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Policy for sustainable entrepreneurship: A crowdsourced framework

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ABSTRACT

Sustainable entrepreneurship can contribute to sustainable development by seeking synergies between social, environmental and economic outcomes, turning market failures into commercial opportunities. However, institutional conditions often act to obstruct sustainable entrepreneurs. While policy is instrumental in shaping conditions for entrepreneurship, how policy can best support sustainable ventures specifically is under-researched. This study uses a novel crowdsourcing approach with multiple actors in the sustainable entrepreneurship ecosystem to explore how policy can create conditions conducive to sustainable entrepreneurship. An emergent multi-level policy framework outlines six mechanisms by which this may be achieved: resource prioritisation, competency building, sustainable market creation, networked sharing, collaborative replication, and impact valuation. These mechanisms enable three interconnected policy objectives: enterprise creation, system transformation, and impact reorientation. The study thereby makes four main contributions to literature on sustainable entrepreneurship and policy. First, it reveals the importance of a 'meso level' of policy that supports the sustainable entrepreneurship ecosystem, complementing micro-level supply-side and macro-level demand-side policies. Second, it proposes a policy focus not just on enterprises and how they are grown, but on sustainability-oriented innovations and how they are replicated. Third, it identifies the need for 'impact re-orientation' policies that track and optimise entrepreneurs' individual and collective triple-bottom-line impacts. Fourth, the study exemplifies a promising crowdsourcing method of co-creating policy.

1. Introduction

Entrepreneurship promises to help with the existential challenge of sustainable development (Gibbs, 2006; Hörisch, 2015; Pacheco et al., 2010). We define entrepreneurship for sustainable development—hereafter 'sustainable entrepreneurship'—as "the discovery, creation, and exploitation of opportunities for (future) goods and services that simultaneously sustain the natural and social environment and provide economic and non-economic gain" (Johnson and Schaltegger, 2020, pp. 1–2). By adopting 'triple-bottom-line' (Elkington, 1997) objectives (Belz and Binder, 2017), sustainable entrepreneurs can be vital actors in turning the market failures that threaten social and environmental ends into commercial opportunities (Hall et al., 2010; Terán-Yépez et al., 2020). As compared with 'double-bottom-line' environmental or social enterprises, they are also motivated to find synergies between social and environmental outcomes (Haffar and Searcy, 2017). Sustainable enterprises can thus play a crucial role in socio-technical transitions towards sustainable systems (Keskin et al., 2013; Hörisch, 2018; Neumeyer and Santos, 2018).

However, these entrepreneurs face a discouraging set of institutional conditions (Hummels and Argyrou, 2021). These are imposed by formal political, legal and financial institutions, as well as by the shared norms and cognitions of different segments of society (Geels, 2004). Pacheco et al. (2010) refer to the conditions facing sustainable entrepreneurs as a "green prison" whereby they face a competitive disadvantage if they pursue costly sustainable actions not borne by their competitors, and are therefore "compelled to unsustainable behaviour by the process of competition" (p. 466). The incumbents these entrepreneurs face may

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indeed use their leverage to prevent market change (Hummels and Argyrou, 2021). Research during the COVID19 pandemic suggests an alternative path forward: some enterprises were seen to collaborate with customers, competitors, and even government to innovate around this 'shared cause', to their own benefit as well as that of shared social goals (Markovic et al., 2021). This raises the possibility that climate change and other sustainability challenges perceived with the same sense of urgency could similarly trigger collaborative mindsets and behaviours.

One potential focus for such collaboration is policy formation. Practitioners (UNCTAD, 2017) and scholars (Hall et al., 2010) have called for a better understanding of how policy can overcome institutional barriers to sustainable entrepreneurship. The sustainable entrepreneurship literature suggests that a co-evolution between institutions and actors is needed, with sustainable entrepreneurs themselves playing a role in modifying their institutional conditions (Johnson and Schaltegger, 2020; Hummels and Argyrou, 2021). Yet literature has not documented any endeavour to innovate sustainable entrepreneurship policy through such a co-evolutionary approach.

We therefore contribute to an understanding of sustainable entrepreneurship policy by asking individuals making up the entrepreneurial ecosystem how they perceive policy can better enable sustainable ventures to thrive and play a role in sustainable transitions. We use a crowdsourcing method to collectively engage (Vaast et al., 2017) sustainable entrepreneurs, along with management academics, policymakers, and other ecosystem actors, to ask: *How can policy improve the institutional conditions for sustainable entrepreneurship*? This process of intentionally generating and promoting policy ideas is known in the innovation policy literature as 'policy entrepreneurship' (Flanagan and Uyarra, 2016). Based on policymaker interviews and a series of workshops, we developed an organizing structure for a one-day online crowdsourcing event involving a further 150 individuals. This event offered participants an accessible forum for proposing and discussing policy ideas.

A framework is derived from these participant insights, evidencing six mechanisms by which policy can improve the institutional conditions for sustainable entrepreneurship: resource prioritisation, competency building, sustainable market creation, networked sharing, collaborative replication and impact valuation. These enable three emergent policy objectives for sustainable entrepreneurship: enterprise creation, system transformation, and impact reorientation.

These findings make four contributions to the sustainable entrepreneurship literature. First, whereas entrepreneurship policy tends to focus on macro issues of demand creation and micro issues of support for individual entrepreneurs (Audretsch et al., 2007), we identify a vital meso-level layer of policy needed to provide a supportive ecosystem for sustainable entrepreneurs. Second, whereas entrepreneurship policy tends to focus on the entrepreneurial venture as its object, sustainable entrepreneurship policy should also emphasize triple-bottom-line innovations, their diffusion *between* entrepreneurs, and their contribution to sustainable transformation. Third, the policy scope must thus consider the measures needed to monitor whether these system-transformation objectives are achieved. This is a considerable challenge for practitioners, hence the importance of the third policy objective of impact re-orientation. Fourth, our method embodies an active role for sustainable entrepreneurs in influencing their institutional conditions, through shaping policy, demonstrating that the relationship between niche-level actors regime-level policy, typically characterised as antagonistic (see Geels, 2010), can instead be co-creative.

The paper is organised as follows. First, we review the literature on sustainable entrepreneurship and its policy challenges. We next outline the method we employed to gather co-created insights about how these challenges can be addressed. We present our key findings in the form of a policy framework. Finally, we discuss our findings in relation to existing literature on policy for entrepreneurship and the (sustainable) transition literature.

2. Sustainable entrepreneurship, policy and shaping institutions

2.1. Entrepreneurship for sustainable development

An extensive review of the current literature contends that entrepreneurs have a role in driving socio-technical transitions, suggesting that individual actors can shift the trajectories of societies through their innovative ideas (Schumpeter, 1934; Hall et al., 2010; Geels, 2010). This potential arises from their ability to recognize opportunities emerging from market changes and market failures, and turn them into profitable ventures (Dean and McMullen, 2007). Notably, recent work focuses on how entrepreneurs turn a market—or institutional—failure into an opportunity (Dean and McMullen, 2007; York and Venkataraman, 2010; Hall et al., 2010). Various literature streams focus on sustainable entrepreneurs, although they define this actor in different ways. Social entrepreneurs are defined by their social mission (Mair and Martí, 2006); their economic aims are typically seen as means for continuing that mission, so their ventures are often characterised as philanthropic (Schaltegger and Wagner, 2011; Binder and Belz, 2015). Environmental entrepreneurs or ecopreneurs (Gibbs, 2006; Gast et al., 2017) are defined as pursuing both economic and environmental aims, turning environmental problems into opportunities and then profiting from them (York and Venkataraman, 2010). Finally, sustainable entrepreneurs are distinguished by their pursuit of both environmental and social goals while also creating economic value (Dean and McMullen, 2007; Terán-Yépez et al., 2020). These triple-bottom-line objectives do not necessarily emerge simultaneously, with these goals often being integrated sequentially (Belz and Binder, 2017). We next consider whether the complex motivations of sustainable entrepreneurs imply that policy for sustainable entrepreneurship requires a different overall objective than for entrepreneurship in general.

Entrepreneurship policy embraces "a broad spectrum of institutions, agencies and different constituency groups" (Audretsch et al., 2007, p.2). Following Taylor et al. (2013) we therefore define policy as "all forms of social control, including those that harness wider social forces beyond government, including the influence of business and other actors in society" (p. 489). Entrepreneurship researchers have been criticized for "tending to focus on the individual and the new venture while largely ignoring the consideration of systems-level constraints and outcomes" (Acs et al., 2014, p. 478). Entrepreneurship policy similarly has tended to center on the role of the individual innovator, the very purpose of policy being stated as "to encourage agents of change, or entrepreneurs, to innovate" (Audretsch and Link, 2012, p.14). However, the desired outcomes of entrepreneurship policy remain contested. The dominant policy objective has traditionally been to encourage more people to consider entrepreneurship, to take action to start a business, and to proceed with the business's early stages (Lundström and Stevenson, 2005). But should entrepreneurship policy simply be aimed at creating more entrepreneurs? Recent work has suggested that knowledge generation and exploitation (measured by aggregated entrepreneurial orientation) are better measures of policy success (Mthanti and Ojah, 2017). Or should policy be about the ultimate value created by entrepreneurs and their ventures? And if it is about value what sort of value? Some authors have suggested that more overall value can be created by focusing policy support on high quality, high growth companies, as these are the ventures most likely to contribute to economic growth and create jobs (Shane, 2009). Others have argued policy should instead be designed to strengthen entrepreneurial ecosystems—defined as the "agglomeration of interconnected individuals, entities and regulatory bodies in a given geographic area"—(Morris et al., 2015, p. 719), on the basis that entrepreneurial firms are embedded in communities, and that the value they create extends beyond the pure economic to wider social benefits including bringing down crime rates and supporting community initiatives (Morris et al., 2015).

The question of policy for *sustainable* entrepreneurship has received little explicit research attention (Hummels and Argyrou, 2021). Such

policy might aim to influence preferences towards becoming a *sustainable* entrepreneur (Hall et al., 2010), with the objective of maximising aggregated sustainable-entrepreneurship orientation. Support for this logic comes from the finding that in nations where the government supports environmental entrepreneurs (e.g. by bringing them together with other actors around specific environmental problems), there exists a higher average environmental orientation of entrepreneurs (Meek et al., 2010). There is also evidence that the higher the perceived social status of environmental innovation, the stronger the environmental orientation of entrepreneurial ventures (Hörisch et al., 2017). However, the perceived effectiveness of policy may be dependent on whether value is defined widely to include not just economic value but social and environmental value too. Sustainable entrepreneurial ventures are likely to differ from other entrepreneurial ventures with respect to the how they regard value creation and how they measure their impact (Neumeyer and Santos, 2018; Austin, 2016). If the objective of traditional entrepreneurship policy is to maximise the number of entrepreneurs in a market and encourage them to grow their businesses to drive economic growth, an unanswered question remains: What are the objectives of sustainable entrepreneurship policy?

2.2. The institutional conditions for sustainable entrepreneurship

Varied institutions combine to create conditions defining the 'rules of the game' in a given field (Fuenfschilling, 2019). Some conditions arise from formal rules, such as intellectual property regimes, business regulation, domain-specific legislation, industry standards, public-funding regimes, and financial and education systems. Others arise informally through cognitive routines and norms (Geels, 2004) shared by actors in the field, such as cultural expectations and citizen behaviour (Dorado and Ventresca, 2013; Dyerson and Preuss, 2017). Perhaps unintentionally, these conditions can collectively disincentivize, rather than reward, sustainable practices (Pacheco et al., 2010). Given the climate emergency, Hummels and Argyrou (2021, p.10) observe that "developing new institutions or changing existing institutions for sustainable development through sustainable entrepreneurship, is imminently required". Sustainable entrepreneurs that recognize these barriers have the potential to act as change agents who can work towards ameliorating unsustainable institutional conditions (Dorado and Ventresca, 2013; Hummels and Argyrou, 2021).

Johnson and Schaltegger's (2020) review concludes that sustainable entrepreneurs are micro-level actors with the potential to influence macro-level institutions (e.g. at national government level) in three ways through: 1) creating new sustainability-oriented institutions, such as, certification standards bodies, 2) transforming institutions towards sustainability, for example through partnering with established business (Watson et al., 2018), and 3) creating economic, social and environmental value for multiple societal actors. They also propose three mechanisms by which micro-level actors can influence meso-level institutions, such as local governments or marketplaces, through: 1) forming sustainability-oriented networks, 2) creating value in local communities alongside positive outcomes for their entrepreneurial venture, and 3) introducing sustainability-oriented market innovations. Other recent research has similarly highlighted the importance of the meso level where social entrepreneurs create institutional transformation through their networks in the ecosystem (Thompson et al., 2018; McDermott et al., 2018; Bozhikin et al., 2019). Collectively, this research points to the meso level as playing a key mediating role in amplifying the activities of entrepreneurs such that despite their small stature, they can in aggregate transform society. However, whether and how policy can encourage such meso-level support for sustainable entrepreneurship remains under-explored.

A prevalent view in entrepreneurship literature more generally is that the institutions influencing entrepreneurs are significantly shaped by policy (Acs and Szerb, 2007; Audretsch et al., 2007; Henrekson and Stenkula, 2010; Acs et al., 2014). Within the multi-level perspective (MLP), commonly used to conceive sustainability transitions, policy forms part of the 'regime' which represents the dominant structure, culture and practices that set the institutional conditions which constrain the radically innovative lower level of 'niche' actors, such as sustainable entrepreneurs (Geels, 2002). However, the sustainable entrepreneurship literature discussed above suggests a co-evolution between institutions and actors where sustainable entrepreneurs themselves have a role modifying their institutional conditions (Johnson and Schaltegger, 2020; Hummels and Argyrou, 2021). Similarly, in the marketing field, it has been found that new markets can emerge from dynamic interactions between institutions and individual actors (Baker and Nenonen, 2020). This raises the possibility that niche-level actors might be beneficially involved in shaping the regime-level institutions which enable or constrain them, including through influencing policy.

This conjecture is consistent with policy studies literature, which stresses that "a multiplicity of actors, state and non-state, individual, networked and corporate, may be involved in shaping policy" (Flanagan and Uyarra, 2016, p. 178). This idea of individuals influencing policy, which in turn shapes institutional conditions, resonates with the concept of institutional entrepreneurship where individual agency aims "at transforming existing institutions and creating new ones" (Acs et al., 2014, p. 478). Similarly, Cojoianu et al. (2020) suggest that entrepreneurs may enhance their opportunities by participating in 'political entrepreneurship' (Dean and McMullen, 2007), which involves taking action to alter the nature of government policies.

In the adjacent field of social entrepreneurship, it has been suggested that policies are more effective if they are "implemented jointly by different players from different social domains—government, business and civil society" (Bozhikin, Macke & da Costa, 2019, p. 742). However, the active role of sustainable entrepreneurs and other micro-level actors in policy formation is yet to receive focused attention. For example, Cojoianu et al. (2020) observed that the interaction between policy and environmental knowledge influences the creation and financing of green start-ups, but they do not examine how the policy regime itself could better enable green start-ups.

There is therefore an opportunity to contribute to understanding of sustainable entrepreneurship policy by asking the individuals involved in the entrepreneurial ecosystem how policy might be enhanced to create more conducive conditions for sustainable ventures to thrive, and amplify their impacts through collectively contributing to sustainable transitions. Fig. 1 summarizes the key insights derived from the literature as it relates to sustainable entrepreneurs, their role in shaping institutions, and how policy comes into play.

We have reviewed three respects in which sustainable entrepreneurship policy might be expected to differ from entrepreneurship policy in general. First, the overarching objective of policy may differ. Second, policy may play a role in creating more conducive institutional conditions for sustainable entrepreneurship, notably at the meso level. Third, sustainable entrepreneurs may need, and want, to take an active role in changing these conditions, including by influencing policy. We address these potential differences in sustainable entrepreneurial policy in the empirical work that follows, including through our research method which is itself a demonstration of collective co-creation across an ecosystem.

3. Method

The primary data collection method was a one-day online crowdsourcing event with entrepreneurs, policymakers, academics and others within the sustainable entrepreneurship ecosystem. Crowdsourcing is defined as a "participative online activity in which an individual, organization, or company … proposes for a group of individuals of varying knowledge, heterogeneity, and number, via a flexible open call, the voluntary undertaking of a task" (Estelles-Arolas & Gonzales-Ladron-de-Guevara, 2012, p.11). The task, in this instance was to evolve a policy framework for sustainable entrepreneurship in the

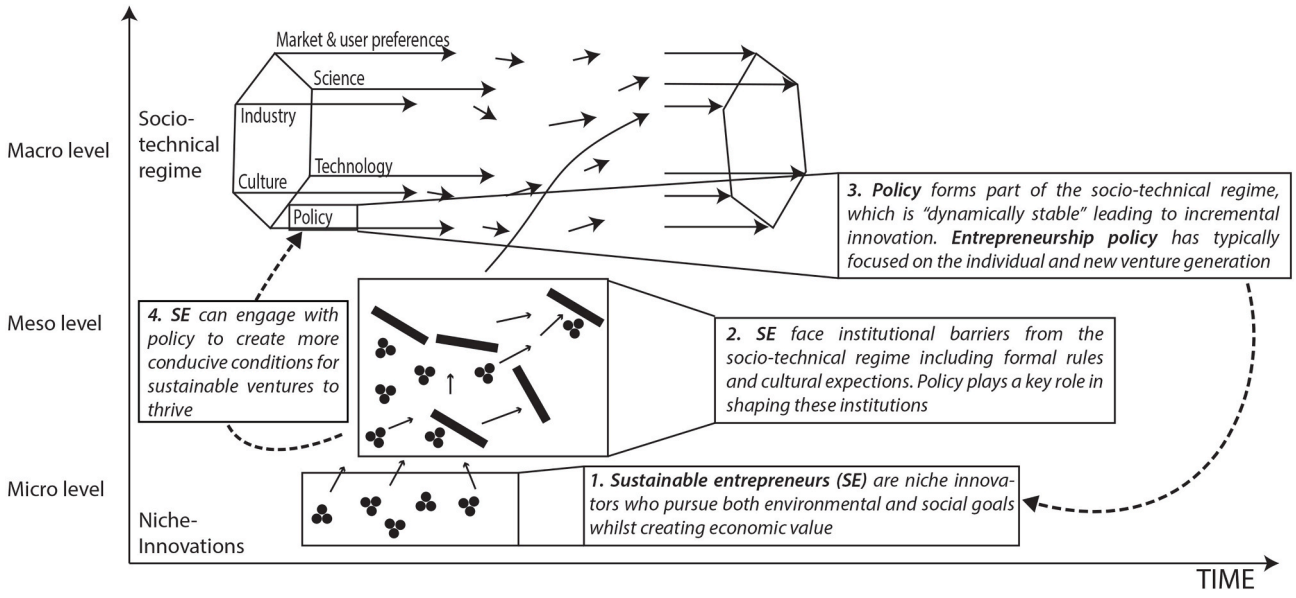

Fig. 1. Sustainable Entrepreneurship, policy, and shaping institutions.
Inspired by Geels (2002).

European Union.

A crowdsourcing event was chosen for four reasons. First, because sustainable-entrepreneurship policy impacts on, and needs to be enacted by, many diverse stakeholders, identifying how it can be improved requires insight from this diversity of stakeholders. Second, the institutional conditions for sustainable entrepreneurship are socially constructed by the actors engaged in the field (Geels, 2004). Since these actors collectively establish the explicit and tacit rules which govern the phenomenon of sustainable entrepreneurship, it is wise for researchers to ask them how best to govern this phenomenon. Third, a collaborative approach aligns with the methods adopted by other movements which advocate for the wider involvement of stakeholders though listening to their insights, including marketing co-creation (Prahalad and Ramaswamy, 2004) and consumer brand engagement (Rundle-Thiele, 2006), as well as open innovation and participatory democracy (Wijnhoven et al., 2015). Specifically, crowdsourcing has been used effectively to inform public policy (Mergel and Desouza, 2013). Fourth, literature has not yet to our knowledge identified a framework for sustainable-entrepreneurship policy, let alone systematically studied its effects. In the absence of applicable theory, crowdsourcing lends itself to a theories-in-use approach (Zeithaml et al., 2019) which builds theory by uncovering the mental models that drive decision making and behaviour of practitioners, in this case, in relation to sustainable entrepreneurship policy.

The online format of the crowdsourcing method had three further advantages. First, as compared with a face-to-face event, the multiple strands of simultaneous conversation captured between all participants, unlike the one-speaker-at-a-time discussions typical in formal offline meetings, meant that all participants could contribute and that all contributions were captured and stored for subsequent analysis. Second, it allowed multiple simultaneous streams of discussion to be captured between shifting organic groupings of participants, allowing spontaneous dialogue and creativity to blossom. Third, it enabled actor participation from a wide range of geographies, with each drawing upon their experiences of sustainable entrepreneurship across diverse institutional conditions in a variety of nations, without the need for travel or other attendance costs.

3.1. Data collection

The study involved multiple stages, consistent with the theories-in-use approach (Zeithaml et al., 2019) where emerging concepts are discussed iteratively with the 'theory holders', in this case sustainable entrepreneurs, policymakers and academics who specialise in the field of sustainable entrepreneurship. The three broad phases of the study included an extensive pre-study phase, a main crowdsourcing event, and a post-study phase, with entrepreneurs, policymakers and academics involved at all three stages. Fig. 2 presents an overview of the pre-study process. Table 1 details sample profiles of the pre-study research and the main crowdsourcing event.

3.1.1. Pre-study research

The aim of the pre-study research was to identify barriers and drivers of sustainable entrepreneurship including policy-related impacts, from the perspective of key players in the ecosystem. The pre-study activities included workshops during two annual general meetings of academics (around 100) involved in a European Union-funded project, interviews with policymakers, and two workshops that included sustainable entrepreneurs, policymakers, and academics. Six policy themes emerged as the most commonly reported areas of concern; these were subsequently used to structure the crowdsourcing event.

3.1.2. Crowdsourcing event

The crowdsourcing event was conducted via an online multi-participant text-based platform hosted by a research company, Globescan. The company supported the practical operation of the platform during the event and provided technical training for the research team in how to moderate discussions via the platform. Participants were recruited via email invitations to databases and personal networks, via social media, and via posters and invitation postcards distributed at relevant events. The participant pool was broadly defined as individuals with any involvement in the sustainable entrepreneurship ecosystem. Participants could identify with more than one role in the ecosystem, as shown in Table 1; an individual might, for example, have roles in a business school, a sustainable-entrepreneurship venture, and a policy body. Over 340 individuals registered for the event, with 150 logging in on the day to participate.

Text-based conversations enabled by the Globescan platform were open-ended, but as with other qualitative research approaches such as focus groups and interviews, where a research protocol is pre-designed to shape discussion, a discussion guide was developed for each of the six policy areas identified in the pre-study. The research team acted as

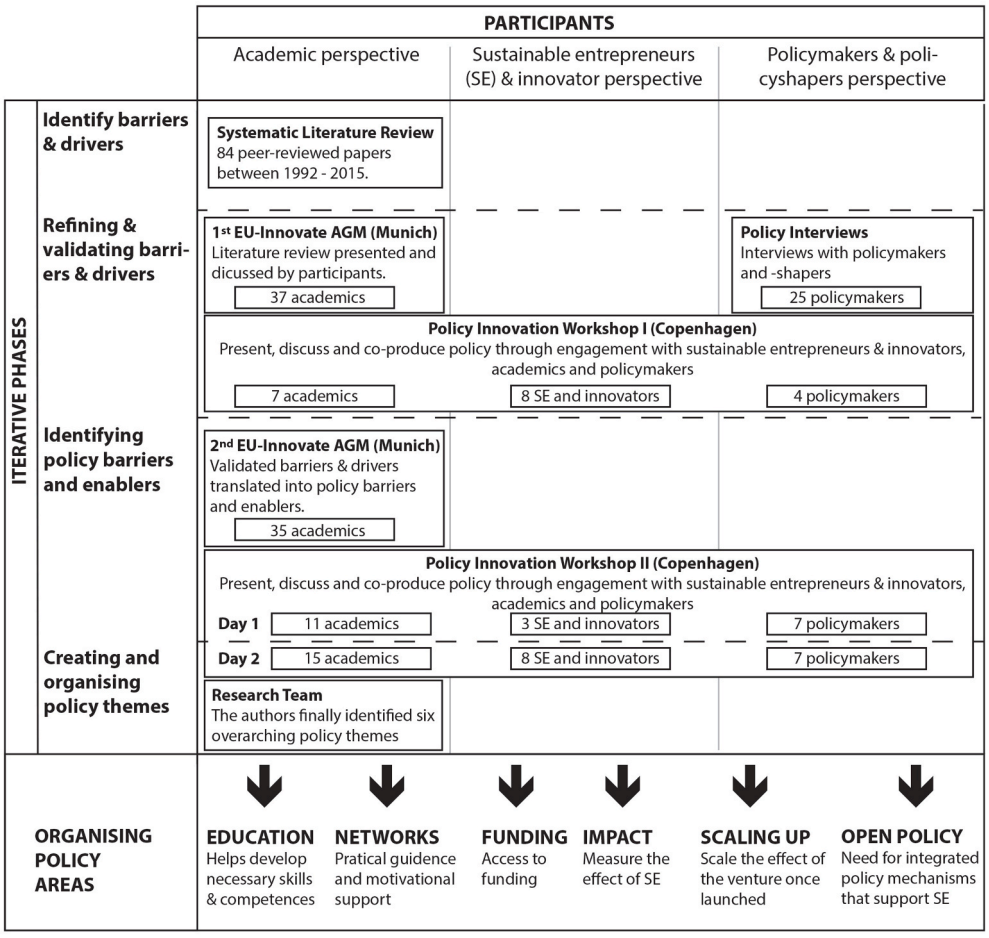

Fig. 2. Pre-study research process.

moderators using the pre-prepared discussion guides (Threlfall, 1999) and encouraged participants to: provide their own experiences of the challenges facing sustainable entrepreneurship, share and comment on policies in their regions, and share ideas for improved policies. After initial open-ended conversation, the moderators seeded conversation with specific questions identified in the pre-study phase that related to policy themes, as well as specific policy proposals that emerged out of the pre-study. They invited participants to comment on and propose variations to these policy measures and to contribute their own ideas. The online platform allowed participants to simultaneously comment on other participants' ideas and to add to discussion threads throughout the day. The online format also meant that all contributions could be captured and downloaded to NVivo for analysis (Kozinets, 2002). By the close of the 6-h crowdsourcing event, 150 participants posting textual comments in real time, had contributed 1696 'posts,' ranging from a single line of text to several paragraphs.

3.1.3. Post-study research

Consistent with the theories-in-use approach, two post-study events convened "representative stakeholders including some original study participants to critique and discuss the researchers' tentative formal theory" (Zeithaml et al., 2019, p. 7). At the first post-study event, the emerging policy mechanisms, populated with specific EU-level policy recommendations, were discussed with 9 EU policymakers, 2 NGO representatives and 6 academics at a 3-h policy roundtable meeting. At the second, the policy framework was presented and debated in a 90-min session at a sustainable entrepreneurship conference attended by 116 sustainable entrepreneurs, policymakers, academics and thought-leaders.

3.2. Data analysis

In accordance with the theories-in-use approach, the data from the diverse participants became the starting point for harvesting constructs and relationships (Zeithaml et al., 2019). Analysis of the 422 pages of text proceeded as follows. First, three scholars conducted open coding to capture the policy ideas identified by participants, using our definition of policy given earlier. Second, this initial large set of codes was reviewed for face validity by a further three scholars. Following discussion by this larger research team, the codes were clustered to form 39 policy categories, shown in the first column of Table 2. Third, we conducted axial coding, focusing on these categories and the relationships between them to develop higher-order policy themes (Gioia et al., 2013). For example, we coded four categories into the higher-order theme of "Prioritising funding flows": "facilitate (and contribute to) crowdfunding," "incentivize corporate venturing," "incentivize impact investors" and "provide loan guarantees." This resulted in 14 policy themes. Fourth, we then compared these emergent policy themes with literature on policy to identify a set of six policy mechanisms, presented in column 3 of Table 2 and discussed in the following section. Finally, we examined the data underpinning each policy mechanism for indications of the explicit or implicit objective the suggested policy ideas or measures served. We found that these clustered into three broad overarching policy objectives: 'Enterprise creation', 'System transformation' and 'Impact reorientation.' These findings are summarised in Fig. 3 and discussed next.

Table 1
Sample profile.

PREPARATORY RESEARCH

	Project Team Annual General Meeting Year 1		Policymaker interviews		Project Team Annual General Meeting Year 2	
Role:	Academic	37	Policymaker	25	Academic	35
Country of origin:	Germany	9	EU-level	7	Germany	9
	Spain	9	Nordic-level	2	Spain	3
	UK	7	UK	6	Belgium	3
	Finland	4	Germany	3	UK	6
	Poland	3	Sweden	3	Finland	2
	Italy	2	Denmark	3	Poland	3
	Denmark	2	France	1	Italy	3
	Netherlands	1			Denmark	3
					Netherlands	3
	TOTAL	**37**	**TOTAL**	**25**	**TOTAL**	**35**

Policy Innovation Workshop - 1			
Role		**Country of origin**	
Entrepreneur	8	UK	10
Academic	7	Denmark	4
Policymaker	4	Germany	2
		Belgium	1
		Spain	1
		Finland	1
TOTAL			**19**

Policy Innovation Workshop - 2			
Role		**Country of origin**	
Academic	15	Denmark	9
Entrepreneur	8	UK	7
Policymaker	7	Germany	4
		Spain	2
		Netherlands	1
		France	1
		Sweden	1
		n.a.	5
TOTAL			**30**

CROWDSOURCING EVENT[1]

Roles (self-selected)			Roles (per person)		Country of origin	
Businessperson	(B)	67	5 roles or more	19	United Kingdom	91
Academic	(A)	65	4 roles	12	Germany	15
Citizen / voter	(C)	59	3 roles	24	Spain	4
Thought leader	(TL)	56	2 roles	31	Denmark	3
Entrepreneur	(E)	39	1 role	58	Greece	3
NGO	(NGO)	22	0 roles	6	Switzerland	3
Investor	(I)	9			Belgium	2
Policymaker	(POL)	9			Finland	2
Public sector employee	(PUB)	8			Other European	7
					USA / Canada	6
					Brazil	5
					Other non-EU	9
TOTAL						**150**

1. Participants could identify with as many roles as they considered applicable.

4. Findings

See Fig. 3 for an overview. We organise our findings under six mechanisms[1] (labelled i. to vi. in Fig. 3) by which policy has the potential to improve the institutional conditions for sustainable entrepreneurship. See Table 2 for definitions of each mechanism, along with details of the related policy themes and ideas. We also show at what system level these mechanisms operate. We take a multilevel perspective to define the macro level as the wider political, social and environmental context; the meso level as markets, industry segments, social groups and geographically defined communities; and the micro level as the individual entrepreneur or enterprise (Johnson and Schaltegger, 2020). The significance of the meso-level across several mechanisms contrasts with much entrepreneurship policy, which tends to emphasize macro-level demand creation on the one hand ('structural factors'), and on the other, supply-side help for micro-level actors ('individual factors') (Lundström and Stevenson, 2005; Audretsch et al., 2007). The interaction between the three levels is conceived as dynamic and co-dependent, where changes to one mechanism drive changes in others. For example, the maturing of the sustainable investment market under such banners as ESG (Environmental, Social and Governance) and impact investing has resulted in demand for quantification of the material effects of these investments (e.g. CO2 emission reduction). In this case, a sustainable market creation mechanism (iii.) also requires an impact valuation mechanism (vi.) in order to succeed.

The six emergent policy mechanisms address three interconnected policy objectives, which we term (I.) Enterprise creation, (II.) System transformation, and (III.) Impact reorientation. Enterprise creation is the dominant traditional focus of entrepreneurship policy, which as we have discussed tends to be designed to grow the number of entrepreneurs and maximise their aggregate economic activity (Lundström and Stevenson, 2005), while protecting innovation for exploitation by the innovating firm (von Hippel, 2005). In addition, our data suggests that a second key policy objective for sustainable entrepreneurship is to encourage the replication and enhancement of innovations by other entrepreneurs, to drive systems transformations towards sustainability. A third policy objective is to reorientate the assessment of entrepreneurial success towards social and environmental as well as economic impacts, by instituting methods for evaluating triple-bottom-line outcomes of

[1] Where a mechanism is conceptualised as a set of interacting parts producing an effect not inherent in any one of them – "the wheelwork or agency by which an effect is produced" (Hernes, 1998, p74).

Table 2
Data structure.

	Policy idea (First-order codes)		Policy theme (Second-order codes)	Policy mechanism (Aggregate dimensions)
1	Deliver informal sustainability education	1	Changing learning-based education	**Competency building:** policy ideas that equip individuals with the knowledge, skills, attitudes, values and behaviours to become sustainable entrepreneurs.
2	Embed sustainability and innovation in curricula			
3	Support exchange and volunteering schemes	2	Encouraging experience-based learning	
4	Support mentoring schemes			
5	Create network of networks	3	Leveraging innovation through collaboration	**Collaborative replication:** policy ideas that enable sustainable entrepreneurs to refine, diffuse and combine triple-bottom-line innovations, so as to transition systems and thereby enhance aggregate economic, social, and environmental impact.
6	Facilitate collaborations			
7	Leverage formal network and hubs			
8	Leverage informal networks			
9	Support development and sharing of IP			
10	Recognize interconnectedness of impacts	4	Accounting for complexity	**Impact valuation:** policy ideas that ensure that the influence of sustainable entrepreneurs across economic, social and environmental dimensions is accounted for, communicated and optimized.
11	Measure what might become			
12	Consider unintended consequences			
13	Recognize aggregate impact of innovation	5	Developing better models	
14	Use models to evaluate impact			
15	Communicate impactful stories	6	Measuring and communicating impact to drive behaviour	
16	Reward positive impact (prizes and awards)			
17	Develop comparable measures	7	Scoping impact	
18	Emphasize regenerative measures			
19	Incorporate stakeholder perspectives			
20	Promote measures management tool	8	Setting vision and direction	
21	Provide flexible certainty			
22	Base purchasing decisions on sustainability criteria	9	Market creation	**Sustainable market creation:** policy ideas that create opportunities on the demand side for ventures delivering positive social and environmental impacts.
23	Incentivize eco-efficiency of businesses			
24	Incentivize sustainable behaviour			
25	Internalize externalities			
26	Create and maintain a database of ideas	10	Creating and maintaining knowledge networks	**Networked sharing:** policy ideas promoting networks which allow sustainable entrepreneurs to provide mutual help and support, identify synergies, access resources, and connect with stakeholders for sustainable innovation.
27	Establish and promote portals for sharing stories			
28	Provide sharing platforms and one-stop shops			
29	Conduct crowdsourcing and open innovation	11	Identifying new ideas	
30	Utilize formal networks and hubs			
31	Utilize informal networks			
32	Fund green investment vehicles	12	Governing sustainable investment	**Resource prioritisation:** policy ideas that focus on directing the flow of financial and other resources towards sustainable entrepreneurs and their ventures.
33	Reform financial system			
34	Reorient pension fund investments			
35	Establish legal form for sustainable ventures	13	Identifying sustainable ventures	
36	Facilitate (and contribute to) crowdfunding	14	Prioritising funding flows	
37	Incentivize corporate venturing			
38	Incentivize impact investors			
39	Provide loan guarantees			

entrepreneurial activity, and aggregating these at enterprise, sector and societal levels. Whilst the success measures of general entrepreneurship tend to be standardised around economic outcomes such as wealth and job creation, measures of the social and environmental impacts of sustainable entrepreneurship are not as well-established or straightforward, and so emerge as a vital policy focus.

We next explain and evidence each policy mechanism in turn. Appendix 1 (see Supplementary Data) presents participant posts which illustrate each of these mechanisms and their component policy themes.

4.1. Resource prioritisation

A lack of resources is a well-known barrier facing entrepreneurs. In the sustainable-entrepreneurship context, policy can be directed at prioritising the flow of financial and other resources towards sustainable enterprises, given their social and environmental benefits. Participants discussed three main means of achieving this. The first is central societal support for sustainable entrepreneurs, through dedicated government funding or targeted tax breaks. Participants discussed such initiatives as Denmark's Green Investment Fund and the UK's Green Investment Bank, government-funded investment vehicles for projects with positive environmental impacts, suggesting that such schemes should extend beyond green impacts of larger organizations to the triple-bottom-line impacts of sustainable entrepreneurs.

Similarly, government-funded 'green bonds' (Gianfrate and Peri, 2019) that help investors decarbonize their portfolios are being extended to 'sustainable bonds', cited by non-profit The International Capital Market Association as "helping institutional investors get more involved" (B75)[2].

Second, interventions can incentivize investors to increase funding for sustainable enterprises. Whilst an increasing proportion of funds make some attempt to take into account ESG performance (Sandberg et al., 2009; Gianfrate and Peri, 2019), the metrics used to differentiate between firms and allocate capital accordingly remain rather blunt

[2] Illustrative participant posts from the crowdsourcing event are referenced by combining their anonymised user ID and their primary role, as selected on registration (A = academic; B = business person; E = entrepreneurs; I = investor; NGO = non-governmental organization employee/member; POL = policymaker).

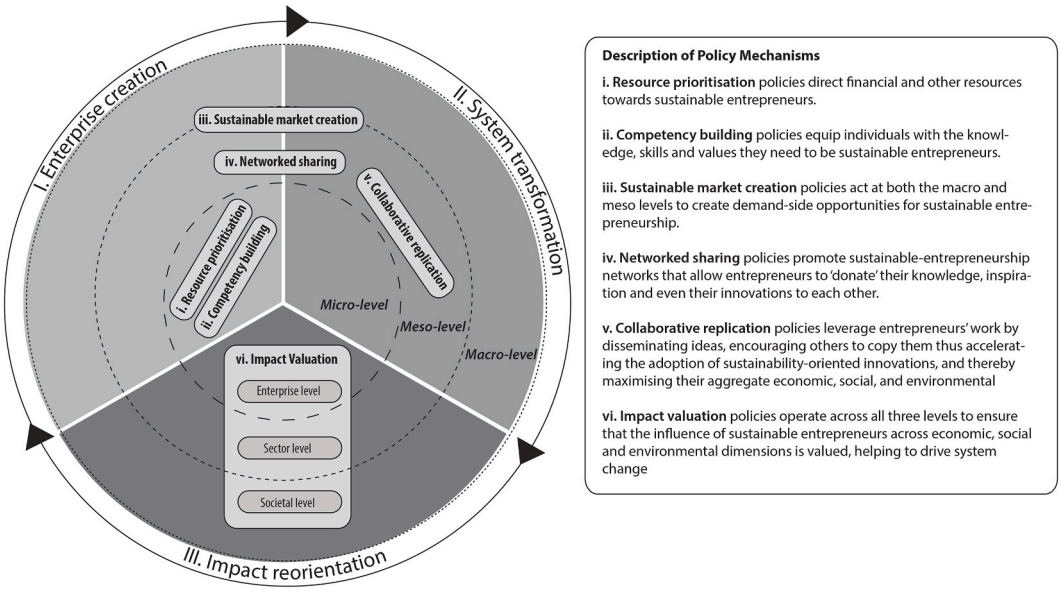

Fig. 3. Policy mechanisms addressing three interconnected policy objectives.
1. Sustainability-oriented innovations involve making deliberate efforts to create products, processes, organizations and wider systems which achieve social and environmental benefits as well as delivering economic returns (Adams et al., 2016).

instruments. Targeted support for such sustainability-oriented investment vehicles, such as government guarantees or national co-funding, could nudge private finance towards sustainable enterprises.

Third, corporate-venturing arms which fund sustainable enterprises can achieve a "market opening effect for sustainability innovations" (Wagner and Lutz, 2017, p. 280). Governments can support such sustainable corporate venturing though co-financing vehicles or tax breaks. Suggestions included reintroducing the UK Corporate Venture scheme with specific relief for sustainable investments, and aligning European venture-capital funding with sustainable corporate venturing. Alternatively, as many sustainable entrepreneurs raise capital through crowdfunding (see Bento et al., 2019), policy ideas included government funding for sustainability-oriented crowdfunding platforms (e.g. Ecocrowd in Germany), public co-financing of specific crowdfunded projects, and the development of a regulatory framework to protect crowdfunders' investments (Hörisch, 2015a; Testa et al., 2019).

However, to prioritise resources towards sustainable entrepreneurs, public and private investors need to be able to identify sustainable ventures and compare their triple-bottom-line impacts. Participants felt that even when funds are available, it is not always easy for investors and entrepreneurs to find each other. Establishing a legal form for sustainable ventures, based on a scheme such as B-Corps (bcorporation.net, 2022), was seen as a good way to identify sustainable ventures, attract 'impact investors' and/or benefit from sustainable-entrepreneurship tax breaks.

4.2. Competency building

Sustainable entrepreneurs need not only to learn general entrepreneurship skills but also to develop specific sustainability-related capabilities. Sustainability should, it was argued, be embedded into curricula for learners throughout their lives: "Sustainability should be a class like maths, taught from the first grade to the [final year of school], including different focus during the years, with the development of innovations, innovative ideas being exams" (B335). Educators need to teach about innovating solutions to sustainability challenges, and to help learners understand context, critical analysis and systems thinking: "Finding solutions to sustainability challenges will require new sets of collective, creative problem-solving skills ….as well as increasing students' ability to think reflectively and critically about deep changes happening in the world around them (globally or locally)" (TL192). Exemplars cited as fostering these competencies included Finland's Tiimiakatemia methodology, the International Institute for Creative Entrepreneurial Development's principles for entrepreneurship, Sweden's Center for Social Entrepreneurship, and Denmark's Socialøkonomisk Symbiose.

Sustainable innovation, because of the complexity of the problems it addresses, tends to require entrepreneurs to collaborate with multiple partners across sectors with different expertise in social, environmental or economic issues (Watson et al., 2018). One advocated way to develop this collaboration competency was to encourage people to work or volunteer in different sectors of society, since these experiences help develop the empathy with others' perspectives that is crucial for collaboration. Suggestion for policies to support this included tax relief for companies offering employees paid volunteering days, and incentives for organizations from businesses to NGOs to 'lend' experts to government task-forces or consultations. Policymakers themselves could be encouraged to volunteer with or be seconded to other organizations for the same reason.

The need was also expressed to encourage the adoption of sustainable entrepreneurship by celebrating role models. A cross-sector group discussion at a preparatory workshop reported: "We need to make solving environmental challenges as exciting as earning money … and hear people say 'my start-up saved 10,000 tonnes of carbon this year', rather than 'turned over £200,000.'" A specific suggestion was to modify the application and evaluation processes of the EU's Erasmus+ and Erasmus for Young Entrepreneur programmes to incorporate the social and environmental benefits of applicants' intended activity, and to include an option for host enterprises to identify a social/environmental mission, to stand out to sustainable entrepreneurs.

4.3. Sustainable market creation

Opportunities for sustainable entrepreneurs can be created if governments encompass relevant externalities, such as the impact of plastic waste or sugar's impact on obesity, in market design (Corbett and Montgomery, 2017). By explicitly accounting for them, for instance via sugar or plastic taxes, incumbents are forced to consider them and the playing field may be levelled for sustainable entrepreneurs. As an investor explained, "If policy can encourage/require investors to measure and therefore consider impact in their portfolios, then

entrepreneurs who have it will be at an advantage" (I115). Governments can also leverage their purchasing power to increase demand for sustainable goods and services (Kristensen et al., 2021). For example, the UK's Small Business Research Scheme enables government departments to 'procure' innovation from small business to solve challenges which are increasingly social and environmental.

Whilst general entrepreneurship policy might look to stimulate economic activity across all sectors (Audretsch et al., 2007), participants suggested that policy for sustainable entrepreneurship needs to be targeted at industries or sectors where sustainability challenges appear most intractable, for example in energy, food and fashion. Policy provides an architecture for business action: "Governments should do what the market can't. For example, reject a path dependent trajectory, e.g., funding highways for automobiles rather than cargo/passenger railways" (TL260); but as highlighted by the director of a policy think-tank in the preparatory research, it can also create barriers to change: "Much of policy locks in unsustainable practice and patterns of production and consumption." A notable example of government-supported market creation was Germany's Renewable Energy Source Act, which signalled to potential entrepreneurs the role renewable energy would play in the energy system. This legislation's protection for smaller ventures, measures to decrease the financial risk for households, and health-focused checks resulted in a grass-roots transformation, so that a large proportion of renewable energy is now generated by small cooperatives and citizen innovators. This Act was cited as a key enabler for sustainable entrepreneurs, for example by the founders of independent green energy provider Polarstern.

Demand for sustainable entrepreneurship, then, can be created by policies that price in externalities and leverage public-sector purchasing. Policies also need to target transformative change towards sustainability in specific systems such as food and energy.

4.4. Networked sharing

While all entrepreneurs value networks, sustainable entrepreneurs report that they and their peers use them to give as well as receive, offering help to others who share their motivations, and finding synergies that can amplify their impact. Networks can also help entrepreneurs to locate their innovations within shared visions of a transformed system. Sustainable entrepreneurs face challenges that other entrepreneurs do not, including how to assess their impact (as we return to later), how best to incorporate (notably, what legal form to choose), and how to understand not just customer needs but also wider social and environmental needs. Because they often tackle intransigent forces in society, sustainable entrepreneurs may feel embattled and alone: "sustainable entrepreneurship is a lonely process at times which is characterised by many ups and downs - a bit like a roller coaster" (A259). Consequently, they seek to connect with like-minded people to both give and receive emotional support. They seek networks that include a variety of stakeholders with relevant practical expertise in order to find partners, since sustainability-oriented innovation requires businesses to engage with external stakeholders to access expertise, solve complex problems and to gain social legitimacy (Watson et al., 2018).

Participants suggested that institutionalised formal networks such as national and regional entrepreneurship clusters and conferences "can help entrepreneurs navigate the landscape" (NGO221), whereas informal networks such as online forums and social media "are needed to cross-pollinate and share insights along the journey" (NGO221). Entrepreneurs are looking for one-stop-shops where they can access diverse resources, but say they are hard to find, as few networks are designed specifically for sustainable entrepreneurs. They report using digital and physical entrepreneurship clusters to identify formal mentors, while valuing the opportunity to have informal conversations with successful entrepreneurs who act as inspirational role models.

Policy could provide valuable support by helping to create 'a network of networks' for sustainable entrepreneurs; for example, the Danish government's registry of social enterprises (European Commission, 2019) enhances the ecosystem for social entrepreneurs and increases their visibility with potential partners and customers. Further policy ideas included governments hosting a national, or even international, database of ideas, bringing together information relating to sustainable innovations such as the technology used, the likely financial return, and social and environmental impacts. Government agency-hosted innovation competitions could also offer an opportunity to boost entrepreneurs' knowledge building through collaboration. Open innovation events also help entrepreneurs access ideas from a broader base of individuals.

Participants, then, called for policies that promote networked sharing: funding or creating networks that enable sustainable entrepreneurs to support each other with ideas, connections, resources and inspiration, not only to help their own business but also to find synergies with others with a view to amplifying their collective impact and creating system change. As the CEO of a sustainability education organization summed it up: "That is the difference - sustainability requires joined up people, place and stuff [physical products] innovation" (NGO309).

4.5. Collaborative replication

Collaborative replication policies create conditions that increase collective triple-bottom-line impact through the enhancement and replication of sustainability-oriented innovations— a process commonly referred to by participants as 'cross-fertilisation.' Sustainable entrepreneurs tend to be motivated to share their innovations to increase their impact—particularly if sharing enables a replication in a non-directly competitive market—and to work collaboratively with others to develop solutions to social and environmental challenges. For example, the founder of Meine Kleine Farm (a German sustainable online butcher 'giving your sausage a face') explained how he invested time speaking at events and in the media, including a TED talk, to encourage others to adopt his business model—small-scale organic farming and direct online selling coupled with messages to consumers to eat less meat but of higher quality.

Examples of government-funded initiatives intended to help make the most of innovations by developing and/or recombining them include the Enterprise Europe Network (EEN) and the UK's Knowledge Transfer Network (KTN) and Catapult Centres. Participants felt that such initiatives should address sustainability challenges explicitly, as does SwitchMed, an EU and UN coordinated network supporting the scaling up of triple-bottom-line innovations in the Mediterranean region. Not-for-profit networks—particularly Impact Hub which runs hubs in over 100 cities worldwide—were cited as effectively facilitating collaborations between entrepreneurs and other actors to help them develop and scale up their innovations. A representative of a social enterprise aiming to "improve lives via mobile" explained: "Thanks to being a member of Impact Hub Berlin, Viamo was able to take part in the world's largest COVID related online hackathon. Teaming up with fellow Impact Hub Berlin members from GIZ Blockchain Lab, we came up with 'Call-VsCorona'. We are already jointly implementing the idea in Rwanda and DRC" (Impact Hub, 2020). UK non-profit Forum for the Future includes "developing business models for replication" as a key step in its 'Scaling Up Impact' framework which could be adopted by governmental organizations (Forum for the Future, 2014, p.14).

At the crux of this discussion on the replication of sustainable innovations was the need to "protect the entrepreneur's IP but at the same time maximise any potential improvements in sustainability" (E146). While some entrepreneurs had no concerns about this—"I want to share ideas, I'm not worried about losing them, I trade on my skills in making ideas happen" (E225)—others perceived a risk of ideas being 'stolen', particularly by larger businesses. One example of an IP 'marketplace' which purposely connects owners of 'green' technologies with those who might be looking to commercialize them is the World Intellectual

Property Organization's Green database. In similar vein, universities and other research facilities could be incentivised not only to create intellectual property, but also to turn their research into triple-bottom-line impact: "I would prefer to see a more enlightened approach to HEI funding that rewards universities which actively mobilise resources (faculty, IP, seed capital) to support innovation clusters/small business development" (TL192). A policymaker proposed that: "we should open up the IP of universities and researchers for entrepreneurs to freely commercialize" (POL231).

While policies supporting networked sharing can help sustainable entrepreneurs find synergies between their innovations, collaborative replication policies support the replication of sustainability-oriented innovations across sectors and geographies, amplifying their impact, and driving transitions in the systems within which these innovations operate.

4.6. Impact valuation

While some entrepreneurship research assumes that the objectives and success measures for entrepreneurship are generally accepted, we found that for sustainable entrepreneurship, policy has a role in reorienting enterprise towards delivering social and environmental, as well as economic, impacts. This involves measuring and communicating progress against a more complex set of triple-bottom-line objectives, so policy has a vital role in this valuation of impact.

For a sustainable entrepreneur, being able to measure triple-bottom-line impact plays a key role in attracting investment. Ability to measure is also central to embedding a sustainable enterprise's purpose—"What you measure becomes what matters: it shapes your organization as much as leadership, vision, values" (B231)—and its value proposition: "choosing the indicators of impact and make communicating that part of the product branding" (B231). Non-profits need to be able to measure societal impact in order to attract financial support; however, sustainable entrepreneurs often find it difficult to communicate the triple-bottom line benefits of their work. A trade-off is perceived between establishing common impact reporting standards and allowing for appropriate variation: "The challenge is to capture the value created, which will be innovation-specific, in a way that there is some degree of commensurability across innovations" (A103). The B-Corps scheme offers one possible consistent structure for assessing impact: "It goes beyond financial performance and (voluntarily) ties them [the enterprise] to a set of measures that value their impact on society as a whole" (TL342).

There were also calls to better track the impact of innovations at the level of an industry or geography, to measure for example the impact of German households adopting solar panels on CO^2 emissions and on fuel poverty. The context is important: "a 'real' sustainable innovation can only be judged within its impact in the regional context (might be totally different in India than in Germany)" (A254). There are multifaceted aspects to impact with complex interdependencies between societal groups: "Impact is an evolving, shifting target which needs to be constantly reassessed and redefined" (TL192). Sustainable entrepreneurs seek not just to help each other and spread innovations, but also to achieve 'system change' towards sustainability: "we need to think about impact in terms of pathways for organizations to achieve [system change] in a given ecosystem, and in partnership with others" (TL192). This calls for an interconnectedness between different policy domains so that innovations add up to system change and unintended consequences are avoided: "we're missing a framework for enabling coherent/systemic decisions" (NGO312). The Welsh Well-being of Future Generations Act (2015) (comprising both health and environmental policies) was cited as an example of an attempt to do this.

Participants called on governments to "prioritise at a macro level which types of entrepreneurial innovations should be supported" (E77), on a time horizon which transcends political cycles. Macro-level measures of environmental impact should be more multifaceted than carbon emissions, capturing unintended consequences of one system on another, such as growth in sustainable industries leading to unemployment elsewhere: "Current policy is focused on growth first and acts in a disconnected way—so innovations don't add up to system change" (NGO312). A common theme was the need for qualitative as well as quantitative impact measures: "I think stories can be metrics in themselves" (POL231).

Impact valuation policies are needed, then, to measure, value and communicate the achievement of sustainable entrepreneurship's collective triple bottom line. They contribute towards improved institutional conditions for sustainable entrepreneurship by reorienting the financial system towards recognizing and rewarding triple-bottom-line performance.

5. Discussion

From the insights of actors representing the sustainable-entrepreneurship ecosystem, we have identified six mechanisms through which policy can improve the institutional conditions for sustainable entrepreneurship: resource prioritisation, competency building, sustainable market creation, networked sharing, collaborative replication, and impact valuation. These mechanisms enable three interconnected policy objectives: enterprise creation, system transformation, and impact reorientation (Fig. 3). These findings offer a range of contributions to a better understanding of how policy can better enable sustainable entrepreneurship.

Our first contribution is to show that sustainable entrepreneurship policy is needed not only to support individual entrepreneurs (micro level) and create market opportunities (macro level)—the dominant emphasis of entrepreneurship policy in general (Audretsch et al., 2007)—but also to support these entrepreneurs' ecosystems (meso level). Since individuals engage in sustainable entrepreneurship to advance not only a private interest but a public collective agenda (Hummels and Argyrou, 2021), it is perhaps not surprising that policies working at the level of the community of entrepreneurs were found to be important. At this meso level, policies to support *networked sharing* are needed, providing, for example, dedicated networks which connect sustainable entrepreneurs with each other and with other ecosystem stakeholders, in order to give practical and emotional support, enable collaborations, and locate innovations within shared visions of transformed systems. Our findings evidence Johnson and Schaltegger's (2020) proposition that the meso level plays a key role in mediating the bi-directional causal mechanisms linking the micro and meso-levels, and extend Bozhikin, Macke and da Costa's (2019) literature review finding in the context of social entrepreneurship that policy is more successful if it is oriented to the entrepreneurship ecosystem.

We clarify two distinctions between the desired outcomes of traditional entrepreneurship and sustainable entrepreneurship and derive two further contributions by revealing their implications on their respective policy regimes. The first distinction is between the single-bottom-line objectives (i.e., profit and economic benefits) of entrepreneurship and the triple-bottom-line objectives of sustainable entrepreneurship. The second is between entrepreneurship's focus on success of the entrepreneur (and their venture) and sustainable entrepreneurship's additional focus on the diffusion of innovations *between* entrepreneurs in order to maximise their collective impact and to drive sustainability transitions. Our second contribution, therefore, is that the object of sustainable entrepreneurship policy should be sustainability-oriented innovations and how they are replicated, not just enterprises and how they are grown. Policies should aim to transform systems by encouraging the take-up and development of triple-bottom-line innovations and treat innovation in a more open fashion (see Marcel et al., 2020; Chistov et al., 2021). This contrasts with the classical entrepreneurship context where the policy objective is typically to help entrepreneurs to exploit their innovation to benefit the economy, whilst ensuring that the entrepreneur maintains proprietary rights to it (Lundström and

Stevenson, 2005).

Our third contribution is that policies are needed to reorient financial and business systems towards tracking, valuing, and optimising the net positive economic, social, and environmental impacts of sustainable entrepreneurship. Impact re-orientation is therefore proposed as a third critical objective for entrepreneurship policy, linking the achievement of triple-bottom-line impacts with the creation of more sustainable ventures and their integration within an evolving ecosystem. Much entrepreneurship research implicitly assumes that the objectives and success measures for entrepreneurship are universally accepted, and does not include them as a variable that policy could or should influence (e.g. Audretsch et al., 2007). By contrast, we find that policies enabling the forecasting, measurement and reporting of environmental and social impacts of sustainable entrepreneurship are critical. At the micro level, they help to prioritise flows of funding to ventures. At the meso level, they are needed to model the impact of innovations within an industry or geography. At the macro level, they help create markets for sustainable products and services by pricing-in social and environmental externalities, as well as providing frameworks through which the impacts of entrepreneurial activity can be totalled-up to transitions towards sustainability in sectoral systems such as energy, food and health, and in societies.

Together, these contributions suggest that practitioners and scholars should not view sustainable entrepreneurship as a mere 'subset' of entrepreneurship. The intended objective of sustainable entrepreneurship policy, as advocated by our participants, is to maximise the positive societal and environmental impact of entrepreneurial activity, not just the level of activity. This difference in objective has significant implications for research into sustainable entrepreneurship, as well as for policy support. Effective policy in this field should therefore not just be about encouraging businesses to flourish but about delivering sustainable transitions.

These contributions therefore have implications for the multi-level perspective (MLP) on sustainable transitions (Geels, 2002). This mid-range theory conceives the dynamic interactions between three socioeconomic levels which take place on the pathway to achieving a more sustainable future (Nielsen, 2020). Traditionally, the MLP conceives policy as part of the 'regime' which establishes an institutional context which *constrains* the potential for 'niche' sustainable entrepreneurs to innovate (Geels, 2002). Sustainable entrepreneurship literature, however, highlights the potential for policy to *enable* the socio-technical shifts sought by sustainable entrepreneurs, and suggests that sustainable entrepreneurs themselves play an important role early on in transforming institutions (at the 'regime' level) so that they better support sustainable development (Pacheco et al., 2010; Pinkse and Groot, 2015). The findings of this research go some way towards reconciling these perspectives. Viewed through the lens of the MLP, our findings: 1) Underline the importance of a meso level of networks and shared interests (less monolithic than the 'regime') for mediating interactions between the landscape and niche level; 2) Suggest that policy should support the replication and diffusion of innovations from the niche so they effect cumulative change at the regime or even landscape level; 3) Highlight that impact valuation policies in particular are needed to link sustainable entrepreneurs and ventures to sustainability transitions, and 4) Demonstrate that although individual actors are well aware of the ways in which current institutions constrain their efforts to innovate towards sustainability, they are willing to use their agency with passion to advocate for policies that better enable their entrepreneurial efforts. We show that the relationship between the regime and niche-level actors is not always antagonistic, but can be co-creative, with early-stage innovators proactively challenging the institutional conditions limiting them, and shaping more favourable conditions (Verbong et al., 2019).

The policy framework derived through this research can be used as a practical tool to guide long-term policy development, and indeed has already been applied by the authors in the context of the European Union. Ten specific EU-level policy recommendations (detailed at Appendix 2 - see Supplementary Data) were derived from the framework and were discussed and refined with EU policymakers at a post-study event. The framework could similarly be used as a policy development tool within a specific industry context, or with governments at a national, regional or local level.

5.1. Limitations and future research

All studies are constrained by their sample, material, procedures, and historical/temporal setting (Simons et al., 2017) but these in turn give rise to opportunities for further research. This is no different for our study.

Our inductive analysis of crowdsourced insights suggests ways in which policy can stimulate entrepreneurial activity at the individual and collective level, as well as create favourable conditions at the macro level. Our study sets the scene for further in-depth case studies (e.g. Garuda and Karnøe, 2003; York et al., 2016) into the policy areas that help to not just develop the enterprise but to scale up the impact of sustainable entrepreneurship. Longitudinal studies might trace the progression from a policy acting to destabilize existing institutions as a means to encourage entrepreneurs, through to establishing and embedding new institutions. This research could also contribute to the emerging conversation in the social entrepreneurship literature examining the interplay between structure and agency in the creation of social entrepreneurial opportunities (Hu et al., 2020). In particular, when policymakers introduce more meso-level policies targeting networks and innovation replication, research that follows the impact of these policies on the diffusion of sustainable innovations would be valuable.

Our policy crowdsourcing method might be applied to other policy domains which involve a complex ecosystem, and/or where policy is immature or in transition. A topical example (at the time of writing) would be entrepreneurship policy following the COVID-19 crisis. Further iterations of the crowdsourcing methodology could better accommodate participants from a wider geographical field through the scheduling of live discussion to accommodate multiple time zones. The methodological properties of policy crowdsourcing would also benefit from further examination. Questions deserving study include the impact of participant recruitment and modes of interaction on outcomes. Research into motivations for participating in crowdsourcing activities, and the effect participation has on attitudes and behavioural intentions, would build well on this work, as would research which examines the different logics or identities which individuals bring with them when they participate. Controlled comparison with other approaches such as a synthesis from individual interviews would also be beneficial.

Finally, considerations as to generalisability of these findings should be reflected upon. Our study is expressly focused on EU-specific policy recommendations that ignore other policy contexts. Further, our study context typifies Western, educated, industrialized, rich and democratic (WEIRD) societies (Henrich et al., 2010), which means that our conclusions may not be directly transferable to other societies. This observation is especially pertinent if we consider that WEIRD societies house only a small proportion of the planet's total population. There is therefore an urgent need for research focused on contexts outside WEIRD societies that addresses the challenges that sustainable entrepreneurs experience in a broader range of contexts.

CRediT authorship contribution statement

Rosina Watson: Conceptualization, Methodology, Formal analysis, Software, Investigation, Data curation, Writing – original draft, Writing – review & editing, Project administration. **Kristian Roed Nielsen:** Conceptualization, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing, Visualization, Project administration. **Hugh N. Wilson:** Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft,

Supervision, Funding acquisition. **Emma K. Macdonald:** Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Supervision, Funding acquisition. **Christine Mera:** Methodology, Software, Formal analysis, Data curation. **Lucia Reisch:** Supervision, Funding acquisition, Investigation.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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Appendix A. Supplementary data

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