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# Mainstreaming innovative circular economy solutions—A comparative study between entrepreneurs in developed versus emerging markets and developing economies

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## Abstract

This paper aims at enabling the acceleration of CE transitions by offering insights into processes that need to take place to mainstream (or scale from niches to regimes) entrepreneurial solutions in two contexts, i.e., developed versus emerging markets and developing economies. Entrepreneurs play a crucial role in spurring innovation. The emergence of innovative solutions is a prerequisite for unlocking CE transitions. Yet, to sustain the transitions, it is critical that the solutions are mainstreamed. The mainstreaming is facilitated by strategic collective system building activities of entrepreneurs as a necessary but probably not sufficient element of CE transitions. Based on a qualitative approach to assessing such activities, involving an online survey and interviews with entrepreneurs in Austria and Southern Mediterranean, the research results reveal that technological innovation is significantly more important in developed economies in comparison to emerging markets and developing economies, where societal innovation is at the core of CE transitions. Also, raising user awareness and competition with incumbents are significantly more important in emerging markets and developing economies than in developed economies. In both contexts, knowledge development within a company is the key activity enabling mainstreaming of innovative CE solutions.

**KEYWORDS**

circular economy, entrepreneurship, innovation, sustainability transitions, strategic collective system building

## 1 | INTRODUCTION

The objective of this paper is to contribute to acceleration of CE transitions globally by providing an in-depth understanding of processes that enable mainstreaming of entrepreneurial solutions in two contexts, i.e., of developed vs. emerging markets and developing economies. The target audience of this research are policy makers responsible for creating conducive conditions for CE transitions as

**Abbreviations:** CE, circular economy; EC, European Commission; EU, European Union; GDP, gross domestic product; GHG, greenhouse gases; MLP, multi-level perspective; PAAS, product as a service; SMEs, small and medium-sized enterprises; TIS, technological innovation systems; TRL, technology readiness level.

Informative: This research comparatively analyses the system building activities that entrepreneurs in Austria and the Mediterranean engage in to mainstream circular economy innovation and thus to enable sustainability transitions.

well as entrepreneurs willing to engage in system building activities. The CE transitions are key to reaching the Paris Agreement objectives and thus to addressing the major global challenge of climate change. Current global trends in natural resource management are not compatible with the ambition to limit the rise in global average temperature to below 1.5°C above pre-industrial levels, as the natural resource extraction and processing accounts for about half of GHG emissions (Wellesley et al., 2019).

The research on CE transitions is criticized for its spatial narrowness, as attention has been paid to developed economies (Cherp et al., 2018; Lindberg et al., 2019; Sareen & Haarstad, 2020). The insufficient consideration of emerging markets and developing economies currently constitutes a research gap (A). While developed economies are characterized by strong economic growth, high per capita income, liquid equity and debt markets, accessibility by foreign investors and a dependable regulatory system, the emerging markets and developing economies are only advancing from a low income, less developed, often pre-industrial economy towards a modern economy with a higher standard of living (IMF, 2021). Notably, with reference to the CE, a term of "circularity divide" has been coined by Barrie et al. (2022). It refers to the differences in the pace of CE transition between developed economies on the one hand and emerging markets and developing economies on the other hand. It exacerbates other existing socio-economic differences, which in turn leads to systemic risks in the global economy.

The research on CE so far has focused on either circular business model innovation or CE in the context of sustainability transitions. As such, the analysis of CE has been embedded in two main literature streams, i.e., either in strategic management and business literature or in the socio-technical transition literature. Yet the intersection of the firm and system perspective, which would result from the combination of both literature streams, is still underexplored (Planko et al., 2016), and it presents a research gap (B).

To address the above-described two research gaps (A and B), this paper sheds light on the similarities and differences in the mainstreaming of CE solutions in emerging markets and developing economies and developed economies. More specifically, based on the strategy framework by Planko et al. (2016), the paper seeks to answer the following research question: *How do entrepreneurs participate in the strategic collective system building to mainstream CE?*

The research question is answered comparatively for Austria and the Southern Mediterranean. Although Austria is becoming a startup hub in Europe, there have not been many studies conducted on CE entrepreneurship in this context. In turn, the Southern Mediterranean countries share common climate change challenges. They warm up 20% faster than the global average, which—coupled with a fast population growth—has immense consequences on the natural resource availability. Also, the CE is high on the political agendas of the Southern Mediterranean countries due to the EU's European Neighborhood Policy that integrates the European Green Deal priorities (Sandri et al., 2023).

Qualitative methods were applied to answer the research question. More specifically, an interpretive case study approach (Ponelis, 2015) was adopted that consisted of two phases. In the first phase, a survey was sent to 148 startups/SMEs (88 in Austria and 60 in the Southern Mediterranean) with a response rate of 22% (33 responses). The survey questions were related to activities outlined in the strategy framework by Planko et al. (2016). In the second phase, semi-structured in-depth interviews were conducted with 28 entrepreneurs (out of the 33 entrepreneurs that provided survey responses) to further explore in detail the system building activities that they engage in. Based on the case study results, three propositions were formulated in relation to importance of intermediaries, user behaviour and availability of finance. They were discussed and validated in a 1.5-h workshop with five experts.

The research results revealed both differences and similarities between the mainstreaming of innovative CE solutions by entrepreneurs in developed vs. emerging markets and developing economies. The four strongest differences exist in the areas of new technology development (which is more important in developed countries), involvement in raising of user awareness, competition with incumbents and generation of skilled labour (all three are more important in emerging markets and developing economies). These differences are statistically significant. The four strongest similarities were identified regarding the generation of new business models (important), engagement in government lobbying (not important), standardization (not important) and thinking in system building roles (important). Notably, the knowledge development within company is ranked highest in both Austria and the Southern Mediterranean.

This research is relevant to both theory and practice. Regarding the former, modifications to the strategy framework by Planko et al. (2016) were proposed to make it applicable to CE and to different country contexts. In practical terms, the research results might guide policy makers, particularly those in emerging markets and developing economies, in designing and implementing interventions that create optimal conditions for the mainstreaming of innovative CE solutions, so that the CE transitions are accelerated and the 'circularity gap' is narrowed down. Broadly, entrepreneurs build a backbone of economies in both developed and emerging markets and developing economies, as they account for a large share of total employment and GDP (Gross Domestic Product), while also playing a crucial role in spurring innovation. Therefore, the mainstreaming of their solutions also has wider positive socio-economic and environmental impacts, beyond those related directly to CE. The research results might also be useful for the entrepreneurs by providing them with insights into the scope of possible system building activities and their importance in different country development contexts.

The paper is structured as follows: it starts with a literature review, a subsequent description of research gaps and formulation of the research question; in the following step, the strategy framework for collective system building for entrepreneurs by Planko et al. (2016) is introduced as the theoretical framework used to answer the

research question; next, the methodological approach is outlined, and research results are presented and discussed; further, the results of validation process are described, and conclusions, limitations and implications are elucidated; lastly, future research directions are proposed.

## 2 | LITERATURE REVIEW

The following sub-sections are dedicated to a review of existing research findings related to (Section 2.1) the key role of entrepreneurs in sustainability transitions in general and distinctive characteristics of CE entrepreneurs; (Section 2.2) scarce theoretical approaches designed for the analysis of CE mainstreaming due to missing links between socio-technical transition literature, and strategic management and business literature; and (Section 2.3) strategy framework for collective system building by entrepreneurs by Planko et al. (2016) that connects the two literature streams and thus enables analysis of the mainstreaming of entrepreneurial solutions, yet it is not explicitly dedicated to CE.

### 2.1 | Importance of entrepreneurship in sustainability transitions and distinctive characteristics of circular economy transitions

The literature recognizes that sustainability transitions, including CE transitions, typically start with individual actors and especially small firms (Aarikka-Stenroos et al., 2021; Hofmann, 2019; Kemp et al., 1998). Startups and SMEs instigate innovative solutions, and they are better equipped than incumbents to detect and spearhead subtle shifts in societal values, as they ignore precedence. As such, entrepreneurship is an important conduit for bringing about transformation towards sustainable products and services, and it is often seen as a panacea for several environmental, social and economic issues (Dijkstra et al., 2021; Gruenhagen et al., 2022).

Yet CE business models display significantly distinct characteristics in comparison to linear ones. For example, CE business models often transcend organizational boundaries, they might imply co-use of assets by several parties in line with the sharing economy principles or they are oftentimes built around a service offering (e.g., PAAS). Fundamentally, CE business models are boundary spanning, in that they link the firm to its network, including suppliers, customers and partners. The CE innovation processes undertaken by entrepreneurs necessitate interactions with other actors within the system in which they operate and to which they establish links based on the value creation logic (Diepenmaat et al., 2020; Moore, 2006). Within this system, various actors might be required to shift their value orientation and introduce changes in how they operate. Any changes in the business model are associated with adjustments in the societal system (Loorbach et al., 2010). This in turn results in coordination challenges between different actors and implies the necessity to create multi-actor partnerships (Sarasini & Linder, 2018). Therefore, for CE entrepreneurs, there is a need to invest in the development of several actors with which they interact, besides investing in their own development (Planko et al., 2016; van de Ven, 1993). This becomes even more demanding since the shift to CE requires firms to expand their understanding of value from the traditional economic and financial centric perspective to a view that also encompasses ecological and social value (Aarikka-Stenroos et al., 2021; Patala et al., 2016; Ranta et al., 2020).

Notably, the academic interest in the study of conditions for the emergence of CE business models has been growing (Jabbour et al., 2019; Rizos et al., 2016). The relevant literature distinguishes between external conditions (macro), such as policy and regulations, and internal ones (micro) that relate to the business entity itself, such as the firm's size or performance (Malesios et al., 2018; Prieto-Sandoval et al., 2018). These internal and external conditions are most analysed through the lens of success factors, drivers and barriers that entrepreneurs face (Chiappetta Jabbour et al., 2020; Diaz Lopez et al., 2019; Jaramillo et al., 2019; Mathivathanan et al., 2022). Yet, beyond the insights into conditions relevant for emergence of CE business models, there is still not enough conceptual and empirical work on the mainstreaming of CE solutions that are at the core of these business models. In general, the interactions of CE entrepreneurs with a broader system of actors, and in particular the question of how these interactions enable the mainstreaming of entrepreneurial innovations, have not been extensively studied so far.

### 2.2 | A missing link between socio-technical transition literature and strategic management literature

The conceptual and empirical study of CE has so far revolved around aspects related to either businesses or socio-economic transitions. Selected relevant insights into the former (*businesses*) were provided in the section above. With regard to the latter (*socio-economic transitions*), there is a wide range of theoretical frameworks that could potentially be applied to study CE transitions, and they are mainly embedded in sustainability transition studies (Stefani et al., 2022), including transition management (Kemp et al., 2007; Loorbach & Rotmans, 2006), strategic niche management (Kemp et al., 1998; Schot & Geels, 2008; Smith & Raven, 2012; Sushandoyo & Magnusson, 2014), MLP (Geels, 2002) and TIS (Jacobsson & Bergek, 2011; Truffer et al., 2008). For example, the MLP that explains socio-technical transitions via the dynamics between three levels of niches, regimes and landscapes, according to Chizaryfard et al. (2021), is not easy to operationalize in the context of CE. This is because CE transitions are characterized by interdependencies between multiple actors and sectors that cut across several regimes and niches. Also, since regime and niche levels are at times difficult to differentiate from each other (Berggren et al., 2015; Chizaryfard et al., 2021), the MLP might not be appropriate to study CE

transitions in-depth. Also, Witkamp et al. (2011) concluded that the MLP pays too much attention to the technological innovations and that several radical sustainability innovations are rather societal than technological (Diepenmaat et al., 2020; Gruenhagen et al., 2022; Malerba, 2005).

In turn, the TIS focuses on the interdependencies between technological transitions and systemic changes at institutional and organizational levels. Yet the CE transitions are not necessarily centred around a specific technology but rather include a broad range of different technologies that might be interconnected and span across various sectors (Chizaryfard et al., 2021). However, the TIS researchers coined a term of a system building activity that makes it possible to gain insights into the activities and processes in which various actors need to engage to create conducive circumstances for their innovation to scale from niches to regimes (Geels, 2002; Hekkert et al., 2007; Jacobsson & Bergek, 2011; Markard & Truffer, 2008; Musiolik et al., 2012).

### 2.3 | Connecting literatures on business and socio-economic transitions

As outlined above, both the TIS literature on the one hand and the strategic management literature on the other hand anchor important starting points for the study of CE. Yet the sustainability transition studies focus on socio-technical change from a multi-dimensional and multi-actor view, while not paying attention to firm perspective and business dynamics. In turn, the business model literature does not explain the societal transitions through the lens of actor interaction and coordination. Although it recognizes that the chances for a successful diffusion of an innovative technology increase when a firm is willing and able to collaborate in networks to create favourable environment, it does not provide advice on how to strategically build this environment (Diepenmaat et al., 2020).

By uniquely connecting the strategic management literature with the technological innovation system literature, Planko et al. (2016) offer a concept of strategic collective system building to explain how business models and sustainability transitions are intertwined, while shifting the attention to the firm. The combination of the two literature strands results in a strategy framework featuring the system and firm level. Planko et al. (2016) refer to strategic collective system building as 'the strategic activity of networks of entrepreneurs and entrepreneurial managers to build up a supportive environment and infrastructure for their innovative sustainability technology'. The merger of two literature streams makes it possible to outline which processes entrepreneurs need to trigger to enable mainstreaming of their solutions, i.e., to influence changes at the system level that lead to a more conducive environment for the implementation of their innovations (Planko et al., 2016). Yet the strategy framework for collective system building for entrepreneurs by Planko et al. (2016) has not yet been empirically applied to study CE entrepreneurs, and it has not been used comparatively for developed vs. emerging markets and developing economies.

## 3 | RESEARCH GAPS AND RESEARCH QUESTION

Primarily, the research on CE transitions has so far focused on developed economies, with insufficient attention to emerging markets and developing economies (overarching research gap A). In particular,

1. CE transitions taking place in emerging markets and developing economies require dedicated empirical and conceptual work. A better understanding of context-specific processes is particularly relevant for the identification of CE leapfrogging opportunities (Bogoviz & Popkova, 2020; Geng et al., 2019; Henry et al., 2021).
2. Transboundary studies on CE are missing.

Further, CE has not been extensively analysed at the intersection of the strategic management and business literature, and the socio-technical transition literature, i.e., an intersection of the firm and system perspective (overarching research gap B). More specifically,

1. The complexity of sustainability issues results in a need to research the relations between business, society and policy (Boons & Lüdeke-Freund, 2013; Elkington, 1998; Hahn et al., 2010). A focus on the business performance and sustainability at the firm or industry level is not enough. Firms alone cannot become sustainable as they operate within a broader production and consumption system (Tukker et al., 2008). It has become clear that the intertwined challenges can only be resolved through wide-ranging engagement of various actors. Yet there is no extensive empirical evidence that explains how multi-actor and multi-pattern characteristics underlying the CE transition processes enable mainstreaming of experiments from niche to regime (Petrovics et al., 2022; Yalçın & Foxon, 2021).
2. In both the transition literature and business literature, the remaking of the economy and society is under-thematized. In comparison to organizational scholars, sustainability transition researchers pay more attention to non-business actors, including for example intermediaries or institutions. Still, the process in which different actor value propositions are combined and integrated into a multiple value has not been deeply explored (Diepenmaat et al., 2020).
3. In particular, the role of businesses in this process requires further explanation (Boons, 2009; Loorbach & Wijsman, 2013), so that there is an in-depth understanding of activities that firms undertake to mainstream innovative solutions
4. Entrepreneurs are frequently seen as driving forces of the transition processes that are capable of developing and diffusing sustainability innovations (Hall et al., 2010; Planko et al., 2016; Schaltegger et al., 2020; Teece, 2010). Yet empirical research on entrepreneurial practices that structurally change the way in which societal systems operate is still underdeveloped. The business-related literature on sustainability transitions has primarily focused on large companies (Geels, 2011; Hörisch, 2014; Lawhon & Murphy, 2011; Loorbach & Wijsman, 2013). The processes

underlying the interlinkages between evolution of startups/SMEs and the CE transitions have not yet been at the core of research attention (Loorbach & Wijsman, 2013; Schaltegger et al., 2020).

An overview of research gaps is provided in Table 1 below.

Against the above-described background, the following research question is asked: *How do entrepreneurs participate in the strategic collective system building to mainstream CE?* The question is answered comparatively for developed economies versus emerging markets and developing economies.

## 4 | RESEARCH DESIGN

### 4.1 | Theoretical framework

The strategy framework for collective system building for entrepreneurs by Planko et al. (2016) is used to answer the research question, as indicated in Section 2.2. It is the only currently existing theoretical framework connecting strategic management literature with technological innovation system literature. It is suitable to answer the research question and thus to address the existing knowledge gaps. Planko et al. (2016) cluster relevant activities into four categories, i.e., technology optimization and development, market creation, stimulation of socio-cultural changes and coordination. The categories and activities that are part of them are outlined in Figures 1 and 2 below.

The strategy framework for collective system building has not yet been used to study CE. At the same time, CE transitions imply an unprecedented radical system change, and as such, they are associated with a multi-technology, multi-sector and multi-actor coordination challenge (Velenturf & Purnell, 2021). It is therefore pertinent to study the mainstreaming of entrepreneurial CE innovations in the context of interactions between startups/SMEs with a broader system, instead of focusing on the business dynamics in isolation.

**TABLE 1** Overview of research gaps.

| Overarching research gaps | Specific aspects of the overarching research gaps that this paper is focused on |
|---|---|
| A. The research on CE transitions has so far focused on developed economies, with insufficient attention to emerging markets and developing economies. | 1. CE transitions taking place in emerging markets and developing economies require *dedicated empirical and conceptual work*.<br>2. *Transboundary studies* on CE are missing. |
| B. CE has not been extensively analysed at the intersection of the strategic management and business literature, and the socio-technical transition literature (i.e., an intersection of the firm and system perspective) | 1. A focus on firms alone is not enough intertwined challenges can only be resolved through wide-ranging engagement of various actors. Yet, there is no extensive empirical evidence that explains *how multi-actor and multi-pattern characteristics underlying the CE transition processes enable mainstreaming of experiments from niche to regime*.<br>2. In other words, *the process in which different actor value propositions are combined and integrated into a multiple value has not been deeply explored*.<br>3. In particular, *the role of businesses in this process requires further explanation*.<br>4. Empirical research on *entrepreneurial* practices that structurally change the way in which societal systems operate is still underdeveloped, as the business-related literature on sustainability transitions has primarily focused on *large companies*. |

### 4.2 | Methods

To answer the research question, a comparative study of two cases was conducted, i.e., Austria, a developed economy, and Southern Mediterranean encompassing emerging markets and developing economies. The selection of these two cases results from purposive sampling that is commonly applied to identify information rich cases that can contribute to theory building. As such, the cases do not necessarily build a representative sample (Eisenhardt, 1989). Initially, it was planned to compare Austria with only one country in the Southern Mediterranean, yet the availability and quality of data gathered for the latter were not sufficient. Therefore, the sampling approach was revisited to cover the entire region of Southern Mediterranean.

The reason for the choice of Austria is that most CE case studies conducted so far focused on the Netherlands, Italy, Germany and Finland in Europe as well as Japan and China in Asia (Horbach & Rammer, 2020; Hosseinian et al., 2021; Ogunmakinde, 2019; Van Buren et al., 2016; Van Leeuwen et al., 2018; Walker et al., 2021). There are less contributions dedicated to CE entrepreneurship in Austria, yet Austria has a high CE profile with an extensive role of environmental innovation (Marino & Pariso, 2020), and it is an aspiring startup hub (Chang et al., 2022). The entrepreneurial scene in Austria has in recent years developed in a highly dynamic manner. The year 2021 was marked by record investments of more than EUR 1.2 billion into young Austrian companies. Austria's entrepreneurship ecosystem grew around three times as much in the first half of 2022 as in 2021, which is the highest growth in Europe (Austrian Business Agency, 2022).

In turn, Southern Mediterranean is a climate change hotspot, warming 20% faster than the global average. The Southern Mediterranean countries share challenges related to climate change's impact on their natural resources' future availability. They include, for example, an urgent need to ensure food security for a growing population (Zebakh et al., 2022). What is more, the Southern Mediterranean countries are affected by the European Green Deal, an ambitious

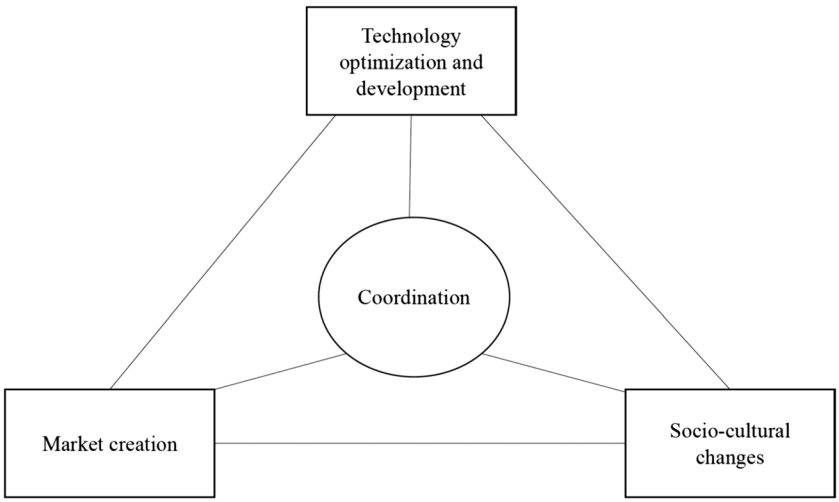


**FIGURE 1** Strategy framework for collective system building by entrepreneurs (Planko et al., 2016).

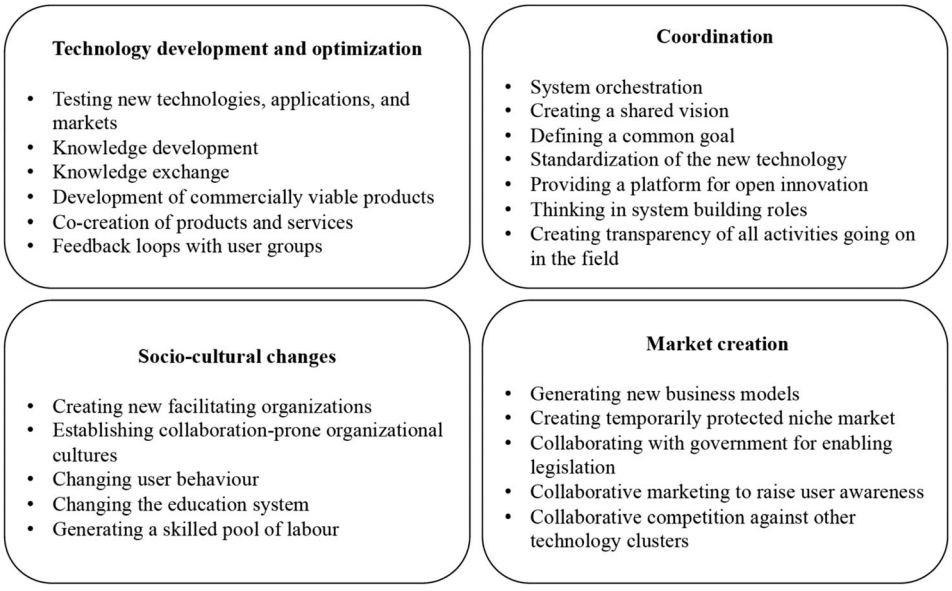


**FIGURE 2** Collective system building activities by entrepreneurs (Planko et al., 2016).

strategy introduced by the EC in 2019 that addresses interconnected issues related to climate action, energy and natural resource management, among others. Although the European Green Deal was initially planned as a domestic strategy, it has been integrated in regional and development policies, including the European Neighborhood Policy (Sandri et al., 2023). In result, the transition to CE has been high on the political agendas of the Southern Mediterranean countries. Therefore, the research results might be particularly useful for the policy makers in this region.

A case study 'explores a real-life, contemporary bounded system (a case) or multiple bounded systems (cases) over time, through detailed, in-depth data collection involving multiple sources of information' (Creswell & Poth, 2016). In this paper, an interpretive case study approach is adopted. It uses theoretical variables to provide explanation for a case (Ponelis, 2015), and it is rooted in the interpretive research paradigm that analyses the world from a subjective perspective (Ponelis, 2015; Tziva et al., 2021). The interpretive approach is regarded as suitable for an analysis of sustainability transitions (Andrade, 2014; Ponelis, 2015).

Each research requires selection of secondary and/or collection of primary data. This study strongly relies on the latter since it has an explorative character and aims at understanding phenomena that have not yet been fully uncovered. For the collection of primary data, methods include observations, experimentation, survey, interviews and diary records. Surveys are useful to gain a first general understanding of the studied topics, while interviews help scrutinize how and why certain things happen and what are the opinions, motivations, interests and feelings of the people involved (Jain, 2021).

The case study consisted of two phases. In the first phase, a survey was sent to 148 startups/SMEs (88 in Austria and 60 in the

Southern Mediterranean). Referral sampling was applied to identify the group, in that first two CE platforms[1] in Austria and Southern Mediterranean were requested to provide contact details of their most active entrepreneurs that they convene, and next, several of these entrepreneurs were asked to further point the researchers to other relevant startups/SMEs (Goodman, 1961). In total, 33 responses were received (17 in Austria and 16 in the Southern Mediterranean), resulting in a response rate of 22%. The survey questions were related to activities outlined in the strategy framework for collective system building by entrepreneurs by Planko et al. (2016). In addition, some questions on the importance of selected activities were included.

In the second phase, semi-structured in-depth interviews were conducted with 28 entrepreneurs (out of the 33 entrepreneurs that provided survey responses) to further explore in detail the system-building activities that they engage in. All interviewees were granted anonymity. The interviews were transcribed and coded. A flexible pattern matching technique was applied against the strategy framework for collective system building by entrepreneurs as proposed by Planko et al. (2016), in that the observed analytical data were compared with the theoretical framework. The emphasis was placed on exploration and theory building based on the patterns that emerged from collected data, for which the strategy framework for collective system building was used to provide guidance and focus (Sinkovics, 2018). The survey questions and response options and the interview questions are included in the supporting information. The limited number of responses (16) did not allow for a deeper analysis of differences between emerging and developing countries.

Although there are ongoing debates about whether terms such as validity, reliability and generalizability are appropriate to evaluate qualitative research (Noble & Smith, 2015), several steps were taken to ensure that the collected data are credible, including acknowledging and accounting for personal biases in data collection and analysis, e.g., by engaging several researchers to reduce biases; inviting participants to give feedback on interview transcripts (respondent validation); diligent record keeping; and verbatim descriptions of selected responses.

## 5 | RESULTS AND DISCUSSION

Several differences have been identified between developed versus emerging markets and developing economies regarding how entrepreneurs participate in the strategic collective system building to mainstream CE. Also, some similarities have been recognized.

[1]Circular Economy Forum in Austria: https://www.circulareconomyforum.at/, and SwitchMed in the Southern Mediterranean: https://switchmed.eu/country-hubs/. SwitchMed covers Algeria, Egypt, Israel, Jordan, Lebanon, Morocco, Palestine and Tunisia. It is a technical assistance initiative pursued by the United Nations Industrial Development Organization (UNIDO) and the United Nations Environment Programme (UNEP), with a financial support from the EU. It is one of few programmes focusing on CE collaboration in hubs in emerging markets and developing economies.

### 5.1 | Phase 1: Survey

Table 2 contains, in a comparative way, average results achieved by companies in Austria and Southern Mediterranean. The four strongest differences exist in new technology development, involvement in raising user awareness, competition with incumbents and generation of skilled labour. These differences are statistically significant. The four strongest similarities were identified regarding the generation of new business models, engagement in government lobbying, standardization and thinking in system building roles. In general, the results achieved in both groups of entrepreneurs (in Austria and the Southern Mediterranean) are surprisingly uniform, as shown in Figure 3.

The knowledge development within company was ranked highest in both Austria and the Southern Mediterranean (please see the supporting information). Several interviewees in both groups underlined that knowledge development and learning, both internally within the company as well as within society at large, are crucial for the success of their ventures. This is in line with the existing literature on CE that recognizes knowledge development as necessary for continual business process improvement. In general, organizations that implement effective knowledge management practices are better equipped to identify and seize possibilities for circular innovation, create new business models and overcome resource and environmental impact-related obstacles (Ul-Durar et al., 2023). Some scholars highlight that organizations should build a supportive structure and culture for knowledge sharing within a system (Atiku, 2020). Confirming the existing research results, one of the Egyptian entrepreneurs said: 'Knowledge is everything, so the company is based on this idea'. In line with this premise, the company makes all its knowledge available in open source. Also, the importance of co-creation was highlighted. All interviewed entrepreneurs have built partnerships with several actors, ranging from universities (or R&D institutions more broadly) to other similar enterprises, corporations, financial institutions, public sector and consumers. For example, some entrepreneurs engaged consumers through interviews to explore their views and to incorporate relevant insights into their business models.

The results showed that technology development is more common in Austria than in the Southern Mediterranean. Also, the technology readiness levels (TRLs) in Austria are higher. Out of 17 entrepreneurs in Austria, 6 featured the highest TRL (9). Out of 16 entrepreneurs in the Southern Mediterranean, 7 indicated that they have not developed any technology. This is outlined in the Table 3 below and further discussed in Section 5.2.1.

Regarding the R-circularity level, to which the entrepreneurs linked their activities, in most cases, several levels were indicated by each entrepreneur. An overview is provided in the Figure 4 below.

The 'reuse' and 'recycle' levels are most common in both Austria and the Southern Mediterranean. In addition, in Austria also, 'remanufacture' is applied more often than other levels, while in the Southern Mediterranean, 'reduce' plays a key role. The biggest difference between Austria and the Southern Mediterranean concerns the application of the 'remanufacture' level, which is much more familiar in Austria. Also, entrepreneurs in the Southern Mediterranean work on a

**TABLE 2** Differences and similarities between Austria and the Southern Mediterranean in entrepreneurs' engagement in system building activities on a scale from 0 to 2 (0–1 not important; 1.01–2 important).

| | Austria—average | Southern Mediterranean—average | Difference | *p* value |
|---|---|---|---|---|
| Technology/service: new technology development | 1.53 | 0.94 | 0.59 | **.02** |
| Market: involvement in raising of user awareness | 1.18 | 1.69 | 0.51 | **.01** |
| Market: competition with incumbents | 0.41 | 0.88 | 0.46 | **.03** |
| Socio-cultural: generation of skilled labour | 0.88 | 1.31 | 0.43 | **.03** |
| Socio-cultural: creation of new facilitating organizations or institutions | 0.82 | 1.25 | 0.43 | .07 |
| Market: participation in niche market creation | 0.65 | 1.06 | 0.42 | .08 |
| Coordination: intermediaries | 0.71 | 1.06 | 0.36 | .07 |
| Socio-cultural: establishment of collaborative company culture | 1.35 | 1.00 | 0.35 | .10 |
| Technology/service: new service development | 1.41 | 1.69 | 0.28 | .12 |
| Coordination: shared vision and common goal | 1.18 | 1.44 | 0.26 | .10 |
| Coordination: system orchestration | 1.00 | 0.81 | 0.19 | .25 |
| Socio-cultural: engagement in client education | 1.59 | 1.44 | 0.15 | .23 |
| Coordination: platform | 1.06 | 0.94 | 0.12 | .31 |
| Technology/service: participation in knowledge exchange and co-creation | 1.53 | 1.44 | 0.09 | .36 |
| Technology/service: knowledge development within company | 1.88 | 1.81 | 0.07 | .29 |
| Socio-cultural: changing user behaviour | 1.06 | 1.13 | 0.07 | .39 |
| Coordination: system building roles | 1.06 | 1.00 | 0.06 | .41 |
| Coordination: standardization | 0.65 | 0.69 | 0.04 | .44 |
| Market: involvement in government lobbying | 0.65 | 0.69 | 0.04 | .43 |
| Market: generation of new business models | 1.59 | 1.56 | 0.03 | .45 |

larger number of different circularity levels at the same time (67 per 16 entrepreneurs) than the ones in Austria (52 per 17 entrepreneurs). Interestingly, repair activities are pursued to the same extent in both country groups.

## 5.2 | Phase 2: In-depth interviews

### 5.2.1 | Strongest differences

The interviews confirmed the survey results that *new technology development* is more important in Austria than in the Southern Mediterranean. The existing literature highlights that in emerging markets and developing economies, where socioeconomic and political situations are not stable, and where funding is limited, the costs associated with new technology development and risks of not succeeding are much higher than in developed economies. This influences the decision of entrepreneurs whether to be involved in technology development or not (Holtström et al., 2019). Yet the findings of this research revealed in addition that forces driving entrepreneurial engagement in CE are different in emerging countries and developing economies on the one hand and developed economies on the other hand. While in Austria the business idea usually starts with the invention of a modern technology, in the Southern Mediterranean, the motivation to launch a circular business stems from the desire to fix the market and government failures and to address the grand socio-economic challenges. In Austria, the technological innovation is usually instigated through university research whose outcomes are often patented. In the Southern Mediterranean, the CE business models usually span social entrepreneurship. The entrepreneurs in the Southern Mediterranean frequently engage underprivileged society groups, including women, the poor and rural communities, and they incorporate awareness raising in their business models. This often implies a need to collaborate with other organizations, such as charities and incumbents. These dynamics are reflected not only in the importance of technology development in Austria and the Southern Mediterranean but also in the TRLs. While in Austria, 35% of interviewed entrepreneurs had a TRL9, in the Southern Mediterranean, only 19% entrepreneurs confirmed the same level. Yet, in the Southern Mediterranean, 44% of entrepreneurs have not developed any technology, and in Austria only 12%. Entrepreneurs in the Southern Mediterranean more frequently developed new services than those in Austria.

The interviews unveiled that entrepreneurs in the Southern Mediterranean take more action regarding *raising user awareness*. They engage in a broad range of, usually interactive and low-budget, activities to change user behaviour, such as organization of social campaigns to clean up the environment, thematic movements (e.g., plastic-free July in Turkiye), information sessions at universities

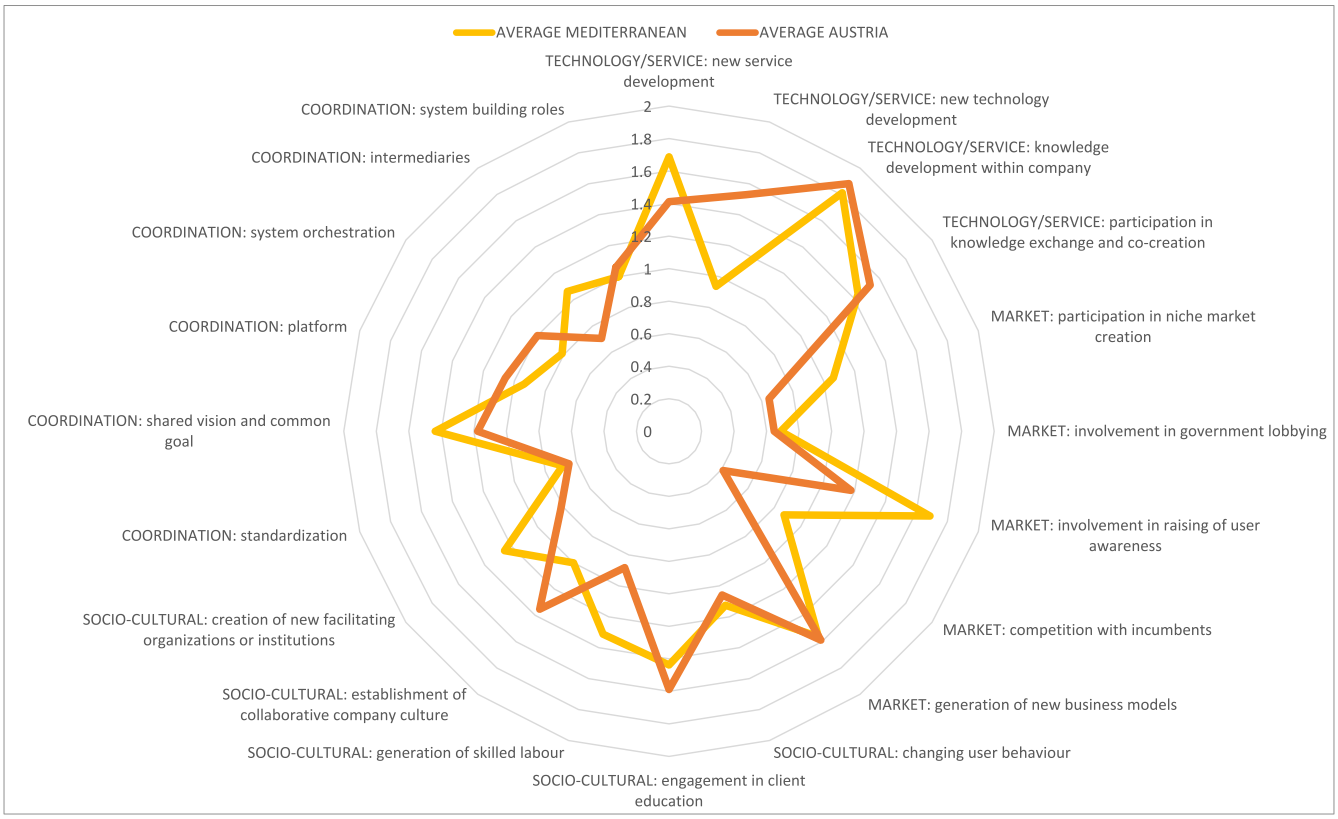


**FIGURE 3** Differences and similarities between Austria and the Southern Mediterranean in entrepreneurs' engagement in system building activities.

**TABLE 3** TRLs of entrepreneurs in Austria and the Southern Mediterranean.

| | No technology | TRL 1 | TRL 2 | TRL 3 | TRL 4 | TRL 5 | TRL 6 | TRL 7 | TRL 8 | TRL 9 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Austria—number of companies | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 4 | 3 | **6** | 17 |
| Southern Mediterranean—number of companies | **7** | 1 | 1 | 0 | 0 | 1 | 2 | 1 | 0 | 3 | 16 |

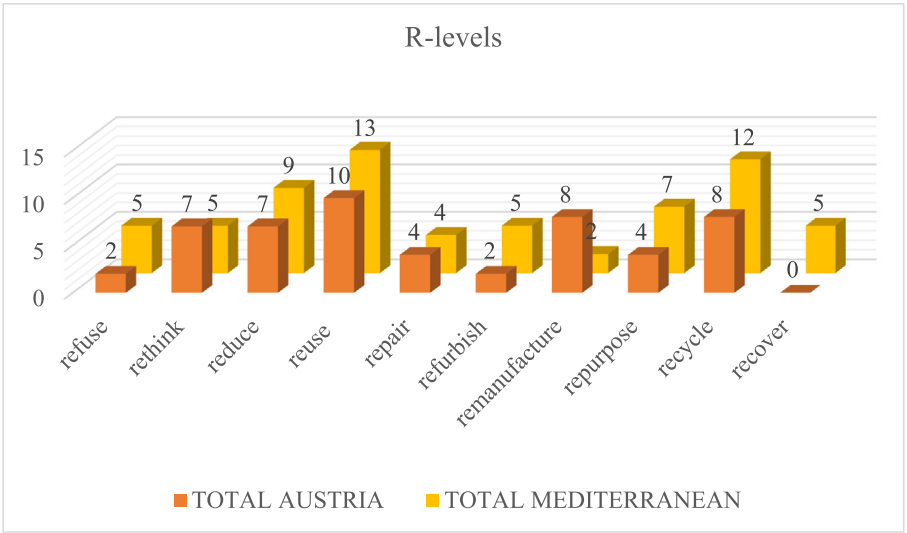


**FIGURE 4** Comparison of R-circularity levels in Austria and Southern Mediterranean.

and schools, expositions in libraries or capacity building workshops for general public, also involving disadvantaged and excluded society groups, for example, living in rural areas and older generations. Yet the language barrier and the fact that most resources on CE are available in English was mentioned as a problem by some entrepreneurs. Several interviewees in the Southern Mediterranean also stressed that they are frequently involved in collaboration with thematic experts to address *behavioural change* related to specific aspects of CE. Entrepreneurs in Austria also recognize that behavioural change is crucial for successful CE transitions. Yet they tend to engage mostly with actors along their value chains, including manufacturers and consumers, while applying proven commercial communications and marketing tools to instigate behavioural change, without necessarily striving to have a wider societal outreach. What is more, some entrepreneurs in Austria highlighted that there are consumer groups with strong environmental awareness that create a market pull for their solutions. Entrepreneurs from both Austria and the Southern Mediterranean underlined that behavioural change is a long-term process that requires consistent efforts and that greenwashing poses a major threat. As it comes to changing user behaviour, there is no significant difference between Austria and the Southern Mediterranean. Yet the involvement in raising user awareness is much stronger in the Southern Mediterranean than in Austria. This surprising finding was therefore further discussed in the validation workshop. The existing studies have so far focused on user awareness and behavioural change either in emerging markets and developing economies or in developed economies (Krajnc et al., 2022; Raffay-Danyi & Formadi, 2022; Robertson et al., 2024), yet comparative studies are missing.

The *collaborative marketing and collaborative competition with incumbents* are more strongly pursued in the Southern Mediterranean than in Austria. This might result from the fact that the entrepreneurship in the Southern Mediterranean is mission-driven; i.e., it is aimed at solving grand environmental and socio-economic challenges, which requires collaborative effort for a more impactful result. Several entrepreneurs in Austria emphasized that they operate in niches and do not have direct competition in the country. The interview responses also indicated that the collaborative competition in Austria might be facilitated by EU funded programmes (e.g., in the framework of Horizon Europe) that often convene companies and other stakeholders working in the same sector. In both Austria and the Southern Mediterranean, collaboration with other companies is also a means to resource pooling and, as a result, cost saving. For example, an entrepreneur in Austria noted: 'We have a lot of products with other brands. So, we did some marketing coalition and campaigns with them, because together you have more budget to do it'. Although collaborative innovation between entrepreneurs is critical for mainstreaming CE transitions, empirical investigations into such collaborations are scarce. The available studies highlight that in order to collaborate on CE, it is critical for company managers to understand what the degree of their complementarity is (Brown et al., 2020). Also, while studies exist on coopetition between startups (Primario et al., 2024) as well as on collaboration between entrepreneurs and incumbents (Veleva & Bodkin, 2018), the academic contributions focused on collaboration between startups to compete against incumbents are underdeveloped. This could therefore be a potential research area to be further explored.

Survey respondents in both Austria and the Southern Mediterranean agreed that *skilled labour* is important. At the same time, the interviews confirmed the existing findings that skills depend on the CE activity and business model (Borms et al., 2023; Burger et al., 2019). The technology-focused business models, which are more prevalent in Austria than in the Southern Mediterranean, require an engagement of qualified engineers. What is more, some entrepreneurs in Austria emphasized the importance of involving people with business development as well as marketing skills. Yet it was also mentioned by interviewees in all countries that they frequently resort to consultations with external experts, on an as-needs basis, rather than permanently employing them as part of the core team. This is because a wide array of skills across many disciplines is required to pursue a CE business model. The social entrepreneurship business models, which are more often pursued in the Southern Mediterranean than in Austria, not rarely build on engagement of underprivileged society groups without education, sometimes even illiterate. Interestingly, although entrepreneurs in Austria and the Southern Mediterranean think that skilled labour is important, they engage in its creation to a smaller extent in general, yet more in the Southern Mediterranean than in Austria.

### 5.2.2 | Strongest similarities

Regarding the *generation of new business models*, the survey results revealed that this activity is rated similarly in Austria and the Southern Mediterranean. Yet the interviews highlighted different approaches to the generation of new business models in both groups of countries. They have not been covered in academic research so far. Notably, most of the Austrian entrepreneurs apply a structured approach that can be exemplified by the following statement: 'As a start up, you really have to focus your time and effort and also finances on one topic'. Another entrepreneur in Austria said: 'We have to first make our production line series ready. And only then we can move on to the next chapter'. Many of interviewees in Austria underlined that their companies are small and their current environmental and socio-economic impact is limited, as well as that they need to focus on their own business. When they engage in interaction with a broader CE ecosystem, it is mostly along their value chains, involving suppliers and consumers. In turn, entrepreneurs in the Southern Mediterranean tend to engage in several activities at the same time. Their approach to establishing a business is more complex than in the case of Austrian entrepreneurs, and it involves interactions with a broader range of stakeholders simultaneously, not only along their value chains but also beyond. The need for interconnected efforts undertaken by multiple actors transpired in several interviews. For entrepreneurs in the Southern Mediterranean, it is also of importance to empower change makers. Another aspect that became clear in the interviews with entrepreneurs from the Southern Mediterranean is

that it is vital for them to facilitate community building. This however does not diminish the relevance of individual impacts, as one of the interviewees said: 'Don't doubt that one individual can make a difference'. The topic of CE business models has been widely covered in the literature so far (Geissdoerfer et al., 2023; Susur & Engwall, 2023), yet aspects highlighted above have not yet been explored.

In both Austria and the Southern Mediterranean, entrepreneurs usually do not *engage in government lobbying*, but it occurs for several reasons. In Austria, entrepreneurs—as mentioned before—usually take a step-by-step approach and the engagement with government is often not their highest priority. One of the Austrian interviewees said: 'Just because we have very limited resources, we need to focus on what is most important and in the end conversations with regulators and policymakers are rather slow'. Others highlighted that they believe in the power of free market and there should be as little regulation as possible. In Austria, a relevant aspect that was raised was also the engagement in regulatory process at the European level. One entrepreneur shared about the interaction with the EC: 'Obviously, we are incredibly small, and our voice is being heard and it is being considered'. In turn, in the interviews with entrepreneurs from the Southern Mediterranean, it was often underlined that the public sector is bureaucratic, and it also not interested in cooperation with small businesses. What is more, it was raised by several interviewees that even if engagement of the government with entrepreneurs is started, it often lacks consistent follow-up and monitoring, and it does not result in the desired outcomes. Many entrepreneurs from the Southern Mediterranean also shared that, based on their previous experiences, they feel discouraged to engage with the government and they do not know how to do it successfully and therefore prefer to use their time for other activities. Some entrepreneurs in the Southern Mediterranean also recognized that although the government introduces some CE legislation and regulations, 'the deep purpose is not there'. This provides some flexibility to the entrepreneurs to experiment with their role in the CE transitions. A Lebanese interviewee said: 'I think one of our opportunities that we have is a lot of flexibility in adapting to what is happening'. Although experimentation is also visible in Austria, it occurs predominantly in the scope of the known and proven CE business models. It is also formed around the typical business-to-business or business-to-consumer relationship, and to a large extent, it is shaped by the government intervention, which might be as far-reaching as defining the criteria for an event to be considered green, 'so from no straws to recycled cups and so on'. In general, there is an ongoing debate whether acceleration of transitions is market driven (bottom up) or policy driven (top down). Planko et al. (2016) distinguish market creation by entrepreneurs, including government lobbying, as one of relevant categories for mainstreaming of innovative solutions. Yet neither Austrian nor the Mediterranean entrepreneurs actively participated in government lobbying for conducive CE policies. For many of them, policy making was perceived as something they have little influence on. According to some researchers, policy makers play a significant role in supporting entrepreneurs to mainstream their CE solutions in a top-down approach, and regulations are essential in shaping the business environment and encouraging the adoption of circularity principles (Boonman et al., 2023; Droege et al., 2023; Ren & Albrecht, 2023).

Regarding *standardization*, it does not play a key role either in Austria or in the Southern Mediterranean. In the Southern Mediterranean, it is often connected with the desire to internationalize, while in Austria, it usually relates to the need to conform to the existing norms, standards, rules and regulations. For some entrepreneurs in Austria, that do not operate in a heavily regulated space, introducing standardization is considered an important dimension of becoming professional by ensuring a high quality of their products and services. Although the standardization might constitute a market entry barrier to entrepreneurs in Austria due to excessive costs that it involves, it can be crucial for those that seek to cooperate with larger industry players, as 'for them the standardization is very important'. Austrian entrepreneurs also highlighted that standardization, as required by the national law and regulations, often results from the law and regulations on the EU level. What is more, the law enforcement mechanisms in Austria are extraordinarily strong, which makes the incentive not to follow the law and regulations very weak. In turn, in the Southern Mediterranean, entrepreneurs referred to ISO standards rather than national norms, standards, rules or regulations. Some also revealed that, although they attach high importance to quality assurance, it is not always possible to conduct it systematically due to tight human resources within the company. They also often highlighted that they plan to or already entered collaborations with companies in developed countries, such as Finland, the United Kingdom or Germany, and that this motivates their efforts to introduce standardized approaches in the business models. The international debate on standards in CE is conflicted, which is confirmed through the existing research results. Some scholars believe assurance of the quality of CE products and services is central to building up confidence in markets, while others argue that markets will always privilege cost over quality. It is suggested that in the context of CE transitions, the standards as policy instruments must challenge the existing neoliberal market relations rather than to follow them (Flynn & Hacking, 2019).

In general, the existing literature recognizes that CE transitions require a systemic realignment of business, regulatory and societal practices, and such realignment is facilitated by intermediaries (Fischer et al., 2021; Gliedt et al., 2018; Hargreaves et al., 2013; Kanda et al., 2020; Kivimaa et al., 2019). The questionnaire results related to the *thinking in system building roles* were in line with the literature, and they were similar for both Austria and the Southern Mediterranean. Yet the interviews revealed a nuanced picture, which was surprising and therefore further discussed in the validation workshop. More specifically, the interviews exposed the relevance of the country's development context. Entrepreneurs from the Southern Mediterranean frequently implicitly referred to the levels of regime and landscape in the MLP nomenclature, while pinpointing market and government failures as well as institutional voids, and explaining how they determine the entrepreneurs' thinking in system building roles. For example, corruption was identified as a major obstacle in engagement with the public sector and intermediaries, i.e., 'The more intermediaries you have, the more you need to pay out under the

table'. Therefore, entrepreneurs in the Southern Mediterranean often try to identify and reach out to relevant CE counterparts directly, without involvement of intermediaries. As a result, they usually have broad networks of contacts and sometimes assume the role of intermediaries themselves for other CE businesses. What is more, the overall low level of society awareness about circular CE and, in general, a weak environmental education were mentioned by several interviewees in the Southern Mediterranean. It was highlighted that people do not know how to segregate waste and why this is important. Also, the fact that most information on CE is available in English constitutes a major barrier to the national capacity building. Entrepreneurs in the Southern Mediterranean try to bridge this gap by engaging in a broad range of educational and awareness raising activities targeted at the society at large, and as such, they assume a system building role. What is more, several interviewees in both Austria and the Southern Mediterranean highlighted that CE requires system orchestration. Yet they did not refer to any external parties that would support them in system orchestration. Rather than that, they often mentioned that a major part of their own work is to align processes between several different actors along and across their value chains and activities. Fundamentally, they frequently saw themselves as system orchestrators. One entrepreneur in Austria said: 'We are thinking along systems and don't need someone to do it for us'.

### 5.2.3 | Comparison of results with the current state of academic debate

In the literature on sustainability transitions, the scaling of niches has been a subject of interest for the past several years and, for example, includes studies on energy communities and urban innovation (Bauwens et al., 2020; Lam et al., 2020; Petrovics et al., 2022). Yet the number of studies on CE is limited. In general, the innovation mainstreaming pathways to a large extent still remain black boxes regarding their inner workings and conditions that they depend on (Petrovics et al., 2022).

There is particularly high complexity associated with the transition to CE, and one of its sources are the interactions between vast networks of stakeholders at various levels (Antikainen & Valkokari, 2016; Velte & Steinhilper, 2016). Scholars and practitioners acknowledge that the CE transitions cannot successfully unfold through isolated attempts of individuals, but instead, they need to be based on multiple value creation processes and collective action (Chizaryfard et al., 2021; Diepenmaat et al., 2020; Suchek et al., 2021).

Regardless of the geographical scale, sustainability transitions involve multi-scalar processes of innovation, experimentation, learning and upscaling (Stefani et al., 2022). There are several related barriers to the mainstreaming of systemic innovation required for CE transition, including lack of consumer awareness and interest, hesitant company cultures, and policy and regulation. In this context, some scholars call for the establishment of CE innovation ecosystems that would catalyse the CE transitions through collaborating and experimenting (Konietzko et al., 2020). In fact, in recent years, it has been evident that several actors have been joining forces to work towards common system-level CE objectives through multi-actor collaboration, often involving competitors (Harala, 2021).

In particular, the role of entrepreneurs as actors instigating and mainstreaming CE transition has been recently gaining increasingly more prominence. Also, some researchers highlight the importance of taking a macro perspective on businesses as an institutionalized logic that locates practices of individual actors in broader structures, which makes it possible to see the 'big picture' (Planko et al., 2016; Vasquez-Delsolar & Merino, 2021). This study contributes to this research stream.

Notably, the mainstreaming of innovative CE solutions from niches to regimes is facilitated by strategic collective system building activities of entrepreneurs, as a necessary but probably not sufficient element for the CE transition. The idea that a CE transition can happen on the basis of system building activities of companies has been criticized by some authors (Corvellec et al., 2022; Dzhengiz et al., 2023). There is a need for more activities to be undertaken also by other actors to enable the mainstreaming, such as government policies and higher market prices for virgin materials because of growing scarcity.

## 6 | PROPOSITIONS AND VALIDATION OF RESULTS

Based on the above-described results, three propositions were formulated in relation to importance of intermediaries, user behaviour and availability of finance. They were discussed and validated in a 1.5-h workshop with five experts, including two entrepreneurs from Austria, one entrepreneur from Lebanon, one representative of the SwitchMed managing team and one representative of academia. The propositions as well as reasons for their choice are presented below.

1. The results for *importance of intermediaries* were surprising, in that they differed between the survey and interviews. According to the survey, the importance of intermediaries is ranked higher in the Southern Mediterranean than in Austria. Interviews revealed a contrasting picture, in that Austrian entrepreneurs acknowledged the importance of intermediaries more that the entrepreneurs from the Southern Mediterranean. Most interviewees in Austria considered intermediaries to play a vital role in the CE ecosystem, and several entrepreneurs acknowledged the support that they received from intermediaries, in particular in identifying relevant counterparts, for example, in the government, and establishing connections to them. In the Southern Mediterranean, several interviewees shared that it is oftentimes challenging to engage with individual intermediaries, as it usually implies incommensurate financial compensation for their services due to corruption. Therefore, the following proposition was defined:

In Austria, it is easier to identify credible national intermediaries and to benefit from their activity than in the Southern Mediterranean. Entrepreneurs in the Southern Mediterranean often try to reach out to relevant CE counterparts directly, without involvement of national intermediaries. As a result, these entrepreneurs usually have broad networks of contacts and sometimes assume the role of intermediaries themselves for other CE businesses. International intermediaries, such as technical assistance programmes, have much higher credibility and usefulness than national intermediaries in emerging markets and developing economies.

2. While there is no significant difference between Austria and the Southern Mediterranean as it comes to changing user behaviour, the involvement in raising user awareness is much stronger in the Southern Mediterranean than in Austria. To further explore this surprising finding, the following proposition was formulated:

Entrepreneurs in both Austria and the Southern Mediterranean agreed that their circular innovation to a certain extent requires a behavioural change of their clients. At the same time, entrepreneurs in the Southern Mediterranean engage in a broad range of activities (usually interactive and low budget) to raise user awareness, also involving disadvantaged and excluded society groups. In turn, entrepreneurs in Austria benefit from the fact that circularity has a positive connotation and increasing popularity for users in developed countries in general, which drives behavioural change. As a result, the burden on entrepreneurs to engage in changing the user behaviour is lessened in Austria.

3. Financing was not explicitly covered in the survey and interviews, but it was part of the question on the importance of external support. In line with survey responses, the importance of external support was placed second in individual rankings for both country groups. Interviews did not provide any further insights. To confirm the role of financing, the following proposition was discussed:

The increasing flows of international technical assistance funding towards CE available in emerging markets and developing economies result in growing interest in CE in these countries, including emergence of CE businesses. In turn, in developed countries, there is a lot of domestic/EU funding available.

All propositions were validated. Yet, regarding Proposition 1, the discussants stressed that it is difficult to generalize. For example, in the Southern Mediterranean, the ecosystems of analysed countries are diverse as well as the quality of activities pursued by national public, private and non-profit actors varies between countries. Also, it was advised to refer to functions rather than actors/institutions to capture the intermediary activity. In the Southern Mediterranean, and in the emerging markets and developing economies in general, there are many informal intermediaries, while in Austria (and other developed countries), the intermediaries are usually institutionalized and have a specific mandate. It was also highlighted that in Austria, there are strong local, national and European networks and structures of intermediation, as opposed to the countries in the Southern Mediterranean, which usually must rely on international intermediaries. Finally, it was raised that intermediaries become particularly important to support the internationalization efforts of enterprises, both in the Southern Mediterranean and in Austria.

Regarding Proposition 2, one of the discussants underlined that sustainable consumption is linked to traditional patterns that have existed in the Southern Mediterranean throughout centuries. This confirms the findings revealed in the recent literature relevant for emerging markets and developing economies in general, for example, that circularity is present in the awareness of inhabitants of Rwandan slums informally, with little emphasis on business and entrepreneurship (Kanda et al., 2020; Kivimaa et al., 2019). The workshop participants underlined that repair activities have always been common in the Southern Mediterranean, and usually, they are a necessity to survive. In the developed world, repair as a business is pursued only for selected items, such as cars or phones. It is intentional and therefore possible to optimize. What is more, the focus is placed on advanced repair tasks, while the simplest ones are often neglected. Also, in Austria, the repair activities are usually structured, while in the Southern Mediterranean, they are informal and not pursued by design, which results in sub-optimization. In Austria, and developed countries in general, sustainable consumption is a novel trend, and the market for sustainable products and services is growing. There is also a willingness and ability to pay more for such products and services, as opposed to the Southern Mediterranean. In addition, Western cultures connote circularity and sustainability with something trendy and positive. This is not rarely associated with the risk of greenwashing. In the Southern Mediterranean, attention that underpins CE entrepreneurship is often directed towards fixing failures that exist (e.g., lack of resources, economic crisis and no electricity) rather than being built around societal trends. In the Southern Mediterranean, there is a need for policy and regulations that support a behavioural change (e.g., lower tax on repaired goods).

Regarding Proposition 3, the 'missing middle' was referred to by several experts. For example, it was confirmed in the discussions that the access to funding is still a barrier for startups and SMEs in both Austria and the Southern Mediterranean. In particular, they need patient capital since the returns are not immediate. At the same time, the investors need to better understand the CE businesses. It was also discussed that, in Austria, there is a lot of EU funding available, but the process to acquire it is usually long and bureaucratic. Yet several entrepreneurs still apply for EU financial support, especially in cases where no national funding is accessible. For the entrepreneurs in the Southern Mediterranean, the drivers to establish a CE business usually lie in a need to solve an existing problem. Such startups and SMEs often have difficulties building a viable business model that would be convincing to investors. Therefore, it is important that technical assistance encompasses grants and capacity building of entrepreneurs. The increasing flows of international technical assistance funding towards CE available in emerging markets and developing economies in general positively contribute to the enhancement of existing entrepreneurial activities as well as emergence and incubation of new ones.

By way of summary, the key insights from the validation workshop were as follows:

- In emerging markets and developing economies, international intermediaries are usually more important than national intermediaries, as opposed to developed economies. Yet, further conceptual and empirical work is needed on intermediaries in the context of mainstreaming entrepreneurial CE solutions in different country contexts.
- While sustainable consumption is a modern trend in developed countries, which stimulates behavioural change, in emerging markets and developing economies, it is linked to traditional patterns of behaviour that are associated with necessity. Therefore, different activities and/or measures are needed in both contexts to support behavioural change. They include awareness raising as an important activity in the emerging markets and developing economies.
- A 'missing middle' still exists in the context startup/SME financing in both developed and emerging markets and developing economies. Yet, next to finance, it is critical to provide capacity-building services to potential investors and entrepreneurs, particularly in emerging markets and developing economies.

## 7 | CONCLUSIONS

Regarding the research questions, i.e., 'How do entrepreneurs participate in the strategic collective system building to mainstream CE?', the research revealed both differences and similarities between developed vs. emerging markets and developing economies. The four strongest differences exist in the areas of new technology development (which is more important in developed countries), involvement in raising of user awareness, competition with incumbents and generation of skilled labour (all three are more important in emerging markets and developing economies). These differences are statistically significant. The four strongest similarities were identified regarding the generation of new business models (important), engagement in government lobbying (not important), standardization (not important) and thinking in system building roles (important). Notably, the knowledge development within company is ranked highest in both Austria and the Southern Mediterranean.

This research contributed to filling two overarching research gaps. With regard to research gap A, that is related to the prevailing focus of academic contributions on CE in developed economies, with insufficient attention to emerging markets and developing economies, a dedicated empirical (1) and transboundary (2) study was conducted that also enabled conceptual modifications (1) of the strategy framework by Planko et al. (2016) to make it applicable to different country development contexts. With regard to research gap B, i.e., a limited analysis of CE at the intersection of the strategic management and business literature, and the socio-technical transition literature (i.e., an intersection of the firm and system perspective), this research focused on the mainstreaming of CE solutions from niche to regime (1) from an entrepreneurial business perspective (3, 4) and with focus on activities requiring interactions between entrepreneurs and other ecosystem actors (2).

It can be concluded that the political and socio-economic circumstances prevalent in each country/region influence how entrepreneurs participate in the strategic collective system building to mainstream CE. While CE entrepreneurs in the Southern Mediterranean tend to adopt social entrepreneurship models (societal innovation), entrepreneurs in Austria are focused on technological innovation that is demand driven instead of being oriented at achieving societal change.

## 8 | LIMITATIONS

A shortcoming of this paper is that the issues of interaction effects between different activities as well as sufficiency and necessity are not dealt with. Another limitation relates to the methods applied. Although surveys and interviews are appropriate for data collection in explorative research, and frequently used in mixed method approaches, there are methodological shortcomings associated with their use. In case of surveys, they might include faulty questionnaire design; sampling and non-response errors; biassed questionnaire design and wording; respondent unreliability, ignorance, misunderstanding, reticence or bias; errors in coding, processing and statistical analysis; and faulty interpretation of results (Harris & Brown, 2009). With reference to interviews, it might be possible that the interviewer influences or manipulates interviewee responses. Hence, interview data reflect only a partial understanding of a participant's point of view (Colin & Michele, 2004; Yin, 2009). What is more, unlike in case of quantitative data, which is numeric, the interview results are subject to researcher interpretation. Yet, despite the weaknesses of both questionnaires and interviews, these methods cannot be discarded. They are key in obtaining information about understandings, conceptions, beliefs and attitudes.

## 9 | IMPLICATIONS

The research results have policy, managerial and theoretical implications. Regarding the former, it is recommended that policies (both national and international) aimed at accelerating CE transitions are guided by the rankings of system building activities (please see the supporting information) by entrepreneurs in each country/region. The rankings can help choose and structure a policy intervention strategy, e.g., to enhance activities that are already undertaken by entrepreneurs or important (ranked high), or to remove barriers to activities that are not yet extensively pursued by entrepreneurs or to elevate their importance (ranked low). Interestingly, since knowledge development within company is the most important system building activity in both Austria and the Southern Mediterranean, there is a potential for cross-boundary collaboration and exchange of lessons

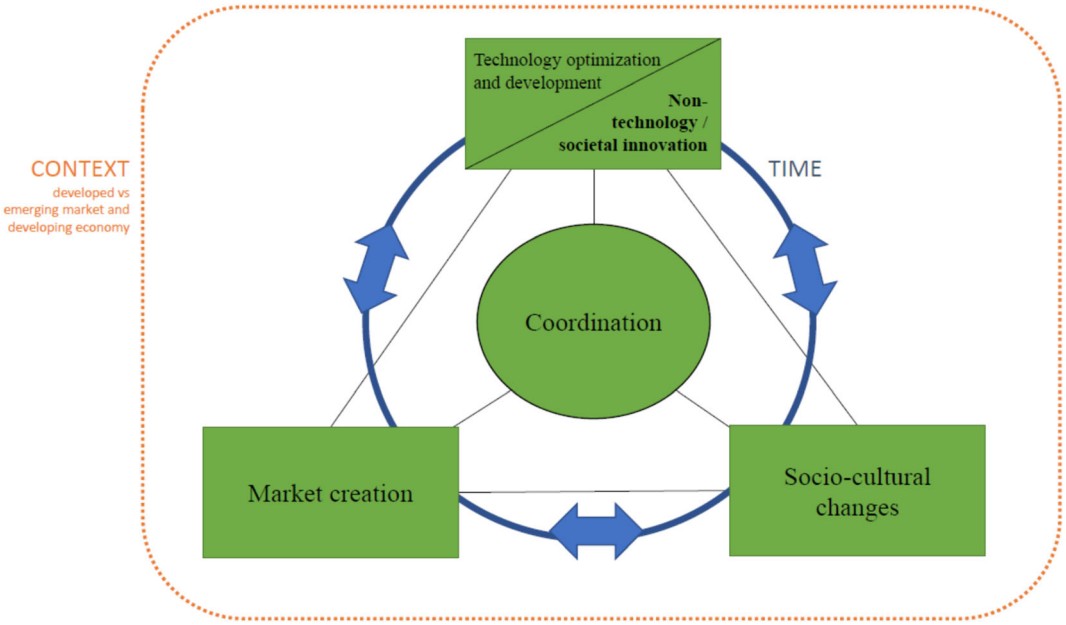


**FIGURE 5** Strategy framework for collective system building by entrepreneurs (Planko et al., 2016) adjusted to study CE.

learnt between entrepreneurs. Importantly, policy interventions in emerging markets and developing economies, to accelerate CE transitions and bridge the 'circularity gap', must focus creating enabling conditions for new service development by entrepreneurs (second ranked activity), for example, through creation of conducive laws and regulations, including tax regimes.

As it comes to managerial implications, this study might make entrepreneurs aware of the scope of engagement that they can undertake to mainstream CE, and it might provide insights into importance of various activities in different country development contexts. Also, the results might support entrepreneurs in both developed as well as emerging markets and developing economies in their decision making on strategic partnerships with other ecosystem actors, including prioritization of these partnerships.

Regarding the theoretical implications, some adjustments to the strategy framework by Planko et al. (2016) are advised for studying CE in different country development contexts. It is proposed that focus is placed equally on technological and non-technological innovation. In its original form, the strategy framework is built around technology development and optimization, which is key for developed, but not for emerging markets and developing economies. For the latter, the development of non-technological innovations is more important. What is more, a time dimension could be added to the framework, as research results revealed that while the entrepreneurs in Austria engage in system building activities in a structured and successive way, those in the Southern Mediterranean pursue an 'all at once' approach. An adjusted strategy framework, including three new elements, i.e., context, time and non-technology/societal innovation, is presented in Figure 5 below.

## 10 | FUTURE RESEARCH DIRECTIONS

Regarding future research directions, based on the results of this study, for gaining deeper insights, it is recommended to address the issues of interaction effects between different system building activities as well as of sufficiency and necessity by expanding the methodological approach proposed in this study. It is also advised to empirically test/validate the adjusted strategy framework for a larger dataset in different countries and for different CE business models. What is more, further conceptual and empirical research could be pursued on the role of intermediaries in the mainstreaming of entrepreneurial CE solutions in the context of developed vs emerging markets and developing economies. Lastly, theoretical and empirical contributions focused on collaboration between startups to compete against incumbents are also encouraged.

This research contributed to filling two overarching research gaps, i.e., insufficient attention to CE transitions in emerging markets and developing economies (A), and limited analysis of CE at the intersection of the firm and system perspective (B), by focusing on six specific aspects (A1, A2 and B1–B4):

- dedicated empirical (A1) and transboundary (A2) study that also enabled conceptual modifications (A1) of the strategy framework by Planko et al. (2016) to make it applicable to different country development contexts;
- mainstreaming of CE solutions from niche to regime (B1) from an entrepreneurial business perspective (B3 and B4) and with focus on activities requiring interactions between entrepreneurs and other ecosystem actors (B2).

Yet, other aspects could be identified in the future to further enable the narrowing of the overarching research gaps. This might require development of new theoretical frameworks.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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