opted for a semi-structured interview approach to ensure consistency of coverage of our key research questions but, also, to allow our experts to freely voice their thoughts.

### **Initial demand and supply surveys of MSMEs and DSPs in Finland**

It is essential that we understand how the innovation support system looks and feels like from the perspective of the MSMEs and that we gain a better understanding of specific, not generic, needs in relation to design services. We also wanted to understand how DSPs saw MSMEs. So, our initial strategy was to explore the relationship between MSMEs and DSPs by initiating surveys in Finland with organisations representing each of these audiences. We chose to look at Finland first, as this is where NODUS/Aalto ARTS intelligence and knowledge of the MLP landscape was best.

### **Follow up surveys in Finland, Germany and Sweden with targeted eco-SMEs and eco-startups**

After analysing our results from the Finnish survey for both MSMEs and DSPs, we made some adjustments to the survey questions and objectives then initiated a second demand side survey in Germany and Sweden with carefully selected and targeted audiences of eco-MSMEs and eco-startups. We also initiated a second supply side survey by looking for experts in Finland, Sweden and Germany. These surveys allowed us to

explore the commonalities and differences between the needs of 'enterprises', 'greening enterprises' and 'eco-enterprises' in relation to design services.

#### **Survey of existing design support systems in the EU in 2014**

Our last survey focused on 14 existing design support systems in the EU in 2014 and explored if and how they supported eco-MSMEs and eco-startups.

#### **Design Acupuncture, a game for MSMEs and DSPs**

Based upon the analysis and synthesis of the literature and our interview and survey work, we designed a prototype game which MSMEs and DSPs could play together. This allowed us to test the prototype as a means to increase empathy and understanding in order to help SMEs choose the most, potentially, effective design support services for their enterprise. The game was launched at a workshop on 8<sup>th</sup> September 2015 during Helsinki Design Week.

## **2 Phase 2: Interviews and surveys**

### **2.1 Interviews with experts**

#### **2.1.1 Background and research questions**

We wanted to interview experts who have experience in ecodesign and sustainable design support to SMEs over a long time frame. As a consequence we chose to interview experts in the UK where these activities have been taking place over the last two decades. These activities have, largely, been initiated by research units based in universities, rather than through individual design agencies, professional or trade design organisations, or national design centres. The first unit, the Centre for Sustainable Design (CfSD) at the University of Creative Arts in Farnham was founded by Professor Martin Charter in 1995. Other units have an established reputation for projects in ecodesign and sustainable design, including the Sustainable Design Network (SDN), Loughborough University, established in 2001 and the EcoDesign Centre (EDC), Wales, established in 2006 (which is part of the National Centre for Product Development and Design Research, PDR, founded in 1991, Cardiff Metropolitan University). The CfSD and EDC are still operative but the SDN is presently inactive after being operative from 2003 to 2012. The CfSD was lead partner in two recent European Regional Development Fund projects between 2009-2012 (EcoMind and SUSCIN) (see Charter and Woolman, 2012) and PDR was lead partner for the SEE Platform project, 2009 to 2015 (see, for example, Whicher et al, 2015), funded by INTERREG IV and, latterly, by the DG Enterprise and Industry under the European Design Innovation Initiative (EDII). These specialist units interact with SMEs at the micro level but co-ordinate with design industry and other organisations at the meso-level (see Figure 16 below).

We also wanted to look at current activities and projects at the meso-level, so we interviewed the managers of the Design for Europe (DfE) project, also part of EDII, at the Design Council, UK, who head up a consortium of eleven organisations across the EU. DfE focuses on creating a platform to co-ordinate design activities across Europe, especially by educating policymakers and by bringing together national agencies, public sector organisations and organisations with design expertise.

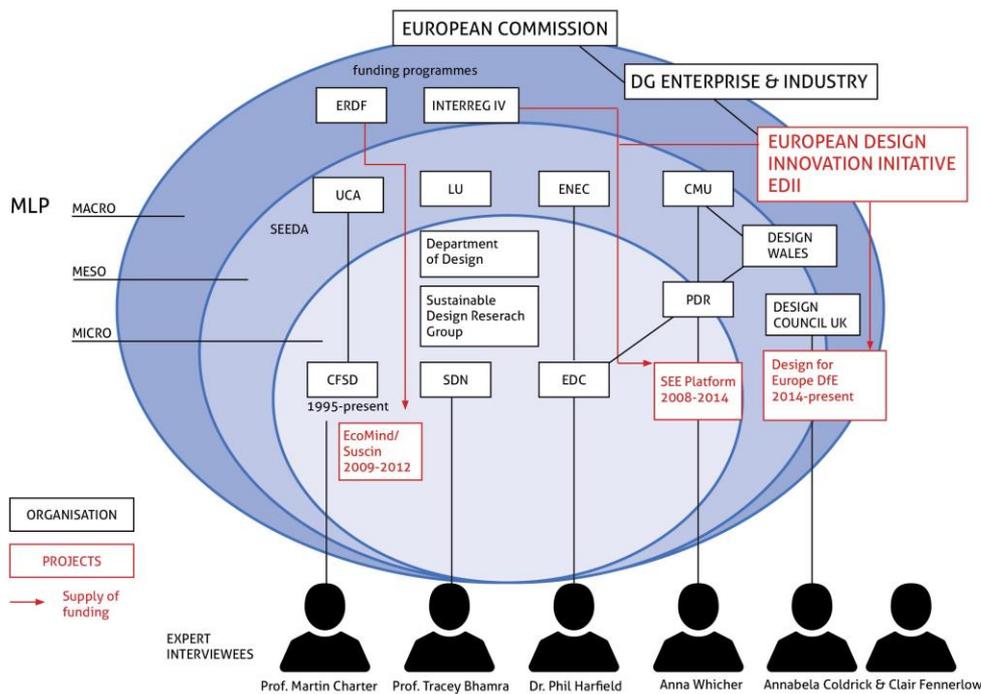


Figure 16. Shows how the organisations of the interviewees fit into a MLP and the macro-level initiatives from EU funding and/or the European Commission, and key meso-level organisations with whom the interviewees’ organisations collaborate. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)

### Research questions

This interview survey focused on the supply side and about how the respondents see current design policy and its effects from their own organisation’s perspective. In particular, we were interested in bottom-up and top-down perspectives about design service provision to SMEs and how the respondents viewed European design policy developments.

- Research questions:
- What services do you provide and to whom?
  - What does the overall system of design service provision look like to you? E.g. best practices, deficiencies, other thoughts?
  - How do you see current European design policy in relation to this provision?
  - How can the design service provision be improved to enhance the eco-innovation support system?

### 2.1.2 Interviews

We applied a semi-structured interview methodology, as this enables finding a balance between questions raised by researchers and unprompted thoughts or knowledge given by the interviewees. We used the same questionnaire for respondents at the CfSD, SDN and EDC (Appendix 4) because they all act at or through the micro-level. However, as the SEE Platform and DfE projects are focused on meso-level actors we used a different questionnaire (Appendix 5), although some questions were similar. All respondents received the questionnaire in advance of the telephone or skype interview, along with the definitions of key terms we thought were important to help define the context for the interview. All interviews were conducted in December 2014 or January 2015.

The interviewees were:

- CfSD – the founder, Professor Martin Charter
- EDC – Philip Harfield, Project Officer, PDR
- SDN – the founder, Professor Tracey Bhamra
- PDR, the SEE Platform project – Anna Whicher, Project Manger, PDR
- DfE – Annabella Coldrick, co-ordinator, and Claire Fennelow, programme lead for the dissemination work package.

### 2.1.3 Key findings

A summary of key comments and insights from the interviewees is given in Appendix 6.

The respondents from CfSD, EDC and SDN, working at the micro-meso level interface in specific local-regional settings, see themselves as providing diverse support services focused around design research, as part of publically and/or externally funded projects, rather than providing strictly commercial design services. They did not see themselves in competition with designers and design agencies because they offered/offer 'design research' expertise, knowledge transfer, facilitation and skill-building through workshops and training. The majority of respondents reinforced the view that most MSMEs require bespoke, individualised, targeted support.

The respondents from the organisations co-ordinating policy initiated projects, PDR and the UK Design Council, see themselves as co-ordinators, network facilitators and platform builders across meso-level organisations in Europe. They are not DSPs but promote the benefits of design as a key ingredient of 'design-driven innovation' and see the meso-level organisations they are trying to co-ordinate as facilitating or providing the 'on-the-ground' services through DSPs.

Key observations include:

## Macro level

- EU policy level initiatives focus on the design support and design industry intermediaries working on programme initiatives at a regional or national level
- There is a gap across Europe to really meet SMEs' needs and a disconnect between the design, eco/sustainable design and innovation agendas. The EU focus tends to be on efficiency (material, energy, resource) and the circular economy at the macro and meso levels
- Design policy has been developed by the designers and design industry first then for the wider industry and enterprises second.
- There is still a negative EU perspective around eco-markets  
There is a lack of coordination between DGs where design is relevant

## Meso level

- Lack of design support infrastructure across Europe and huge variation in the quality of design support services
- The European Design Innovation Initiative set by DG Enterprise & Industry (now DG GROW) generated the Design Driven Innovation Action Plan whose focus is on regional, national and European-wide actors with little attention or resources arriving at the micro level to support SMEs.

## Micro level

- Design needs of SMEs are dynamic, depending upon the stage of the innovation cycle
- SMEs need a flexible, adaptable support system with face to face networking, updating and trend forecasting, and quick problem solving
- Startups are highly motivated and , perhaps, should be the focus of more design support
- There is no shared perception of best practice.

## **MLP and gap analysis**

The development of a coherent design policy by the European Commission is relatively new, commencing in 2007, compared to other policy fields, such as environmental policy. Consequently, respondents from two key projects (the SEE Platform and Design for Europe) initiated by the European Design Innovation Initiative (EDII) driven by the DG Enterprise and Industry, see their key role as creating platforms to share experiences and best practice between meso-level actors. These actors are the key link to the micro-level actors including Design Service Providers (DSPs) and MSMEs, whereas the projects themselves are focused on networking, platform building and exchange of best practices for the meso level actors in order to meet the requirements of the Design Driven Innovation Action Plan of DG Enterprise and Industry. In short, these projects are a top-down initiative and are not aiming to improve the design support services for MSMEs but rather hope that the coalescence of activities and knowledge and

know-how transfer at the meso-level will have a 'trickle-down' effect on the micro-level actors.

Most interviewees identified that the various DG policies on 'design' and the 'green economy' are not linked, and that 'ecodesign' and 'eco-innovation' are marginalised in EU innovation policy whose focus tends to be economic growth (at all costs?).

Policy agendas are driven by a combination of economic growth, climate change and material and resource efficiency, but there is no coherent message on the 'green/circular' economy. There is still a negative perception about green markets. Furthermore, policy makers have little understanding of MSMEs' actual specific needs related to different sectors.

Current design policy seems developed for the design industry by the design industry i.e. it has little focus on the *clients* of designers or the needs of (smaller) design agencies. The platforms being developed under the umbrella of the EDII are trying to bring together meso-level actors from design industry with the policymakers and the public sector organisations, but perhaps lack co-ordination around a single agenda. Moreover, there is confusion as to the benefits of design in the public and private sectors. Nor is there a shared perception of 'best practice' for design support – is it subsidy through mentoring, innovation vouchers or direct tax credits or other means? Where there is evidence of some best practice across both sectors, it is limited to certain EU member states such as the Netherlands, Belgium, Sweden, the United Kingdom and Germany.

In contrast, the DSPs operating from within specialist units in universities work with bottom-up organisations and meso-level actors within a local or regional setting, often within specific industry sectors (e.g. CfSD has worked with SEEDA, the South East of England Development Agency and the electronics industry). Support services are generally provided within the context of research projects with local enterprises interested in greening their operations, developing a new product or service, and/or increasing their internal skills to explore market opportunities by learning about the latest trends, technologies and business models. However, training and upskilling workshops, courses and mentoring are also a key support service for MSMEs through these research-orientated or design centre DSPs.

Despite their long track record of providing design support services for MSMEs over two decades, the specialist university research units in the UK tend to have a local-regional 'reach' in MSME support and do not tend to co-ordinate with each other. Some units are strongly connected with meso-level actors (for example, EDC and PDR work closely with Design Wales, the effective national body in Wales, UK) whereas other units (CfSD and SDN) remain largely independent of meso-level design industry actors and national bodies. To compound this situation, the meso-level actors in the UK, such as the Design Council, and the design industry and/or professional organisations for designers, do not co-ordinate with these specialist research units or promote ecodesign or sustainable design as an essential design activity (despite two reports commissioned by the Design Council – see Otto, 2002 and Richardson et al., 2005 – identifying an urgent need to improve activities in this area). This means that the provision of ecodesign and

sustainable design support at a local level is very limited across the UK, so from this perspective the message about design to support eco-innovation is failing to be delivered. And, as the respondents of the DfE and SEE Platform projects also concede, eco-innovation is not a specific priority of these projects.

From a multi-level perspective it seems that *design for innovation* is being promoted in the UK and the EU especially across the macro and meso levels, but that *design for eco-innovation* is more of a minority activity pursued by specific university-based research units who network and collaborate with local government and industry within a particular local and/or regional setting.

There are some generic support and demand side barriers for these expert ecodesign/sustainable design research units. They always need external research funding and not all programmes permit MSME participation. Only small numbers of MSMEs can collaborate on research projects because they lack time, money, skilled people and/or do not see the benefits of design. MSMEs have bespoke needs, so easy diagnostic tools are required for the DSP and the MSME. Eco-innovation is an upstream activity in an enterprise so this needs awareness raising and education which takes time. The 'design' and 'ecodesign' agendas are often disconnected and design is often not connected to basic business information support services. The combination of these barriers limit the participation of MSMEs in design research projects and support for eco-innovation through the application of ecodesign/sustainable design.

## **2.2 Initial demand and supply surveys, Finland**

### **2.2.1 Background**

An understanding of the MSMEs needs in relation to 'design' and 'sustainable design', and the existing supply of design services to this particular target group, is essential in order to determine if there is a gap between the demand for design services among eco-MSMEs and the supply of design services by DSPs. Two online surveys were carried out in order to obtain information about the current situation on the demand side in co-operation with Suomen Yrittäjät – The Federation of Finnish Enterprises -and for the supply side in co-operation with Ornamo, The Finnish Association of Designers.

#### **Research questions**

What are the design perceptions and needs of MSMEs?

What are the needs of DSPs in their collaboration with MSMEs?

#### **Design of the questionnaires**

We tested the design of the questionnaires with our Finnish MSME partners in the NODUS/Aalto consortium and with our two collaborative industrial partner

organizations, the BDOs Culminatium and LADEC. Their feedback helped refine the questionnaire and remove ambiguities.

### 2.2.2 Demand-side survey with Suomen Yrittäjät

In order to understand the demand-side in relation to 'design' and 'sustainable design', an online survey was initiated by NODUS, the sustainable design research group, Aalto ARTS (School of Arts, Design and Architecture, Aalto University) with the co-operation of Suomen Yrittäjät - The Federation of Finnish Enterprises. The survey was conducted between 27.11 to 8.12.2014. Approximately nine thousand members of SY were contacted by email inviting them to visit a Webropol online survey page. A total of 75 respondents (just less than 1%) completed the questionnaire. Although this is a low response rate, and these respondents might be seen as having an intrinsic interest in design i.e. they are self-selecting, the insights gained were helpful.

### 2.2.3 Demand-side survey –analysis & results

The complete survey results are given in Appendix 7. Key data and insights are presented below.

#### Who were the respondents?

Among the 75 respondents, 15 represented Design Service Providers (DSPs), so this analysis focuses on the 60 non-design MSMEs from a diverse sectorial background (Figure 16). Of these 60 respondents 95% (57) were micro-SMEs (MSMEs) i.e. less than or equal to 10 employees and 72% (43) were start-ups, 0-3 years old. Most were service-oriented MSMEs with less than 18.5% being in manufacturing or construction. The majority 57%, saw themselves as conventional enterprises, 37% as 'greening enterprises' (i.e. greening their operations to become more eco-efficient) and just 7% saw themselves as 'eco-enterprises' whose core interest is centred on the environment (Figure 17). One third or 33,3% of the respondents offer services or products that help other companies reduce their environmental impact. One third (33, 3%) of the respondents offer services or products that help consumers reduce their environmental impact. The respondents, therefore, have substantive interest in eco-focused B2B or B2C customers, showing their key focus on eco-innovation.

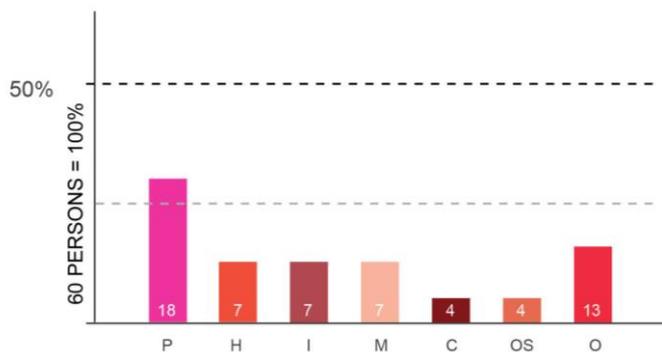


Figure 17: The sectors of the MSMEs represented among the respondents. (Source: NODUS, Aalto ARTS for SHIFT, March 2015)

P = Professional, Scientific and Technical Activities: 18 (30%)  
 H = Human Health and Social Work Activities: 7 (11,67%)  
 I = Information and Communication: 7 (11,67%)  
 M = Manufacturing: 7 (11,67%)  
 C = Construction: 4 (6,67%)  
 OS = Other Service Activities: 4 (6,67%)  
 O = Other: 13 (21,67%)

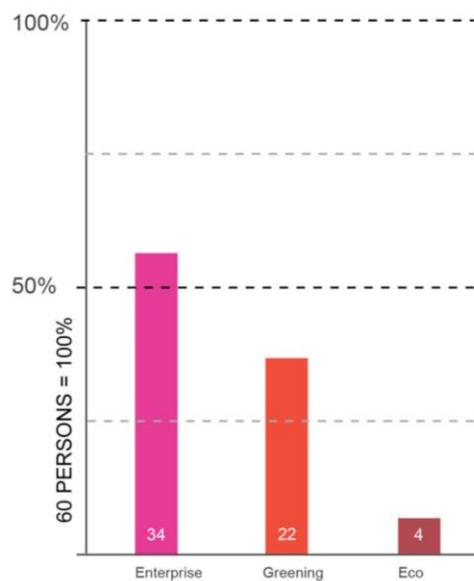


Figure 18: How the respondents see their company, given the options 'enterprise', 'greening enterprise' and 'eco-enterprise. (Source: NODUS, Aalto ARTS for SHIFT, March 2015)

**Use of design services, opportunities, needs and challenges:**

A significant majority (88%) of the MSMEs stated that they have used design services in their company. Only 12% said they had not used design in any way. A clear majority (66,7%) of the respondents see benefits in using design and are able to give examples of how they can benefit from collaborating with DSPs. This might indicate that respondents have an inherent interest in design, eco-design and/or sustainable design i.e. they were 'drawn' to the survey and were self-selecting rather than representative of MSME's attitudes, or it could indicate that MSMEs are beginning to better perceive the benefits of design activities when compared to earlier surveys in Finland (Pitkänen, 2012; Ornamo, 2013).

**Key benefits of using design include:**

- making their products and services more attractive
- emphasising the importance of usability and user experience

- helping with market communications by differentiating and making their products more visible in the market
- growing sales.

#### Applying different design activities:

Furthermore, the MSMEs were also able to distinguish different types of design activity and where they had applied this activity in the innovation cycle. In particular they saw *graphic design*, *concept design* and *new product development* as important design activities, especially in the pre-seed, seed and start-up stages of the innovation cycle (Figure 19).

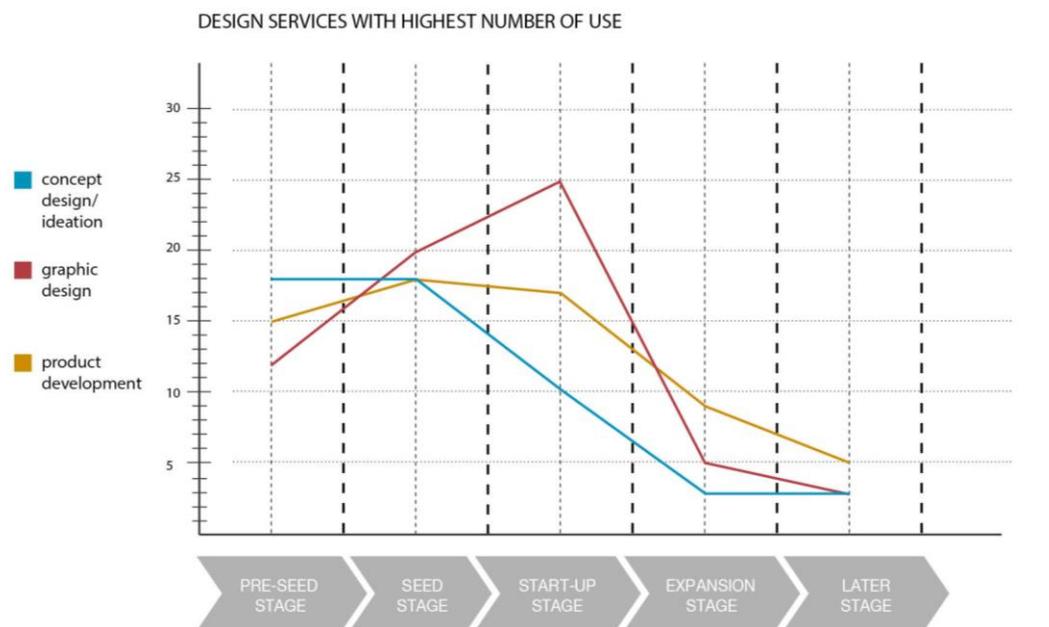


Figure 19: The most used design services, and at what stage in the company's development. (Source: NODUS, Aalto ARTS for SHIFT, March 2015)

#### Key challenges and needs of MSMEs in relation to design:

**67% of respondents experience challenges when collaborating with DSPs, for example:**

- Lack of finances to obtain design services
- Communication issues
- Not enough understanding among DSPs about MSMEs' own fields and their needs
- Difficulties to find the right DSP

**Some of the respondents (40%) were able to specify their design and other needs, which can be summarised as:**

- Advice & References
- Networks & Financial support
- Information about the design services and design service providers available
- Help in reaching the DSPs

### **Improving the design support system:**

They were also able to suggest possible solutions as to how the support system could be improved:

- Events or networking opportunities where DSPs and SMEs can meet
- Service that provides information about design services (in a clear and easily understandable way) and which show the DSPs available
- Financial support for MSMEs and startups when using design services.

#### **2.2.4 Supply-side survey with Ornamo**

In order to understand the supply-side, an online survey was initiated by NODUS, with the co-operation of Ornamo - The Finnish Association of Designers. The key aim of this survey was to gain an understanding about the services provided by and the needs of Design Service Providers in relation to MSMEs (eco- and 'non-eco') in Finland.

The survey was conducted twice, first 11 -22.12.2014 and, due to the low number of participants, again between 29.1.2015 – 15.2.2015. An invitation to participate in the survey was included with a link to the online Webropol survey page in Ornamo's newsletter. The newsletter is sent once a week to Ornamo's 2200 members. A total of 10 respondents (less than 0.5%) completed the questionnaire. The low response rate raises questions about whether this shows a lack of interest among DSPs related to sustainable design and the collaboration with MSMEs or is related to some other unknown factor, e.g. the chosen survey period, survey 'fatigue', lack of time as most DSPs are also MSMEs with limited resources.

#### **2.2.5 Supply-side survey –analysis & results**

The full results of the Ornamo survey are given in Appendix 8. Key results and insights are below.

##### **Who were the respondents?**

Among the 10 respondents, 9 represented private companies, 50% (5) of these were in house designers in companies and 40% (4) design service providers.

##### **Design services provided**

The DSPs who participated provided a wide range of different design services, 9 of them provided *Product / Industrial design*, 8 *Product development*, 7 *Graphic design*. *Communication design*, *Package design*, *Service design* and *Visual Identity Design* were provided by 6 of the respondents.

## **Sustainable design**

Only 3 of the 10 respondents noted that they provide services focused on sustainable design. The services these respondents provide were: Ecodesign (2), Life cycle thinking (2), Sustainable product design (2), Sustainable product service system (1), Materials innovation (2), Cleaner production (1), Design for environment (2). When asked about the sustainable design knowledge in their companies most of the respondents said the knowledge is average (4) or good (4). A majority of the respondents (7) said they see a need for sustainable design among their clients but none of these DSPs advertise their services especially to environmentally friendly MSMEs.

## **Their clients**

Most of the DSPs clients represent small companies (with less than 50 employees) and these companies have usually been operating more than 10 years.

## **How do potential clients find the DSPs?**

Most of the respondents stated that their clients find them through networks, common contacts and by recommendations from previous clients. Less than half (4) of the respondents said their clients find them via the internet. The respondents advertise their services mostly online, they also use their networks, take advantage of seminars and events and uses traditional sales and marketing tools.

## **Collaboration, Challenges & Support**

### **Benefits of deign**

According to the respondents, collaboration with DSPs can add value to MSMEs by ameliorating their products and increase their sales. A few of the respondents also mentioned that the MSMEs can better differentiate from their competitors and reduce their production costs as a result of their collaboration with DSPs.

### **Challenges**

DSPs experience challenges when working with MSMEs, the challenges articulated were mostly related to lack of knowledge of design among MSMEs, communication and attitudes. A few also mentioned financial challenges among the MSMEs as an obstacle for the collaboration.

### **Support needs of DSPs**

To overcome the challenges in their collaboration with MSMEs the DSPs noted that they need support with networking and marketing. Financial support was also mentioned. One respondent suggested that the DSPs need a spokesperson that can help the small DSPs to be found among the MSMEs, while one respondent said that explaining the concept of design to the MSMEs would benefit both parts. It should be noted that most

DSPs are, typically, MSMEs and just like other MSMEs they are trying to serve, they too have resource and other challenges. This can be called the 'small-small' problem<sup>14</sup>.

### **2.2.6 Key findings**

The Finnish MSMEs that took part in the demand-side survey show a positive attitude towards using design in their businesses but few use eco-design or sustainable design. The MSMEs understand how design can benefit their businesses and a significant majority (88%) of the respondents have used design services, however, their needs are not always satisfactorily met and it is difficult to access the most appropriate design service providers or to find the finances to support design activities.

Because of the small response rate in the supply-side survey it was not possible to determine anything of statistical relevance about the kind of design services used by the respondents' clients and when in their business development or innovation cycle.

#### **The gap**

Despite the small response rate it was possible to compare the results from the supply-side survey with the demand-side survey. The way in which MSMEs and DSPs think about how design can benefit the business of MSMEs are similar. Both parties experience difficulties related to finances and communication. Perhaps this is not surprising as most DSPs are also MSMEs, i.e. less than 10 employees. Designers see a lack of understanding of their field among MSMEs, while MSMEs see a lack of understanding of their business among DSPs. This gap needs to be addressed.

Although the designers who replied to the supply-side survey have knowledge within sustainable design they do not advertise this clearly. It is not yet clear why this occurs. It might be because they do not consider themselves as experts within this field, or because they do not understand the MSMEs' needs in relation to sustainable design.

#### **Improving the support system**

The suggestions given about how DSPs can better be supported in their collaboration with MSMEs were similar to the suggestions given by MSMEs about how they can better be supported in their collaboration with DSPs. Both parties need support with networking and suggest ways such as events or platforms through which MSMEs and DSPs can be brought together. DSPs need support with marketing while both parties mention financial support as an important aspect within the collaboration among MSMEs and DSPs. It is also clear that there is a gap of communication between the DSPs and MSMEs that needs to be addressed.

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<sup>14</sup> Personal communication, Professor Olaf Helm, Linköping University at the SHIFT consortium meeting in Helsinki, 24-25th February 2015.

## 2.3 Demand -side surveys among eco-MSMEs in Germany and Sweden

The survey questions for the eco MSMEs in Germany and Sweden are presented in Appendix 9.

### 2.3.1 Background

The key aim of the surveys was to gain an understanding of the demand side – what are eco-MSMEs and start-ups’ needs in relation to ‘design’ and ‘sustainable design’ in Germany and Sweden. The surveys were initiated to target eco-MSMEs by engaging organisations from respective countries with expertise and knowledge about specific eco-sectors who could contact their members and companies to encourage them to visit a webpage to complete an online survey, using the online survey tool, Webropol.

#### Research question

What are the design perceptions and needs of eco-MSMEs in Germany and Sweden?

### 2.3.2 Demand-side survey Germany

The survey was initiated in collaboration with two different organisations in Germany, The Federal Association of Green Business<sup>15</sup> (Unternehmensgrün) and Future e.V.. The survey was sent via email and facebook posting to 150 company members of Unternehmensgrün and to selected companies reached by Future e.V.<sup>16</sup> The survey was open 11.5.-31.5.2015. The total number of respondents was 17, representing approximately less than 10% return.

#### Who were the respondents?

The respondents mainly represent micro(7), small(3), medium(3)- sized enterprises and four answered to belong to larger enterprises. 14 enterprises have been operating since 10 years or more and two were Start-ups. Most of the respondents operate in sectors such as Consultancy services (3), Energy (3) and Materials & Products (3). 15 out of 17 respondents (88%) see their enterprise as an eco-enterprise, while 2 describe themselves as a greening enterprise.

#### Use of design services, opportunities, needs and challenges:

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<sup>15</sup> <http://www.unternehmensgruen.org/>

<sup>16</sup> <http://www.future-ev.de/>

15 of the 17 respondents (88%) state that design has added value to their business. When asked if DSPs have helped the company to become more green or to support eco-innovation 3 (18%) say that they have helped naming two DSPs such as: “agentur merz:punkt” and “linnenschmidt.de”. The other 14 (82%) responded that design didn’t support them towards eco-innovation.

**Key benefits of using design include:**

- More attractive products and services (4)
- Better identity and visibility in the marketplace (13)
- Better differentiation of products/services in the marketplace (8)
- A better user/customer experience (5)

**Challenges and barriers of eco-SMEs and startups in relation to design:**

The respondents were given a list of barriers and challenges, based on the results from the demand-side survey done in collaboration with Suomen Yrittäjät, Finland (see p. 97-100).

**The barriers and challenges chosen by the respondents are:**

- Financial (8)
- Difficulties to find the right DSP (8)
- Lack of knowledge and/or understanding about our business (7)
- Uncertain Results at the beginning of the Collaboration (7)
- Communication (6)
- Time (4)
- No opinion (2)

**Improving the design support system**

Although only one of the respondents had participated in a formal design support system three respondents were able to give examples of how they would like to improve the design support system. Among these were the suggestion that the awareness about design needs to be increased and that there should be more regional support programs and less EU based support. One respondent also suggested to not increase the financial support only for design services, but to support sustainability oriented enterprises (SOEs), and these then can raise the demand on the market for sustainability services indirectly.

**2.3.3 Demand-side survey Sweden**

The survey was initiated in collaboration with two different organisations in Sweden, The Sustainable Business Hub<sup>17</sup> and Malmö Cleantech Inn<sup>18</sup>. The survey was sent to 40

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<sup>17</sup> <http://www.sbhub.se>

<sup>18</sup> <http://cleantechinn.com>

companies by The Sustainable Business Hub and was open 6.5.-26.5.2015, the number of respondents was 6. Malmö Cleantech Inn sent the survey to approximately 50 contacts in their network, the survey was open from 27.5.-12.6.2015 and the number of respondents was 4. A total number of 10 respondents (approximately 11% return) represent the presentation of analysis and results below.

### **Who were the respondents?**

The respondents mainly represent micro(4) and small(5) enterprises that have been operating 3-10 years. Most of the respondents operate in the sectors IT & Automation (4) and lightning (2). 5 of the 10 respondents (50%) see their enterprise as an eco-enterprise, while 4 of 10 describe themselves as ordinary enterprises. Only one of the respondents describes their company as a greening company. This is a surprising observation given that the respondents were targeted through organizations with an eco-innovation focus.

### **Use of design services, opportunities, needs and challenges:**

5 of the 10 respondents (50%) state that design has added value to their business. When asked if DSPs have helped the company to become more green or to support eco-innovation 5 (50%) say that they have helped to little (1), some (1) or great (3) extent.

### **Key benefits of using design include:**

- More attractive products and services (5)
- Better identity and visibility in the marketplace (4)
- Better differentiation of products/services in the marketplace (3)
- A better user/customer experience (2)

### **Challenges and barriers of eco-SMEs and startups in relation to design:**

Only two of the respondents state that they do not experience any challenges or barriers in their collaboration with DSPs. The respondents were given a list of barriers and challenges, based on the results from the demand-side survey done in collaboration with Suomen Yrittäjät (see section 2.2.2, p. 98).

### **The barriers and challenges chosen by the respondents are:**

- Financial (7)
- Lack of knowledge and/or understanding about our business (3)
- Difficulties to find the right DSP (2)
- No challenges or barriers (2)

### **Improving the design support system:**

Although none of the respondents had participated in a formal design support system 7 out of the 10 respondents were able to give examples of how they would like to improve the design support system. Among these the most re-occurring aspect was related to finance (3). Interesting examples include match-making events for designers and

companies and that the understanding of design services and the benefit they can bring needs to be increased.

#### **2.3.4 Key findings**

##### **Use of design services**

Similarly as in the supply-side survey done in collaboration with Ornamo, Finland (see section 2.2.4, p. 101), it was not possible to determine anything of statistical relevance about the kind of design services used by the respondents, and when in their business development or innovation cycle, due to the small response rate.

##### **Type of companies**

The German and Swedish respondents represent micro and medium sized companies, the majority of the German respondents represent companies that has been operating for more than 10 years, whereas the Swedish companies were start-ups that had been operating for less than 10 years.

When asked how the companies see themselves given the options, enterprise, greening enterprise and eco-enterprise a significant majority of the German respondents described themselves mostly as eco-enterprises, while only half of the Swedish respondents saw their enterprises as eco-enterprise and almost half of the 10 respondents described themselves as ordinary enterprises although they were identified as environmentally oriented enterprises by the organisations that distributed the survey.

##### **Benefits and barriers when collaborating with DSPs**

A significant majority of the German respondents (88%) see benefits in using design services, while 50% of the Swedish respondents say design has added value to their business. The same amount (50%) of the Swedish respondents say that DSPs have helped them to become green or to support eco-innovation. Among the German respondents only 18% see that DSPs have helped them with becoming green or to support eco-innovation.

It is clear that barriers and challenges are experienced, when collaborating with DSPs by a majority of respondents in both countries. Among the options given to the respondents most often barriers and challenges related to *finance, lack of knowledge and/or understanding about our business* and *difficulties to find the right DSP* were chosen among the respondents from both countries.

##### **Improving the design support system**

Among all the respondents only one German company had participated in a formal design support system, however many of the respondents were able to give suggestions on how the design support system could be improved. The Swedish respondents mostly suggested improvements related to finances and funding. Among the respondents from

both countries it was suggested that the understanding of design needs to be increased. One Swedish respondent suggested match-making events and one German respondent said that there should be more regional support instead of EU-level support. One respondent also suggested to not increase the financial support only for design services, but to support sustainability oriented enterprises (SOEs), and these then can raise the demand on the market services which help deliver more sustainability (like ecodesign and sustainable design). In this way support of SOEs will indirectly 'pull' the demand for these services.

## **2.4 Supply Side e-mail Survey in Germany, Sweden and Finland**

### **2.4.1 Background**

Based on the initial survey facilitated in Finland with the DSPs reached through Ornamo, we decided to initiate an improved shorter survey to identified experts on the supply side in the three countries: Finland, Sweden and Germany. These experts were on the one hand design agencies especially focusing on providing ecodesign services (A) and then experienced individuals or organizations representing the design industry with knowledge on ecodesign practices in their respective countries (B). The key aim of this survey was to gain an understanding about the services provided, the state of the art in ecodesign service provision in these countries and identify possible challenges or gaps in the support system.

#### **Research Questions**

1. What is the current knowledge and competences in ecodesign and its implementation in Sweden, Germany and Finland?
2. How many designers/design consultancies or agencies have competences to help MSMEs or start-ups take eco-products or eco-services to market?
3. What services do they offer?
4. How are these ecodesign services integrated into the current MSME support programs?

In total we contacted 30 individuals, ten from each country with five persons each for the respective group. The questionnaires (see Appendices 10 & 11) were designed as an iteration of the first supply side survey facilitated in Finland and had specific questions according to the two groups:

Questionnaire A) was addressing: Designers and design agencies providing ecodesign services to MSMEs.

Questionnaire B) was addressing: Organizations or individuals representing the design industry or with great expertise about it.

The survey was conducted during the period of 20.05.2015 – 10.06.2015, using personal emails including one reminder a week before closing the survey. A total of 12 respondents (36%) answered to the questionnaires. Out of these 12 respondents were 4 answering to questionnaire A) 3 Swedish and 2 German. For the questionnaire B) we had 8 respondents: 2 Swedish, 2 German and 4 Finnish experts. These results may relate to the fact that the Finnish respondents were familiar with NODUS and the Shift project, which could answer the higher response rate. In respect to the low response rate for the questionnaire A), one could mention the fact that Sweden and Germany have a higher awareness and stronger agenda for ecodesign through their design councils. Besides the fact that these numbers are too small to enable conclusions regarding the current situation, they still support the findings from the other surveys and discoveries made throughout the literature.

#### **2.4.2 Analysis & results - Survey A**

There were four respondents in total, two from Sweden and two from Germany. Each representing a design agency, consultant or service provider with expertise in ecodesign. Four out of four were micro enterprises with one to max three employees and two of them were operating since more than 10 years.

##### **Their Services**

The design services they offer to MSMEs comprise the following: Ecodesign, Developing sustainability in brands, Design Coaching, Corporate Design, Corporate Publishing, Web-design and Consulting. The services which especially focus on ecodesign were mentioned as being: Visualization tools for increased eco efficiency, Design Coaching and Corporate Design and trying to implement eco-/ sustainable design principals in most design projects.

##### **Their Clients**

Their clients range from 25% - 60% non-green enterprises, to 20% - 100% greening enterprises and very low percentage 10% - 20% eco-enterprises. The answers to this question obviously vary greatly among the four DSPs, however it clearly shows that the majority of their clients are not yet to be considered eco-enterprises, so they have the potential to impact on their eco-performance through their knowledge.

##### **Need for Ecodesign**

We positively recognized, that all participants agreed that there is an increased interest and need for ecodesign and its opportunities, for example:

“Big interest, big need for it and big possibilities!”

“Very big need. They are aware it is the market of the future and the clients main interest, but the MSME are unsure of how to reach there and how to communicate their effort to become sustainable.”

“Necessary - sustainable processes and works and design should be self-evidently. Designers should be asked at beginning of project (and consult) not at end.”

“The role of graphic design within the sustainable market is not as crucial as the one of industrial design. However, there IS a market for ecographics beyond the role of “greenwashing“.”

### **The Market**

Three out of four respondents also believe that there is a viable market for providing eco-design/sustainable design services. Regarding the competition on the market, they are split as two DSPs answered that there is no real competition that agencies rather complement each other, whereas the other two responded that they face competition from less knowledgeable advertising agencies or other design related businesses, which do not have expertise in ecodesign.

### **Challenges**

The challenges they experienced when working with MSMEs in general reflect the findings in the literature, for example that the management needs to be committed, and educated on what design and ecodesign can do for them. “That design can develop processes and new ways of thinking, not just a new look of a product.” They also mentioned that the commitment of the MSMEs was lacking: “As long as they are small and idealistic, they demand low-budget work, and later, they switch to advertising agencies.”

Regarding the work with eco-enterprises they mention that the enterprises are rather “naïve” and have little experience in that respect, including the challenge of finding a common language. They also point out that the DSPs are often forced to work with very low budget and that especially NGOs are using moral arguments to “exploit their service providers”.

### **Promotion & Finding Clients**

The MSMEs find the DSPs mostly through conferences and presentations, advertising, word-to-mouth and the internet. These are also the main channels they use for promotion.

### **Providing services through government subsidised schemes.**

Two out of four DSPs have offered their services through government subsidised schemes, such as:

- Project: Referensmiljöer för framtidens produkter in EU regional development
- Ökoprofit Düsseldorf, work at Lokale Agenda 21

### **Key findings**

The respondents rate was too low, to allow for general conclusions. However, we can see a positive trend in recognizing the potential and interest among the MSMEs for ecodesign practices and the flexible application of the design services. The survey also supported the assumption that there is no real channel for the DSPs to reach the MSMEs, such as networking sessions or locally organized meet-ups. Furthermore, similar challenges, as discovered in the literature were identified in the survey: lack of awareness about what design can do and enough financial resources and commitment of the MSMEs.

### **2.4.3 Analysis & results - Survey B**

There were eight respondents in total, two from Sweden, two from Germany and four from Finland. Each organization or individual was representing the design industry or had great expertise about it.

Regarding their knowledge about the percentage of DSPs with eco-/ sustainable design expertise in their respective country the answers were rather vague, with the majority suggesting somewhere between 5% - 20%.

### **Design and/or ecodesign support programs**

When asked for knowledge about government funded design support programs in their countries, the majority said they were not aware of any, except for: “ELY Centres providing development funding for sustainable design and -innovation: <https://www.ely-keskus.fi/en/web/ely-en> and Tekes – the Finnish innovation fund. For specific eco-design services there were no concrete answers given.

### **Need for eco- /sustainable design expressed by MSMEs**

All respondents believe that there is a strong need, and interest expressed by MSMEs and that is for several reasons. For example to “lower environmental impact, to differentiate on the market, to attract new customers, and to attract new employees.” They also mentioned “due to growing understanding, customer demand and good case-examples of new successful sustainable technologies, there is a growing interest in sustainable solutions among MSMEs.” It was also pointed out that “There is a need for professional, subsidized services that could address the sustainability needs of the MSMEs...”.

## **The Market**

Six out of eight respondents believe that there is a viable market for eco- / sustainable design. Reasons for this: The need amongst MSMEs is increasing (4) and that sustainability is a growing trend (2). The two respondents who answered with “maybe” there is a market, argued that it’s a very intangible asset and needs to be linked to other development initiatives to be successful.

The majority of respondents also agreed that the biggest market for DSPs is in offering services to “greening enterprises”. Because: “They already have an ambition to improve their work and are looking for help/method/tools to do this”.

## **Competition**

In respect to the question if they believe there is a strong competition on the market, the answers were mostly linked to “yes” for a competition between “engineering and environmental strategist” and other disciplines such as business consultancy firms. “Also standard AD and Marketing agencies, Engineering and Product development agencies use experts or have widened their professional services.” This could also link to some issue: ““traditional” design agencies are using sustainability claims without any/enough knowledge on about it”.

## **Challenges with MSMEs and or eco-MSMEs and Start-ups**

The challenges experienced when working with MSMEs were mostly to change their current business strategies to implement design on all levels and the lack of knowledge of the MSMEs in respect to design, its possibilities and the resources needed for the utilization in terms of financial resources and time. They also mentioned problems with finding a common language among MSMEs and DSPs to equally understand each other.

Challenges identified when working with eco-MSMEs were that “eco-enterprises are still too small or lack strategic know-how to be able to invest in design effectively” and that they need a lot of consulting as they are often value-based with less business potential and focusing on singly system problems, without a holistic view.

## **Other comments**

“There is need for more research in this area as well as good examples that can persuade MSMEs to be more eco-friendly.”

“The “cardboard” and “artsy” -image and profile that eco-design still has in many occasions should be actively developed towards business orientation. This will enhance its utilization in MSMEs.”

“I would like to see more ecodesign as a part of the “immaterial value-creation” perspective and how to make business on that.”

“Sustainability should be a fundamental starting point for enterprises, especially for start-ups. More education is needed for understanding the complexity of the effects of the products and services.”

#### **2.4.4 Key findings**

Similar to the survey among the DSPs, is also here the response rate too low for concrete conclusions. The respondents pointed out that there is still a rather low rate of expertise in the field of eco- and sustainable design and that ecodesign support programs do not exist or that they, themselves might not be aware of them. However, the respondents believe that there is a growing market and demand from the MSMEs, especially greening MSMEs, which is also reflected in the answers from the DSPs. They also experience similar challenges when working with MSMEs, such as lack of understanding the value of design for sustainability, missing financial resources from the MSMEs and that especially micro MSMEs are too small to embed design strategically.

## **2.5 Survey of existing design support systems in EU in 2014**

### **2.5.1 Introduction and background**

European design support programmes have been monitored through the SEE Platform, a project of the European Design Innovation Initiative sponsored by the DG Enterprise and Industry from 2012 to 2015. SEE identified 12 active design support programmes (Whicher et al., 2015, 16) seven of which were initiated after 2012 (see Table 6, section 1.4.2 above).

The number of participant companies varied dramatically between each programme, although this was based upon only 7 of the 12 programmes being able to report the numbers accurately. The total number of companies supported per annum over 7 of the 12 programmes was 454, and the total number of companies supported through the whole life of all the programmes was 3.235 of which 1.976 are accounted for solely by the Design Leadership Programme run by the UK Design Council from 2002-2014 inclusive. The SHIFT survey below indicates that the vast majority of these companies receiving design support are probably micro-SMEs and SMEs. However, given that there are 23 million SMEs in Europe (Thomson & Koskinen, 2012, 48) then the annual number

of SMEs being supported in these programmes represents less than 0.02% of the total, a rather poor record given the total monies received by the meso-level organisations to implement these programmes.

Although the SEE Platform survey provides useful data about the overall situation in design support in Europe, it does not indicate what is the position regarding eco-SMEs and eco-startups. We therefore thought it necessary to raise a specific research question.

### Research question

How many of the existing (2014) design support programmes in Europe have helped support eco-SMEs and eco-startups?

### Survey background and method

A named individual was identified for each design support programme identified by the SEE Platform and was contacted by email on 20.05.2015 requesting that they complete a short Webropol survey questionnaire (Appendix 12) with the original survey deadline of 05.06.2015. A reminder email and, in some cases, telephone call was initiated on 11.06.2015 and the survey deadline extended to 15.06.2015. Five respondents completed the questionnaire, with two respondents from the same scheme (Design Bulldozer in Estonia) (Table 13). The latter respondents' replies were combined in the analysis. One design support scheme was relatively new, the Design Innovation Tax Credits operated by the Ministry for Economy, Industry and Digital sector, France, so they presently did not have any data to report.

Your name	Email	Name of the organisation you represent	Your role in the organisation	Name of the design support programme	Country
Zuzana Sedmerova	zuzana.sedmerova@czechtrade.cz	Czech Trade Promotion Agency	Project Manager	Design for Competitiveness project	Czech Republic
Camilla Engberg	cen@ddc.dk	Danish Design Centre	Project Manager	ChangeWork	Denmark
Pille-Liis Milvere	pilleliis@disainikeskus.ee	Estonian Design Center	project manager	Design Bulldozer (DB)	Estonia
Jane Oblikas	jane@disainikeskus.ee	MTÜ Estonian Design Centre	Design promotion	Design Bulldozer	Estonia
Philip Harfield	phil@edcw.org	Ecodesign Centre	Senior Project Officer	Ecodesign Centre	Wales

Table 13. Respondents from the different design support schemes in the EU, 2014. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)

## 2.5.2 Results

The design programmes were described by the respondents as follows:

Design for Competitiveness, Czech Republic, 2008-present: The project is focused on strengthening the international competitiveness of industrial enterprises through the effective use of design in the innovation process. Support to MSMEs is provided by: a) subsidies for individual cooperation with the designer selected from the Directory of designers that will now also be open to designers from the whole EU; b) subsidies to promote industrial design at a professional trade fair through common exhibition; c) educational services focused on design management and effective management of innovation processes; and d) information service.

ChangeWork, Denmark, 2013-2014: ChangeWork is a design thinking-lab that brings together designers, businesses, researchers, the public sector, great thinkers and creative entrepreneurs to develop and test new methods of radical innovation and find new solutions for significant societal changes.

Design Bulldozer, Estonia, 2012-2014: Design Bulldozer aims to enhance the economic performance and export potential of Estonian companies by generating new business ideas and innovation using human-centred design methods. It was a two-year programme for 10 enterprises per annum. Enterprises worked with design managers to find and to develop their own design challenges. We also offered a training programme and sharing experience seminars.

Ecodesign Centre, PDR, Cardiff Metropolitan University, Wales, UK, 2006-present: The Ecodesign Centre (EDC) is a UK based knowledge-intensive organisation that develops and delivers collaborative multi-sectoral projects based around the concepts of ecodesign, lifecycle thinking and circular economy. EDC have been designated a Centre of Excellence in Ecodesign by the Welsh Government since 2008. This status aligns our activities with the Welsh Government, industry, design educators and other actors to enable eco-innovation and stimulate demand for ecodesign. The EDC noted that they 'do not currently deliver an 'off the shelf' design support service. The 'companies supported' indicated in Q3 [of the survey] refers to engagement activities within externally funded projects'.

Data was given in absolute numbers and percentages in the survey questions Q3, Q4 and Q5. We were able to convert percentages into numbers for the Design Bulldozer scheme so we could then average results across all four design support schemes.

The survey results were:

*Question 3. Please define the percentage or numbers of micro to large sized companies which accessed your design support services in 2014.*

Micro: 30%

Small: 30%

Medium: 37%

Large: 3%

Ninety seven percent of enterprises were SMEs with over 60% being small (less than 50 employees) or micro (less than 10 employees).

*Question 4. Please define the percentage or numbers of each of these types of enterprise which have received design support through your programme.*

Enterprises: 76%

Greening enterprises: 8%

Eco-enterprises: 16%

The vast majority of enterprises supported (76%) did not have a green or eco- focus. The relatively high results for eco-enterprises was the result of increased activities in this area by the Ecodesign Centre – so, for example, Design for Competitiveness supported 1 eco-enterprise, ChangeWork 4 eco-enterprises; Design Bulldozer didn't support any eco-enterprises and EDC supported 18 eco-enterprises in 2014. So the proportion of eco-enterprises is boosted by the specialist work of the EDC. If we remove this bias, then it is likely that design support programmes in the EU are typically servicing less than 5% of companies which are eco-enterprises.

*Question 5. Please define the percentage or numbers of enterprises according to how long they have been operating.*

0-3 years (start-ups): 15%

3-10 years: 28%

longer than 10 years: 57%

Relatively few start-ups (15%) are accessing these design support schemes, whereas nearly 60% of the companies accessing these programmes are established for more than 10 years.

*Question 6. Can you identify the typical design services which your SMEs access from the list below?*

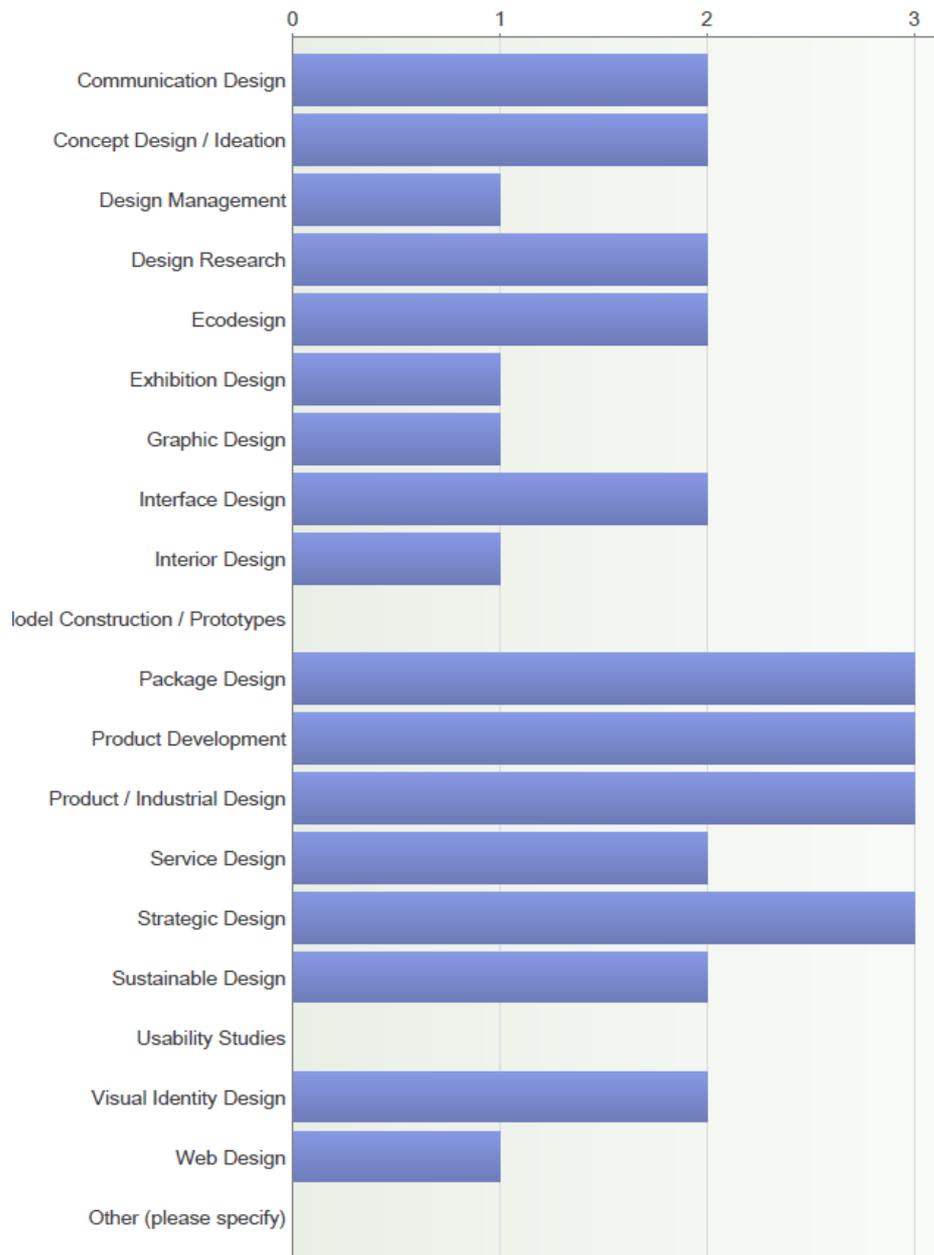


Figure 20. Results of Q5 showing diverse design services were accessed in the support schemes. (Source: NODUS, Aalto ARTS for SHIFT, August 2015)

All design services were used by companies in the support programmes with the exception of ‘model construction/prototypes’ and ‘usability studies’ (Figure 20). The most popular design services were package design, product development, product/industrial design and strategic design.

*Q7. Can you identify an enterprise which is a best practice case study for eco-innovation through your design support programme?*

Each respondent gave the following [diverse] examples serving b2b and b2c markets:

Design for Competitiveness – Rauchenberg, <http://www.rachenberg.cz>

ChangeWork – Pack Design, <http://www.packdesign.dk/index.php?page=packaging-design-uk>

Design Bulldozer – Meiren Engineering

<http://disainikeskus.ee/index.php/en/content/article/26-eng/sisulehed/517-meiren-engineering-oue> and Alpaka, <http://www.alpaka-shop.com>

EDC – Orangebox, <http://edcw.org/en/office-chair-life>, a Product-Service-System business model development within an Innovate UK project.

### 2.5.3 Key findings

There was a disappointing response from the 14 existing EU design support programmes to the questionnaire, with only 5 replies from 4 programmes. This might indicate a lack of priority or interest in eco-startups and eco-MSMEs, or not seeing them as a ‘special case’ amongst MSMEs in general. From the respondents who did answer it appears that MSMEs are being supported but that they tend to be young (3-10 years) or well established (greater than 10 years old) and are general enterprises rather than being those specifically interested in greening their operations (greening enterprises) or championing eco-products or services (eco-enterprises). Where there is a dedicated ‘eco-’ perspective in the support organisation, e.g. the EDC in Wales, the numbers of eco-enterprises supported increased significantly. This might indicate that MSMEs with ‘eco-’ interests appreciate design support programmes or centres with expert knowledge and practices.

On the evidence from recently published work from the SEE Platform (Whicher et al., 2015, 16) and this small survey it appears that most of the existing EU design support schemes in 2014 *do not* prioritise or emphasise design support for eco-startups and/or eco-SMEs, nor do they address design in the context of the green economy but place design support more in the general innovation support agenda.

## 2.6 Design Acupuncture game

### Introduction

Key findings from our survey work with MSMEs and DSPs (designers/design agencies) indicated that there was a real gap in how MSMEs understood design and designers, and visa-versa. We therefore decided to test a way of creating a playful interface which would stimulate conversations between the two groups and improve their mutual

understanding. We wanted to test a prototype design to assist with improving mutual understanding and identify the best design support tailored to an individual MSME. We submitted our concept for a workshop called ‘Design Acupuncture’ to Helsinki Design Week organising committee. They accepted our proposition and the SHIFT workshop became an official event for HDW, on Tuesday 8<sup>th</sup> September, 15.00-19.00hrs at Helsinki Hub13, a non-profit co-working space in central Helsinki.

**Research Question:**

Can a game-like interaction between MSMEs and designers/design agencies (DSPs) help create better mutual understanding of the MSMEs needs and design services that could help meet those needs?

### 2.6.1 The game

We created a playful ‘game’ comprising a booklet, a ‘needs-wheel’ for the MSMEs and ‘design service cards’ for the designers (Figure 21, Appendix 13).



Figure 21. The booklet, ‘design service cards’ and ‘needs-wheel’. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)

The booklet describes the ‘game’ and summaries information about the design needs of SMEs and the range of different design services offered by DSPs and why to use them and how they add value.

The core of the needs-wheel lists nine ‘design needs’ identified by our demand-side MSME survey respondents:

- Product and service development
- Strategic process development
- Help with prototyping
- Making products more attractive
- Increase usability of products
- Increased product visibility on the market
- Growing sales
- Market: support in penetration or initiation
- Online representation

Three blank segments are left for MSMEs to add their own perceived design needs.

The DSPs received 'design service cards', each one with a definition of the design service printed on the reverse. There was also a card called 'other' which enabled the designers to add other services. The service cards were set around categories we had used in the preceding survey work:

- Communication design
- Concept design
- Design management
- Design research
- Ecodesign/sustainable design
- Spatial design (exhibition, interiors, retail)
- Graphic design/visual identity design/brand design
- Interface design
- (New) Product development
- Product/Industrial design
- Service design
- Strategic design
- User-centred design/usability
- Web design
- 'Other services'

### **2.6.2 The workshop**

Despite wide ranging publicity via Suomen Yrittäjät, Ornamo, Design Forum Finland, Aalto ARTS, Helsinki Design Week and several innovation networks and start-up centres in Finland, we had a small number of participants – 4 MSMEs (1 food waste company and 3 design agencies developing their own new products or services) and 8 designers/MSME design agencies.

Step 1. Building empathy with 'blind drawing'. 2 minutes per pair, 10minutes with the whole workshop audience.

We began with a brief introduction to the SHIFT project then followed with a workshop technique to raise empathy between the participants. Participants went into pairs and

were instructed to use the 'blind drawing' technique. They were asked by the facilitator (AFL) to close their eyes and draw on a piece of A4 paper anything which they felt represented themselves and/or their enterprise. Each participant then introduced themselves to the other in the pair by using the drawing as an aid to storytelling. After two minutes talking to each other they were then asked to present themselves, using their drawing, to the whole workshop audience.

Step 2a. MSMEs thinking about their needs. 20 minutes.

We asked the MSMEs to take the needs-wheel and identify which needs were the highest priority and mark the most urgent need. We also asked them to write in the blank segments of the wheel any needs they felt should be in the wheel. They also had to write the name of their enterprise and a brief description on the needs-wheel.

Step 2b. Designers think about the 'design services'. 20 minutes.

While the MSMEs were identifying their needs (Figure 22), the designers were asked to read and explore the booklet and definitions of the design services. Did they wish to add any 'other services'? If 'yes' then they filled in the blank card marked 'OTHER'.

Step 3. Creating a dialogue with the Design Acupuncture 'game'. 15 minutes per MSME.

Each MSME then placed their needs-wheel on a table and the facilitator brought the designers around the table. The facilitator asked each MSME to briefly introduce themselves and state their highest priority need. Designers were then asked to place a design service card on the needs-wheel and talk about how they thought it might address or solve the need. Once a few cards were placed on the needs wheel a dialogue ensued between the MSMEs and the designers.

After each MSME had gone through the same process, we asked them to complete a feedback questionnaire. The facilitator asked them to say out loud one word which summarised their experience.

### **2.6.3 Results**

Dialogue around the needs-wheel

As soon as a few cards were put down by the designers on the needs-wheel a rich dialogue commenced between the MSMEs and the designers (Figure 23a and 23b). It would only need occasional intervention by the facilitator to keep the conversation focused, but it was clear that both parties were listening intently to the other and that this was leading to a better understanding of the possibilities for both parties.



Figure 22. An MSME using the needs-wheel to define their needs. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)



Figure 23a (above) and Figure 23b (below). Designers responding to the needs-wheel defined by an MSME. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)



Here are the summaries of the feedback from the questions to MSMEs:

**Did this exercise help you to better understand how design can benefit your company?**

Yes: *All MSME participants thought that the exercise helped them to understand how design can benefit their company.*

**Did the game help you understand what design services would best fit your company's design needs?**

Summary: *All MSME participants said that the game did help them to understand what design services would best fit their company.*

**Did this event help you find suitable design service providers for possible future collaboration?**

Yes: *75% said they think some form of collaboration might emerge as an effect of the event.*

**Any other comments?**

*All participants were positive and thankful for the experience.*

Here are the summaries of the feedback from the questions to designers:

**Did this exercise help you to better understand what the needs of the MSMEs are, and how design can help meet those needs?**

Yes: *All designers who participated in the event thought that the exercise helped them to better understand what the needs of the MSMEs are and how design can help meet those needs.*

**Did this game help you to explain to the MSMEs in what way the different design services can benefit their enterprise?**

*Almost all of the designers said that the game helped them to explain to the MSMEs in what way the different design services can benefit their enterprise.*

*One participant said that the MSMEs were too design-oriented, not representing an enough broad variety of MSMEs. One designer stressed the importance of explaining, since one cannot assume that the MSMEs speak the same mind-set and that it is important for designers to understand their mind-set.*

**Did this event help you find suitable future MSME-clients?**

Summary: *Maybe, but it was not the goal.*

**Any other comments?**

*All participants were positive and thankful for the experience.*

#### 2.6.4 Key findings

For those MSMEs who did attend the Design Acupuncture workshop it appears to have been a valuable experience.

Despite wide-ranging publicity, the poor attendance at the workshop might reflect a lack of interest in MSMEs to invest time in such an event where the focus was 'design'. It might also be a result of the high number of other design events (over 30) being held on the same day during Helsinki Design Week. Perhaps other events were more appealing to MSMEs. The game clearly helped both parties, MSMEs and designers, discuss the needs of the MSMEs in relation to design services and helped them share each others' perspectives. Some even expressed that it might lead to collaboration. The game clearly helped build good dialogue and improved understanding between the parties. We didn't get to discuss the 'actions' part of the needs-wheel i.e. how to convert the dialogue into actions, but it was clear that the seed for further collaborations was sown.

We had some design literate MSMEs attending the workshop (it was part of Helsinki Design Week 2015) so further testing of this prototype game is required with more diverse 'non-design literate' MSMEs.

Initial feedback from the designers and MSMEs indicated that it would be useful if the MSMEs were given the needs-wheel in advance of the workshop and could prepare, in advance, a short summary of their MSME, its history, activities and present status and future ambitions. We could also elaborate on the steps in the workshop and the role of the facilitator.

An interesting question is whether this kind of approach to better understand how MSMEs needs can be addressed by (eco-)innovation support services could work for, for example, financial services or services from universities, incubation centres or business development organisations.

### **3 Phase 3: Summary of the key findings from Literature Review, Interviews and Survey work**

#### **3.1 Gap analysis between supply and demand**

Collating information from the evolving literature review, empirical work with SMEs and DSPs and design support organisations, together with the experiences in the workshops undertaken throughout this study enables us to document the gaps in supply and demand at different levels of the MLP. There are some real, and profound, gaps between the supply of design support for eco-innovation and demand by MSMEs, start-ups, eco-MSMEs and eco-start-ups (Table 14) which can be summarised as:

##### Macro level

- Current policy initiatives for design & innovation at EU level lack a consistent message on eco-innovation and the green economy.
- MSMEs and start-ups do not feel they are the real target of policy initiatives.

##### Meso level

- Design support for MSMEs and startups in the EU is negligible and for eco-MSMEs and eco-start-ups almost non-existent.
- Most national design centres/organisations do not promote ecodesign or eco-innovation or the green economy.

##### Micro level

- Very few DSPs have ecodesign &/or eco-innovation skills – this is an issue for design education and reflects lack of belief in the green economy
- DSPs and MSMEs/start-ups face similar issues in being small enterprises.
- Both (ordinary)MSMEs and eco-MSMEs seem to have similar design needs and face similar challenges when collaborating with DSPs.
- Both (ordinary)MSMEs and eco-MSMEs see benefits in design, but they need better ways of meeting and communicating with DSPs and understanding how design can really benefit and add value to their business and why they should prioritise it over other support services.

- MACRO LEVEL
- MESO LEVEL
- MICRO LEVEL

# GAP ANALYSIS DIAGRAM

WORK PACKAGE NO.

5 Design Service Providers (DSPs)

Supply:Demand summary



Table 14. Gap analysis between supply and demand for design support services for eco-innovation. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)

How did the current situation arise? We believe that the present state of very poor design support provision for MSMEs and start-ups in general, and even worse provision for eco-MSMEs and eco-start-ups is driven by the prevalent mindset at macro and meso levels in the socio-technical regime. The EU organisations responsible for design and innovation policy do not see the environmental agenda - a resource efficient and sustainable Europe - as an imperative, nor do they see a vision of a green economy as central to European competitiveness. In addition, the poor orientation of European and national design centres and design industry organisations towards eco-innovation and the green economy compounds lack of policy coherence and translates into a message of 'design is good for innovation and economic growth, design is good for public sector cost efficiencies, but that sustainability is not a central tenet'. This top-level mindset trickles down to the designers and design agencies who, themselves, are generally MSMEs. On the support side this is evidenced as follows:

#### Macro level

- The present policy agendas under three EC Action Plans (SCP/SIP, Eco, Design Driven Innovation) do not have a consistent integrated focus about eco-innovation or the role that design or ecodesign can play in encouraging it.
- The current EDII projects are, generally, focused at meso level activities for larger companies and the public sector in order to promote economic growth and/or cut costs. There is no focus on the 'green economy' and the role design or ecodesign can play.
- Design policy is still emerging and evolving in the EU, beginning with the initiative of the Bureau of European Design Associations (BEDA) with the EC in 2007. It tends to be dominated by a design industry perspective rather than focusing on the needs of enterprises, in particular MSMEs or SMEs.

While the report of the European Design Leadership Board (EDLB) was a most welcome boost to design policy development in 2012 (Thomson & Koskinen, 2012) it lacks a substantive focus on MSMEs and their needs and does not have sustainability or the green economy fore-fronted in its policy recommendations. It does, however, note the serious fragmentation of design knowledge and its application in innovation and research. Furthermore, it proposes that significant changes need to be made to make design more effective within Europe's 2020 Innovation strategy and to revitalise research, education and practices to deliver a more competitive European design industry. The EDLB's report led to the DG Enterprise and Industry supporting the European Design Innovation Initiative and subsequently developing six EDII contracts

with 46 organisations in 19 countries under six projects<sup>19</sup>: The SEE Platform (Sharing Experience Europe – Policy Innovation Design), EuroDesign (Measuring Design Value), DeEP (Design in European Policies), IDEALL Integrating Design for all in Living Labs), EHDM (European House of Design Management), and REDI (When Regions support Entrepreneurs and Designers to Innovate) in early 2012 and in January 2014 the initiation of the European Design Innovation Platform (EDIP) now known as Design for Europe (DfE) (see Figure 3 in this report). With the exception of REDI, which did try and bring designers together with SMEs, most of these initiatives are operated by meso-level organisations whose target is other meso-level organisations in industry or the public sector, not specifically MSMEs. Most of the projects are about raising awareness about the potential of design to contribute to innovation, economic growth and cost efficiencies in the public sector. MSMEs do not prefigure in much of the language of the final reports from the project consortia. In the DeEP project final report, which focuses on design policy benchmarking and developing criteria to benchmark, the key criteria are: government spending, education course and graduates and design industry data (numbers of designers, GDP contribution, import/exports of creative services) (DeEP, 2015: 70). There are no criteria specified for measures for the value design adds to enterprises, the number of businesses helped by design, design ROI data and so on.

#### Meso level

- In 2014 design support programmes only existed in 12/28 EU Member states, only 1 was focused on eco-innovation. Less than 0.02% of MSMEs in the EU received support from these programmes.
- In 2015 only 3 national design centres/organisations in the EU embed ecodesign/sustainable design.
- In a snapshot of national design centres/organisations very few had directories of designers which enabled MSMEs to find those with ecodesign/sustainable design and/or MSME experience.
- The design industry doesn't see growth in terms of the green economy or eco-innovation.

It appears that early interest in addressing the lack of ecodesign and eco-innovation competences in the design industry and education in the 2000s (e.g. Charter & Tischner, 2001; Otto, 2002; Richardson et al. 2005) has waned significantly after the global (and European) economic crisis of 2008. Perhaps, most importantly, organisations operating to promote design (usually national design centres) or to represent designers (usually

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<sup>19</sup> The six EDII projects are: Design Management for Public Services, <http://ehdm.eu/>; IDEALL, Integrating Design for All Living Labs, <http://usercentredbusiness.com/index.php>; Measuring Design Value, <http://www.measuringdesignvalue.eu/>; The SEE Platform, <http://www.seeplatform.eu/>; DeEP, Design in European Policy initiative, <http://www.deepinitiative.eu/>; REDI, When Regions Support Entrepreneurs and Designers to Innovate.

professional associations) do not generally see ecodesign, sustainable design, sustainability or the green economy as a distinct and valuable focus for future growth.

Micro level

- In 2015 very few of the 410,000 designers/design agencies in the EU appear to have expertise in ecodesign, a key eco-innovation approach. This expertise tends to reside in research units in universities in 6 to 8 EU member states. Nor do designers/design agencies tend to have expertise in dealing with SMEs and understanding their needs.
- Designers/design agencies are themselves MSMEs and experience similar challenges to eco-MSMEs and eco-startups. They lack incentives from government or the design industry to expand their skills and develop services for the eco-innovation market.

While there have been some improvements in addressing ecodesign and sustainable design skills in design education during the last decade, the desire for designers and design agencies to promote their services towards a green or sustainable economy are generally absent and even low in countries such as Germany regarded as one of the greener EU member states (Behrisch et al. 2011).

Not only are there substantial real gaps between the supply-side and the demand-side for DSPs in relation to eco-innovation support but the lack of focus, belief and vision that the green economy presents a real opportunity is absent at macro, meso and micro levels *except* in the eco-MSMEs and eco-start-ups themselves.

### **3.2 Best practice from a Multi-level Perspective**

While it is possible to commend the rapid progress in policy development for design in the EU context over the last ten years, the only explicit recommendation for the role of design in eco-innovation is the EC's 2008 SCP/SIP, 2011 Eco Action Plan and 2014 Green Action Plan (see Table 4 in this report). However, as this study shows, ecodesign and other design services need to be better integrated into current policies and projects around design and innovation – for example, the 2013 Design Driven Innovation Action Plan, the EDII and DfE.

The national design centres and/or national design organisations of Austria, Germany and Sweden, followed by Spain and the UK, and, as noted by the experts interviewed for SHIFT (section 2.1 above) we can add Belgium, Denmark and the Netherlands to this list of EU countries that has an above average awareness of ecodesign, sustainable design and/or its relevance to innovation.

However, it is at the local and regional level in Europe where we see the genuine examples of best practice in how design can support eco-innovation. Of particular merit are the locations supported by ENEC (see Table 7 above) – Flanders, Belgium; North-Rhine Westfalia, Germany; Ithobe Basque, Spain; Pôle Eco-conception Rhône Alps, France; and the EcoDesign Centre, Wales, UK. The key feature appears to be that there is

support for ecodesign and eco-innovation at the local or regional political level of governance. The success of the EcoDesign Centre Wales has been well documented in the literature as well as the challenge to keep growing local capacity in the future (O'Rafferty and O'Connor, 2010; O'Rafferty et al., 2008).

Local and regional government support is particularly relevant for some non-ENEC examples of best practice, such as LADEC's Cleantech Co-design Center which has received consistent support from the City of Lahti and the Päijät Häme region in south-central Finland. In fact Finland's Ministry of Employment and Economy in the latest Finnish design policy document emphasised that *'Linking design competence together with the green economy demands the pooling of investments in expertise. This has been achieved for example with the CleanDesign concept in Lahti'* (Ministry of Employment & Economy, 2013, 50). The development of this centre has run in parallel with the development of a co-design culture to increase creative collaboration between the commercial, public, social and informal sectors (Fuad-Luke et al. 2015).

### **3.3 Challenges from a Multi-level Perspective**

#### **Macro to meso level actors**

There needs to be much better co-ordination between the EC's DGs to create synergies between the DGs own APs to provide a consistent cross-cutting theme to support the idea of a resource-efficient Europe, the growth potential for a green economy and greater co-operation under the Small Business act (SBA) whose focus is MSMEs in Europe and their welfare and growth. The Green Action Plan (GAP) published by the EC (EC, 2014) provides a clear set of aims:

1. improve resource efficiency of European MSMEs
2. support green entrepreneurship
3. exploit the opportunities of greener value chains
4. facilitate market access for green MSMEs.

Design policymakers and key decision makers from national design centres and professional design and research organisations need to collaborate and focus on how design can help meet the aims of the GAP. They need to co-ordinate with local delivery agents who can offer or provide access to design support services.

The present design support system appears organised on short-term objectives and seems orientated towards growing the design industry, and especially its performance in large or medium sized enterprises and the public sector, not the (eco-)MSMEs themselves. Most design support programmes are reactive not pro-active, they offer hard not soft support, and aim for incremental rather than radical innovation. This is evidenced by many meso level organisations which promote design and offer design support programmes referring to the Danish Design Ladder (originally created in 2003, see Figure 5 of this report), or their own version, to show progression of companies from 'no design' to 'design as styling' to 'design as process' to 'design as strategy'.

Progression up this 'ladder' implies that design for discrete problems converts into design as capability and, implicitly assumes that having an 'in-house' design capability is desirable. For most MSMEs this is not a realistic proposition since they lack human capital and financial capital to dedicate to rising up the ladder. This is more fitting to larger 'SM' companies, where maybe the return can justify the investment. Most MSMEs want access to design support at the pre-seed, seed or initial stage development in order to help them get access to a market. Later design inputs are needed in order to grow the market, but they don't necessarily mean developing an in-house design capability. Thus, the meso-level organisations need to re-think their delivery strategies and models to better meet the needs of MSMEs.

The poor skillset amongst designers and design agencies for ecodesign, sustainable design and business expertise within an MSME environment needs addressing by higher education institutions (HEIs) and/or professional design organisations by creating opportunities for Continuous Professional Development (CPD) courses. In addition, policymakers need to demonstrate that they are co-ordinated across the EC's DGs and lever more concerted action on the green economy that can be felt by the designers at the micro level and design industry and design educational institutions at the meso level.

#### **Macro to Micro level actors**

As noted in the Growth and Prosperity report by the EDLB (Thomson & Koskinen, 2012) 'The majority of Europe's 23 million SMEs have yet to grasp the opportunities entailed in the utilisation of design'. If they are to take advantage of these opportunities then it appears that all actors in different levels of the design support system (policy makers, design industry representatives, designers, design agencies, design research units and so on) should put themselves in the shoes of the MSMEs and start-ups in order to better understand:

- the needs of MSMEs
- the needs of eco-MSMEs and eco-startups
- how to communicate different design services and how they create benefits and add-value to MSMEs and start-ups
- how MSMEs and start-ups can find competent DSPs (designers, design agencies and specialist design research units)
- how MSMEs can better communicate their needs to DSPs
- how DSPs can better explain the design services they provide and what needs these services meet for the MSMEs
- how MSMEs and eco-MSMEs can better access design support systems and find relevant DSPs e.g. through better directories and networking or partnering events
- how to develop the best range of options or preferred mechanisms for MSMEs and eco-MSMEs to get assistance by public subsidy (tax incentives, vouchers or other system) and how to best meet their need by mentoring, coaching, training,

workshops, expert advice or a particular kind of promoter (see 'interagents' in WP7, SHIFT) working with designers, etc.

- how to dovetail or provide design support services with other business support services e.g. through the Enterprise Europe Network
- how design can help give access to existing markets and help grow new ones

The above list suggests that, at present, we lack a suitable set of tools or methodology to audit the needs of (eco-)MSMEs and (eco-)start-ups in order to assess how different design services might provide a solution and/or can be combined with other (eco-)innovation support services.

## **4 Conclusions and recommendations for improving support systems**

### **4.1 Re-designing the design support systems & Discrepancies in the existing design support systems for entrepreneurship**

#### **4.1.1 Recommendations for the EU**

##### **Policy**

In current design and innovation policy neither MSMEs or eco-innovation or the green economy are central to achieving the current aims of these policies. This is an omission.

*Recommendation 1:* 'Design' including 'ecodesign/sustainable design' should be embedded in all new Horizon 2020, Innovation Union, Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME) and other relevant EU/EC initiatives and bids to ensure its integration into an emergent European innovation culture.

##### **Design support programmes**

Currently there is patchy provision across the EU with only 12 active programmes and their reach is very limited to MSMEs and less so to eco-MSMEs and eco-start-ups.

The Green Action Plan for SMEs (EC, 2014) provides a golden opportunity to integrate design to improve efficiency of products and services while simultaneously raising eco-startup/MSMEs' branding, communications and market entry. However, national design centres of EU member states have not contributed to the development of this plan and, consequently, have not explored opportunities which might exist for the design industry to work more closely with The European Resource Efficiency Excellence Centre, due to be set up in 2015 and the Enterprise Europe Network (EEN).

*Recommendation 2:* The Directorate General for Internal Market, Industry, Entrepreneurship and SMEs (DG GROW) should collaborate with existing EDII projects, such as DfE, and EU member states' national design centres to discuss how better design support to SMEs, and in particular eco-startups and eco-MSMEs can be levered at the micro level. Perhaps this could be co-ordinated through the European Resource Efficiency Excellence Centre and/or the European Enterprise Network. The discussion should gather around the policies developed in the Green Action Plan 2014 (European Commission, 2014). In particular discussion should focus on the possibility of creating a 'one-stop shop' where eco-innovation services are 'visible' and where design services sit alongside business and other support services.

Most national design centres or national professional design organisations do not forefront ecodesign/sustainable design services nor support, or promote, the development of their industry towards the green economy. There is also a lack of quality directories listing designers with ecodesign and/or experience of working with (eco-)MSMEs, so it is difficult for prospective MSMEs to find the right DSP. In addition, the

design industry does a very poor job of communicating how different design services can add value and/or show a ROI and/or give short-term and long-term benefits. This further makes it challenging for (eco-)MSMEs to prioritise design over other support services.

*Recommendation 3:* DGs Enterprise and Industry; Environment; and Internal Market, Industry, Entrepreneurship and SMEs should liaise with the European design industry, possibly through the existing DfE project in co-operation with the Bureau of European Design Associations (BEDA), to bring together all national design centres and professional trade organisations to discuss the creation of a European directory of designers and design agencies. This directory would define different design services (including ecodesign, sustainable design) and how they add value to enterprises.

*Recommendation 4:* Reports on Return-on-Investment (ROI) from design services show clear benefits to SMEs (Design Council 2012; Pitkänen 2012), but a universal agreement and measurement of how different design services add-value to an SMEs activities is absent. Organisations such as the national design centres of EU member states and BEDA are best placed to collate and collect this data. This will generate more confidence in SMEs making investment in design over other support services if they better understand that the ROI adds value to tangible *and* intangible assets.

#### **Supply-side micro level**

Designers and design agencies are key DSPs who input their expertise to design support programmes. However, it is clear that while they see a potential market for more ecodesign services and working with MSMEs they actually lack the skills or capacity to provide these services. While excellent work has been done by specialist research centres supporting ecodesign in 8 to 10 EU countries, the design support is largely provided through research projects. The time frames and eligibility can restrict participation of MSMEs and long term funding is not guaranteed for these centres.

*Recommendation 5:* There is an urgent need to do an up to date 'state of the art study' on ecodesign capacity in Europe in DSPs (designers, design agencies, specialist research units) as ecodesign is a core eco-innovation practice (Klewitz & Hansen, 2014) and as the last review was undertaken in 2000 (Tukker et al., 2000). Perhaps this can be co-ordinated by the European Network of Ecodesign Centres (ENEC) and dovetailed with the development of a European design directory (see Recommendation 3 above).

**Demand-side micro level** – There is a lack of knowledge in how and which design services actually meet the needs of MSMEs and when in the innovation cycle. Does the MSME need to develop existing or new products or to consider whether a Product Service System or service might be more appropriate for their business model and value proposition? MSMEs need to network with different promoter types (see WP7) in order to update on trends, find quick solutions to pressing problems, understand their technological and organisational limits and requirements and so on. Their needs, and design needs are dynamic. Eco-innovation is about upstream processes, so there is a

need to raise awareness in MSMEs so they can engage in longer-term planning for their own organisational change.

*Recommendation 6:* Develop an audit tool which would help MSMEs determine their immediate and longer-term specific needs and whether it is 'design support' or some other kind of support needed. This should be co-ordinated with activities under Recommendation 2.

#### Developing supply:demand side synergies at the micro level

There is a need to experiment with different ways of bringing the supply-side together with the demand-side, e.g. in matchmaking and other events, platforms, and to provide better channels for the MSMEs to meet DSPs and provide marketing assistance to both. It is essential to find ways of reducing the communication gap between DSPs and SMEs.

It is also important to find ways of providing funding to *both* supply and demand actors at the micro level, with more funding for sustainability orientated enterprises (SOEs) and eco-enterprises i.e. those already committed to the green economy. This recognises that MSMEs and DSPs both struggle by being 'small' and having limited resources.

*Recommendation 7:* Design support programmes need to facilitate the meeting and networking of MSMEs and DSPs and try to combine marketing and/or entrepreneurial support. For example, develop matchmaking events where MSMEs and DSPs have to create a joint proposal to obtain micro-funding for the application of design to a specific innovation life cycle phase in the development of a eco-product or eco-service. Perhaps these can be co-ordinated by the Enterprise Europe Network (ENN) or linked to specific KICs named above.

#### **Requirements of (adapted) systems for sustainable entrepreneurship**

The SEE Platform project, part of the European Design Innovation Initiative (EDII) proposed an 'EU Design Innovation Ecosystem' (Whicher et al., 2015) which enables the actors, organisations and capacities within each to be more easily visible. However, this 'design ecosystem' was conceived by a meso level organisation for a macro level client (the DG Enterprise and Industry), so it remains a 'top-down' view of the existing system. LADEC, Lahti Regional Development Oy, in the City of Lahti, Finland developed a more local/regional design ecosystem where the beneficiaries and key support providers were placed in the inner circles of the ecosystem and more permanent design support infrastructure fed into it (LADEC, 2012; Fuad-Luke et al., 2015). This is an example of best practice in design support and allows the beneficiaries and key support actors to bring in appropriate resources when required for a specific beneficiary and project. This ability to adapt the shape of the design ecosystem at a local level seems to offer a proactive, flexible and softer system that could encourage both incremental and radical innovation (depending upon the needs of the beneficiaries). Any 'adapted system' for sustainable entrepreneurship should position itself to offer the maximum benefits to the beneficiaries i.e. it should be driven by a sensitive mixture of bottom-up demand and

top-down inspiration and planning. Such a system could respond to short, medium and long-term trends and cycles.

An adapted system also needs to have a clear distinction between enterprises, greening enterprises and eco-enterprises because they have different general and innovation support needs. An adapted system should give preferential treatment to eco-enterprises (Table 16) as these represent the vanguard of the green economy. These eco-enterprises are synonyms for ‘visionary champions’ and ‘ethical mavericks’ (Taylor & Walley, 2004, 2010), ‘strategic eco-innovators’ (Kemp & Pearson, 2007), ‘green champions’ (Marin, Marzucchi & Zoboli, 2015) and MSMEs interested in Sustainability Orientated Innovations (SOIs) (Klewitz & Hansen, 2014).

Sources for definitions of eco-innovators, ecopreneurs and green entrepreneurs	SHIFT classification of enterprises		
	enterprises	greening enterprises	eco-enterprises
Taylor & Walley 2004, updated in Walley, Taylor & Greig, 2010.	-	Innovative opportunists Accidental entrepreneurs	Visionary champions Ethical mavericks
Kemp & Pearson, 2007	Non-eco innovators	Passive eco-adopters Strategic eco-adopters	Strategic eco-innovators Strategic eco-adopters
Marin, Marzucchi & Zoboli, 2015	Non-eco innovators Deterring barriers Cost deterred Market deterred	Revealed barriers	Green champions
Klewitz & Hansen, 2014	-	-	SMEs interested in Sustainability Orientated Innovations (SOIs)

Table 15. Refining the language around eco-innovative enterprises. (Source: NODUS, Aalto ARTS, for SHIFT, 2015)

#### 4.1.2 Recommendations for Finland

The role of design in the Finnish economy and, specifically, innovation policy and strategy in Finland, has been the attention of two key initiatives in recent years. In 2008, design was incorporated into the definition of innovation used in the Finnish National Innovation Strategy (Nieminen, 2011). It is also seen as a component of the National Innovation System. In 2012 the city of Helsinki, with four nearby municipalities, hosted the World Design Capital, an event designated by the International Council of Societies of Industrial Design (ICSID). This led to the understanding and application of design expanding out from the private sector into the consciousness of public, social and informal sectors. By 2013 the Ministry of Employment and Economy with the Ministry of Education and Culture published a new national strategy for design looking to lever new growth through design by 2020 with a focus on elevating well-being for all (Ministry of Employment & Economy - MME, 2013). Moreover, design is now seen as part of the core competence of enterprises and the public sector. In particular, *'design provides tools for companies to differentiate, thus strengthening their competitiveness'* and *'design is understood as planning and implementation that arises from the needs and values of the user; is comprehensive, accounts for the context of use and adheres to the principles of sustainability'* (MME, 2013: 11, 13). However, it is recognised that the use of design by SMEs is very limited and needs to be addressed. Of the 29 strategic actions noted in the Design Finland Programme 2013, several are particularly pertinent to the context of the SHIFT programme, and are summarised here:

- Action 4. Business competence among designers is deepened and practical training is promoted. (this agrees with NODUS, Aalto's findings for SHIFT.
- Action 9. Link with the Knowledge and Innovation Community (KIC) to be developed under the European Institute of Innovation & Technology (EIT).
- Action 11. The advisory and development services provided to companies by Centres for Economic Development, Transport and the Environment are renewed and design is seen as a factor in the business development of the SMEs.
- Action 12. Tekes' innovation funding is used to enhance the development and utilisation of design expertise as a source of competitiveness and growth for companies.
- Action 19. Design competence is integrated in the Cleantech programme (launched by the Ministry of Employment and Economy) and development projects for new business in the green economy, particularly pilot projects in Espoo and Oulu on city ecosystems (open data, energy-efficiency and the optimisation of material streams). Of particular note is that *'linking design competence together with the green economy demands the pooling of investments in expertise. This has been achieved for example with the CleanDesign concept in Lahti'* (MEE, 2013, 50).
- Action 20. Design is integrated in the national strategy for Bioeconomy and design competence is enhanced through the National Programme for Wood Construction.

These actions show a positive attitude by the Finnish government and its agencies to encouraging the uptake of design by SMEs to enhance their innovation, growth and competitiveness. However, given the findings in the SHIFT project about the demand-side views of Finnish MSMEs and supply-side views of Finnish DSPs we believe that the real challenge is to provide easy access to events and platforms where (eco-)MSMEs and (eco-)start-ups can meet DSPs and discuss their current and future needs for their enterprises. We believe the following recommendations will assist in meeting this challenge:

*Recommendation 1.* As the Clean Design Center, Lahti is already recognised by the Finnish government as a centre of excellence and best practice, it makes sense to amplify this situation by further promoting this as a national centre for ‘design and the green economy’ for MSMEs and DSPs.

*Recommendation 2.* The Clean Design Center, Lahti should join the European Network of Ecodesign Centres (ENEC) to benefit from their knowledge and network with other centres of excellence in other EU member states.

*Recommendation 3.* LADEC, Lahti Regional Development, has developed their own ‘design ecosystem’ and is experienced in developing platforms for projects, for example, the CoDeCo project where co-design teams were formed around real projects with local companies while simultaneously raising the expertise of designers in Lahti to facilitate using co-design (Fuad-Luke et al., 2015). The continued development of Lahti as a ‘Co-design Bay’, a national centre of activity for co-design projects for multi-stakeholders, also provides a strong opportunity for eco-MSMEs and eco-startups to expand their networks, especially in the early lifecycle stages of innovation. The eco-preneurs, those who initiate and lead eco-enterprises, should be placed at the centre of the ‘design ecosystem’ and seen as the key beneficiaries of the services, knowledge and other facilities which can be provided by the platform.

*Recommendation 4.* Access to design support services should be prioritised to eco-enterprises (green, visionary champions), who are highly motivated to innovate in the green economy, over greening enterprises or enterprises, who represent a more ‘business-as-usual’ attitude.

*Recommendation 5.* A state of the art national survey should be initiated to determine the current expertise in DSPs for eco-design/sustainable design and their competences to work with SMEs and if there is a need to initiate training and coaching programmes.

*Recommendation 6.* Develop an audit tool which would help MSMEs determine their immediate and longer-term specific needs and whether it is ‘design support’ or some other kind of support needed. This audit tool should be made available via Centres for Economic Development, Transport and the Environment where design services should be made available with general business or technology advice and advice on market entry/new market initiatives.

*Recommendation 7.* Develop the Design Acupuncture game for MSMEs and DSPs by bringing together demand-side (Suomen Yrittäjät, Confederation of Finnish Industries) and supply-side actors (Ornamo, Design Forum Finland and other actors in the Finnish Design Centre network outlined in the Finland Design Programme 2013) with key funding agencies' programmes, such as Tekes Green Growth, with a view to developing regular matchmaking events for MSMEs and DSPs. These events can be used to help them develop joint proposals where they receive micro-funding for mutually beneficial projects such as prototyping, new product development, taking products to market and so on.

## 4.2 Key recommendations for WP8

### Improving support for green eco-start-ups/MSMEs (the eco-enterprises)

Place the eco-entrepreneurism at the centre of a design support system and build the system according to their needs rather than imposing a top-down policy view of macro-economic or political objectives, which do not effectively trickle down to the eco-enterprises. Aim for a pan-European 'green economy and eco-accelerator' design ecosystem where design support is critically mixed with other key support activities, but make sure that the ecosystem model is adaptable to local/regional circumstances. A schematic of this radical innovation support system re-design is given in Figure 25.

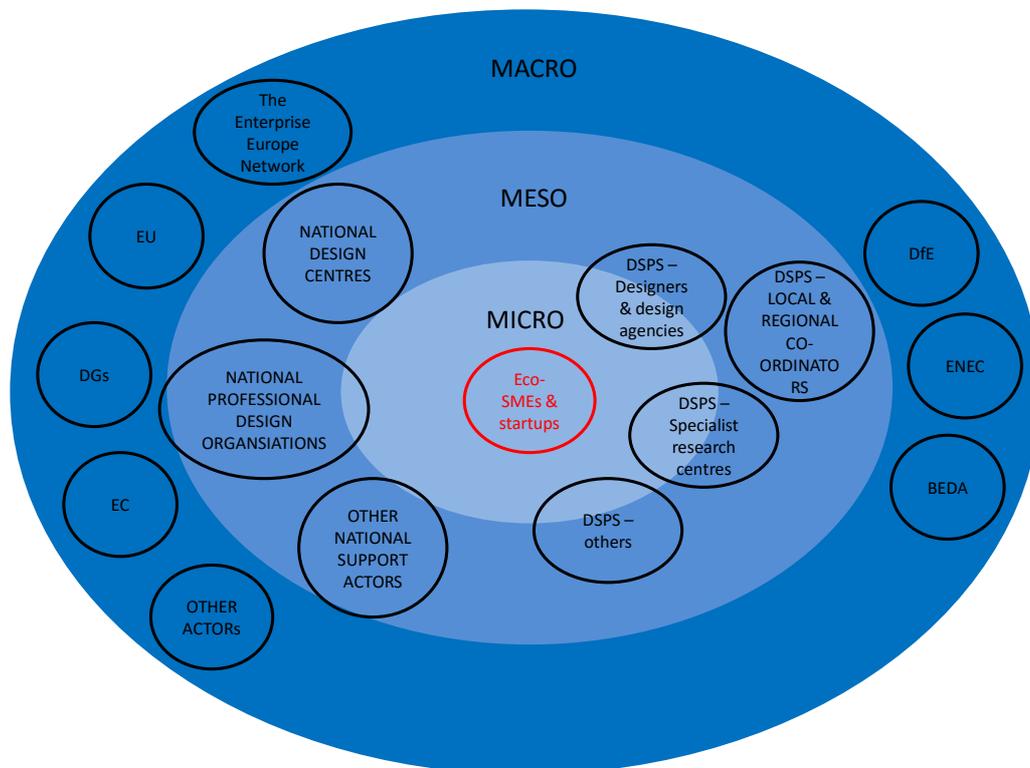


Figure 25. Developing a paradigm shift in support systems: A green economy and eco-accelerator design ecosystem for the EU. (Source: NODUS, Aalto ARTS for SHIFT, September 2015)

Priority should be given to helping those MSMEs and start-ups that are ‘eco-enterprises’ i.e. the existing ‘visionary and green champions’ in order to inspire others to join the green economy.

Those responsible for developing such an EU ‘ecodesign ecosystem’ should liaise with the Enterprise Europe Network (EEN) and their extensive 600 partner network in 50 countries and the forthcoming European Resource Efficiency Centre.

Prioritise financial and other support mechanism to the eco-enterprises as they are the vanguard of the green economy. This also means that policy makers and their meso level delivery organisations need to prioritise the green economy in their activities and look for synergies with organisations involved in The Green Action Plan (EC, 2014) and insist on ring-fencing more micro-funding initiatives for MSMEs and DSPs at the micro level.

Maximise the ability of eco-enterprises to enter the market or develop new markets by encouraging design services in the support system which enhance new sustainability oriented- concept/product/service development, prototyping and user-testing, while concurrently developing the eco-enterprises’ brand and visual identity, communication design and web design. Link these critical design services to other relevant business services (finances, management, tax, investment etc) by co-ordinating with the EEN.

#### **Improving support for greening start-ups/MSMEs (‘greening enterprises’ wishing to green their operations)?**

Developing an EU ‘ecodesign ecosystem’ which demonstrates the added-value of design services which improve resource efficiency. ENEC provides an existing framework for building a pan-European network of ecodesign centres across the EU, but they need to work closely with existing policy orientated projects (such as Design for Europe, DfE), the Bureau of European Design Agencies (BEDA), national design centres, national professional design organisations and local delivery agents (see Figure 25). Such an ecosystem would offer ecodesign and other design services that help ‘greening enterprises’ to have an ambition to become ‘eco-enterprises and move beyond resource efficiency to develop sustainability-oriented concepts, prototype them and take these products to the green market.

### **4.3 Recommendations for further research**

An urgent state of the art study of ecodesign capacity in Europe’s design industry and design research institutions is long overdue. The last study was in the year 2000. This should be combined with a review of DSPs capability to understand the current policy business environment for eco-MSMEs and eco-startups in the context of the green economy with a view to recommending new activities in the area of Continuous Professional Development (CPD) courses for DSPs.

Building on the work done in this SHIFT work package (during the MSME and DSP surveys and the creation of the Design Acupuncture booklet and game), policy makers,

representatives of the design industry, design researchers, and design educators should be brought together to co-design a definitive guide to the different types of design service, how they meet needs in different parts of the innovation cycle, how they give tangible and intangible benefits and ROI and why design should be a prima face concern of (eco-)MSMEs and (eco-) start-ups.

Lastly, a suitable tool or methodology needs to be developed to enable (eco-)MSMEs and (eco-)start-ups to specify their immediate, short, mid- and long-term needs in order to assist with a design support audit and/or a recommendation to seek other support services in combination with design support. This would provide a strong diagnostic tool to gather information on specific, not generic, eco-MSME needs and enable an adaptive design ecosystem to adjust its support services in a more flexible way.

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## GLOSSARY

### Design

'Design' is perceived...as a broadly-defined activity of user-centred innovation that focuses on people in the process of defining new products and services; as a sector in its own right of specialised professional economic activity by trained and qualified practitioners and as a tool for business and organisational growth at the highest strategic level.' (Thompson & Koskinen, 2012).

### Eco-design/ecodesign

Ecodesign is environmentally conscious product development which explores how reductions of negative environmental impacts can be achieved by considering design options throughout the life cycle of the product or service, from design concept to manufacturing, distribution, the use phase and end-of-life phase (Fichter et. al., 2013, 144).

### Sustainable Design

'Sustainable design' as 'any design activity such as ecodesign, Design for the Environment (DfE), Design for Sustainability (DfS), sustainable product design (SPD), sustainable service design (SSD), or sustainable Product Service System (PSS), whose main priority is to reduce environmental impacts and improve resource efficiency while giving simultaneous attention to ethical, social and economic considerations.' (*SHIFT, Nodus, working definition* – a composite definition compiled from Tischer & Charter, 2001 and Fuad-Luke, 2002).

### Design policy

'Design policy' is defined as 'government intervention aimed at stimulating the supply and demand for design to tackle failures in the way that actors and components interact in the national or regional design system' (Whicher & Cawood, 2014).

## Other definitions to help contextualise the area of study

### start-ups

Start-ups are young, not yet established enterprises, which are founded to implement an innovative business idea, usually working with a low starting capital. They often seek to grow their capital by receiving, for example, venture capital, seed capital, crowdfunding or by the help of business angels. (modified from the definition by Achleitner, n.d.).

### SMEs

Based on the European Commission's new definition a SME is defined according to the number of employees and the yearly turnover of the enterprise.

*"Small enterprises are defined as enterprises which employ fewer than 50 persons and whose annual turnover or annual balance sheet total does not exceed 10 million euro."*

*"Medium-sized enterprises are defined as enterprises which employ fewer than 250 persons and whose annual turnover or annual balance sheet total does not exceed 43 million euro."*

*"Micro enterprises are defined as enterprises which employ fewer than 10 persons and whose annual turnover or annual balance sheet total does not exceed 2 million euro."*  
(European Commission, 2003).

### **eco-start-up**

Eco-start-ups are companies which are in their early stage of the life-cycle and are founded on the basis of implementing an eco-innovative concept as the core of their company processes. They are established with a rather low entry capital, and are therefore relying on a fast collaboration to grow their capital. (SHIFT, Nodus, working definition).

### **eco-SMEs**

We define eco-SMEs as small or medium size enterprises, which are implementing eco-design and eco-innovative strategies within their product- and/or service development (SHIFT, Nodus, working definition).

### **environmental products**

Environmental products are goods and services that are produced for the purpose of preventing, reducing and eliminating pollution and any other degradation of the environment (environmental protection - EP) and preserving and maintaining the stock of natural resources and hence safeguarding against depletion (resource management - RM) (Eurostat, 2015)

### **greening enterprises**

Existing enterprises which are trying to become greener. 'Greening enterprises' are already established enterprises which are aiming or trying to implement eco- and/or design strategies within their current processes to become greener, usually by developing more eco-efficient / eco-effective products and/ or implementing environmental management practices across their operations (SHIFT, Nodus, working definition). This can be in correlation with improving the brand name towards greener working practices (Karlsson & Luttrupp, 2006).

### **eco-enterprises**

Enterprises which were started with an eco- purpose, or are already focused upon eco-activities, that want to be even greener. These eco-enterprises already work with eco- and/or eco-design strategies, but want to improve their performance to become front-runners in developing eco-innovative products and services. (see e.g. Bocken et al., 2014, 44; Fichter et. al., 2013, 143)

### **eco-entrepreneurs**

Eco-entrepreneurs, sometimes also referred to as 'eco-preneurs' or 'ecopreneurs' identify an eco- and/or eco-design oriented business idea, evaluate and exploit this idea (Fichter et. al., 2013, 143).

### **sustainable entrepreneurship**

"A [...] market-oriented and personality driven form of creating economic and societal value by means of [...] environmentally or socially beneficial [...] innovations" (Schaltegger & Wagner 2011, 226) (Fichter et. al., 2013, 146).

### **product-service systems**

A product-service system (PSS) is a pre-designed integrated combination of products, services and necessary infrastructure, e.g. a business model where a firm offers a mix of both products and services. A PSS can be thought of as a market proposition that extends the traditional functionality of a product by incorporating additional services and networks in the offering. The emphasis is on the sale of use or result rather than the sale of product. It is aimed at providing improved conditions for sustainability of both consumption and production (Fichter et. al., 2013, 146).

### **eco-innovation**

An eco-innovation is a product or process innovation that causes a *significant* decrease in environmental impact, while remaining economically feasible (i.e. financially viable) and being in harmony with social sustainability (Fichter et. al., 2013, 143).

### **social innovations**

Social innovations are new solutions (products, services, models, markets, processes etc.) that simultaneously meet a social need (more effectively than existing solutions) and lead to new or improved capabilities and relationships and better use of assets and resources. In other words, social innovations are both good for society and enhance society's capacity to act (Caulier-Grice et al., 2012, 18).

### **social entrepreneurship**

Social entrepreneurship refers to the discovery and exploitation of opportunities to create social and environmental benefits. This process can lead to the creation of *social enterprises* that are hybrid organisations having characteristics of both the for-profit and not-for-profit sector. Individuals engaging in social entrepreneurship are often referred to as social entrepreneurs, working to create social innovations (e.g. Hockerts in Visser et al. 2007, 422).

### **social entrepreneur (corporate social entrepreneur)**

Social entrepreneur employs e.g. new business ventures to address or solve social or environmental problems. Independent social entrepreneurs may build traditional businesses in a socially responsible manner; create or develop new products or services suggested by social issues; innovate in processes that are less harmful; or identify business opportunities to profit while addressing a serious social problem (e.g. Wood in Visser et al. 2007, 118).

### **support systems**

Support systems comprise all actors, institutional settings and resources that help entrepreneurs in successfully generating and implementing innovation (Fichter et. al., 2013, 146).

## **LIST OF ACRONYMS**

Aalto ARTS – Aalto University, School of Arts, Design and Architecture

AD - Advertisement

AP – Action Plan

ASTUTE – Advanced Sustainable Manufacturing Technologies

BDO – Business Development Organisation

BEDA-The Bureau of European Design Associations

B2B – Business to Business

B2C – Business to Consumers

CfSD – Centre for Sustainable Design

CMU – Cardiff Metropolitan University

COSME - Competitiveness of Enterprises and Small and Medium-sized Enterprises

CPD – Continuous Professional Development

DCCR – Design Center of Czech Republic

DeEP- Design in European Policy

DfE – Design for Europe / Design for Environment

DfS – Design for Sustainability

DG – Directorate General

DRS – Design Research Society

DSP – Design service provider

EAD – European Academy of Design

EC – European Commission

EDC – Ecodesign Centre, Wales

EDII- European Design Innovation Initiative

EDIP-European Design Innovation Platform

EDLB-European Design Leadership Board

EDRF – European Regional Development Fund

EEA – European Environment Agency

EHDM – European House of Design Management

ELV – End of Life Vehicles

EMAS - Eco-Management and Audit Scheme

ENEC – European Network of Ecodesign Centres

ErPs- Energy related Products

EU – European Union

EuP- Energy Use Products

GAP – Green Action Plan

GDP – Gross Domestic Product

GPP – Green Public Procurement

HDW – Helsinki Design Week

HEI – Higher Education Institutions

ID – Industrial Design

IDEALL – Integrating Design for all in Living Lab

IP- Integrated Product

IPP – Integrated Product Policy

KTP - Knowledge Transfer Partnership

LADEC – Lahti Region Development

LCA – Life Cycle Assessment

LU – Loughborough University

MAP – Materials Action Plan

MLP – Multi-Level Perspective

MSME – Micro, Small and Medium-sized enterprise

NGO – Non-governmental organisation

NODUS – Sustainable Design Research Group, Aalto University, School of Arts, Design and Architecture

NPD – New Product Development

OVAM – The Public Waste Agency of Flanders, Belgium

PDR – National Centre for Product Development and Design Research, Wales.

PSS – Product Service Systems

Q&A – Questions and Answers

R&D – Research and Development

REDI - When Regions support Entrepreneurs and Designers to Innovate

RoHS- Restriction on Hazardous Substances

ROI – Return on Investemt

SBA – Small Business Association

SCP / SIP - AP – Sustainable Consumption and Production / Sustainable Industrial Policy Action Plan, European Commission.

SD – Sustainable Design

SDN – Sustainable Design Network

SEE – Sharing Experience Europe

SEEDA – South East England Development Agency

SHIFT – Support Systems for Sustainable Entrepreneurship and Transformation

SME – Small and Medium sized Enterprise

SOE – Sustainability Oriented Enterprise

SPD-Sustainable Product Design

SSD – Sustainable Service Design

SUSCIN – Sustainable Supply Chains through Innovation

SVID – The Swedish Industrial Council

SY – Suomen Yrittäjät – The Federation of Finnish Enterprises

TESLA – Transnational Ecosystem Laboratory and Actions

UCA – University of Creative Arts

UK – United Kingdom

UWIC – Cardiff Metropolitan University

WEEE- Waste Electrical Equipment

WP – Work Package

## **LIST OF APPENDICES**

Appendix 1: Understanding Design Services

Appendix 2: Objects of Design in 2013

Appendix 3: Case study initiatives in worldwide demonstrating local/regional/national design support programmes

Appendix 4: Questionnaire to CfSD, SDN and EDC

Appendix 5: Questionnaire to SEE Platform and DfE

Appendix 6: Interviews with experts

Appendix 7: Detailed analyse of demand-side survey with SY

Appendix 8: Detailed analyse of supply-side survey with Ornamo

Appendix 9: 2<sup>nd</sup> Demand-side survey questionnaire

Appendix 10: E-mail Survey A

Appendix 11: E-mail Survey B

Appendix 12: Survey: Existing Design Support Systems

Appendix 13: Design Acupuncture Game

Appendix 14: Design Acupuncture event feedback forms – Q&A