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Organizations as users in sustainability transitions: Embedding Vehicle-to-Grid technology in the United Kingdom

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ABSTRACT

This study explores organizations as users of innovations in sustainability transitions. Existing literature concentrates on organizations that are producers in energy-intensive sectors. And yet, transitions also greatly affect organizations as users of innovations in everyday contexts. We develop a lens on organizational embedding of technological innovations during transitions using social practice theory and neoinstitutional theory. In this view, innovation embedding involves dynamics between innovation, organization and wider context. Empirically, the study considers how Vehicle-to-Grid Electric Vehicles (V2G-EVs) can be embedded in the fleet management practices of organizations. V2G-EVs deliver electricity back to the grid, and could provide an important contribution to a future electricity grid based on intermittent renewables. The study draws on interviews with fleet sector practitioners, conducted as part of a trial project to explore the potential role and uptake of V2G-EVs in organizational fleets in the United Kingdom. The findings highlight how, in innovation embedding, developments in everyday practices and organizational environments are inherently linked. During embedding, organizations follow different pathways. A sustainability pathway, a market-sustainability pathway and a professional-sustainability pathway are identified, and are shown to enhance and hinder embedding with and through their particular dynamics. The paper demonstrates the added value of jointly considering everyday organizational practices and wider system-level developments when studying innovation embedding during transitions.

1. Introduction

Despite increasing attention, important questions remain regarding the roles of organizations in socio-technical transitions towards a more sustainable society. Socio-technical transitions refer to large-scale shifts in systems of production and consumption. Studies of organizations in the socio-technical transition literature tend to focus on firms active on the supply-side of energy-intensive or resource-intensive sectors (1–3). However, apart from being producers, organizations are also users of goods and services. Indeed, organizations in sectors other than mobility and energy might be affected most directly by transitions as users of innovations for sustainability, such as electric vehicles. Although studies have addressed the contributions of organizational users in early stages of experimentation, little attention has been paid to the interactions that occur between users and institutional context during embedding (4,5). To study the use of sustainability innovations in organizations, scholars often draw on traditional innovation adoption models (6,7). While such innovation adoption frameworks provide some insights into transitions, they are less able to capture the particular complexity and transformational character of innovation embedding during transitions (8). Importantly, they pay limited attention to the co-evolution between organizations and innovations, and organizations and their environments as constituted by, for instance, socio-technical systems.

A persistent challenge for understanding organizational embedding of innovations in transitions lies in reconciling firm-level approaches with the system-level perspectives commonly used in the field of sustainability transitions (9–11). In response, this study uses social practice theory as developed by Schatzki, Shove and colleagues (12,13) and neoinstitutional theory (14,15) to analyse how organizations embed innovations in transitions. The practice perspective centres on everyday practices, which are seen as the sites where micro and macro structures and processes meet and as crucial for change towards sustainability. Although practice literature is sometimes accused of ignoring wider socio-technical systems, there are now multiple practice approaches to

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broader societal structures (16–18). In the field of organizational studies, the Practice-Driven Institutionalism (PDI) approach has been developed, which links organizational changes to wider societal logics (19,20). Among the many approaches to organizational behaviour, the PDI approach is particularly helpful for developing a new lens on the roles of organizations as users in transitions, as it shares core assumptions of actor behaviour as embedded in multiple socio-technical entanglements with transition scholarship. Although the PDI literature has not yet engaged extensively with sustainability, it offers promising synergies with sustainable transition studies, particularly now the latter field has experienced a modest 'institutional turn' (21,22).

Empirically, we analyse how an innovation with the potential to enhance sustainability – i.e., vehicle-to-grid electric vehicles (V2G-EVs) – is embedded in the vehicle fleet management practices of organizations. V2G-EVs are electric vehicles that can also provide electricity back to the grid, which is helpful for stabilizing the grid and facilitating a transition to intermittent renewable energy such as solar. A recent UK report estimates that if 50 % of the expected 11 million EVs by 2030 had V2G, this would add 16GW of daily flexible capacity to the grid saving £3.5 billion per year in grid upgrade and generation costs (23). V2G is receiving increasing attention in the academic literature, but mainly for usage by private consumers (24,25). However, it can be argued that organizational fleets provide a more promising application context given that larger, geographically concentrated fleets of vehicles can be integrated more easily with the electricity network (24,26). Fleets are important for sustainability, as around 50% new passenger vehicles in Europe are registered by organizations (27). Fleet management has changed considerably in the past decades, and specialized internal fleet knowledge has given way to a market-based approach to fleets based on efficiency. Sustainability also has become a more prominent topic in the fleet management community. In this complex context, organizations follow different trajectories of embedding V2G-EVs, trading off costs and environmental commitments in a context of different degrees to which fleet management has been professionalized. The empirical case draws on interviews with fleet experts and fleet managers participating in the Vehicle-to-Grid Oxford (V2GO) project, a V2G trial project held in the United Kingdom in 2018–2020. It also makes use of fleet management community observations and document analysis. The interviews with fleet managers concerned a detailed exploration of the embedding of V2G-EVs in fleet management practices, which involve the handling and operation of fleets within organizations. Interviews predated the implementation of V2G vehicles, although most fleet managers already had experience with conventional electric vehicles.

Our empirical study of V2G can be seen as a critical case (28) for enhancing theoretical understandings of technological innovation embedding within organizations during socio-technical transitions towards sustainability. It touches upon basic questions of operation and the reconciliation of classic business considerations (e.g. cost reductions) and sustainability orientations (maximizing benefit for local and global environment) at a time of climate emergency. In addition, V2G-EV embedding demands the bringing together of domains and practices of mobility and energy, which have long been relatively independent from each other in how organizations operate (29). In the study, an abductive process was followed, in which the theoretical framework was developed in part in response to the empirical materials, and subsequently deeper analysis of those materials was undertaken (30).

In short, the study aims to make the following contributions. At a theoretical level, we seek to enhance understandings of how technological innovations are embedded in the practices that enable production or service delivery within organizations during socio-technical transitions towards sustainability. This study uses practice theory in the manner of Schatzki and Shove and the PDI approach to develop a lens that allows for zooming-in on the organizational processes and zooming-out to contextual developments such as, respectively, IT use in daily management of fleets, and interactions about environmental problems at fleet conferences. At an empirical level, the study contributes by investigating drivers and hurdles for the implementation of V2G in organizational fleets, an understudied domain that is highly relevant from a sustainability perspective. As commonly assumed in the field of socio-technical transitions, sustainability in this study refers to environmental improvements in terms of CO_2 emissions.

2. Theory: a practice-logics perspective on organizations embedding innovations in transitions

To analyse innovation embedding in a changing organizational and institutional environment, we need a theoretical lens that allows us to capture the interactions between innovation, organization and context. In this section we develop such a lens by drawing on recent developments in social practice theory and neoinstitutional theory in organization studies.

2.1. Innovation adoption perspectives

'Classic' organizational innovation adoption perspectives draw on socio-psychological adoption models and a behavioural perspective of the firm to identify factors influencing adoption decisions (7,31). From an extensive review of organizational innovation adoption theories, Mohammed et al. (7) develop an integrative framework of firm adoption of sustainable technologies and use it to review the literature on alternative fuel vehicle adoption. They find that efficiency and environmental, economic and strategic gains can be enablers for adoption. The main barriers include limited knowledge and organizational policies such as decision-making processes on new vehicles. Economic factors and operational factors such as limited range and charging possibilities are additional barriers, particularly when EVs are seen as exact replacement for fossil fuel cars (32). As an emerging topic in adoption studies, the role of emotions is identified. Wolff and Madlener (33), for instance, find a positive effect of "technophilia" on perceived ease of using EVs. While these adoption models can help to identify factors that might stimulate or hamper innovation embedding, they also have shortcomings in the context of socio-technical transitions (8). First, they view both the innovation and adopting organization as relatively static, and ignore potential processes of co-evolution between technological and organizational changes in innovation embedding. Second, they mostly see adoption as an individual decision by firms. Although these models sometimes include the influence of perceived social factors such as social norms, they pay less attention to the influence of the changing socio-technical configurations in which innovation takes place.

2.2. A practice perspective on innovation embedding in organizations

A perspective on the use of innovations by organizations can be developed using social practice theory (SPT). In this view, everyday practices are the main sites of stability of the status quo and potential change towards sustainability. Practices can be defined as routinized types of behaviour that consist of several interconnected elements (34). Multiple practice perspectives exist, which differ in the way they conceptualize practice elements and the arrangements in which the elements are linked together (12,13,34). Practices are persistent, although not static because they emerge, change and decline. Practices interact to form loosely connected bundles or integrated complexes. For example, driving can be seen as a single practice or an integrated complex of steering, switching gears and so on (13). Similarly, at the level of organization, on which this study focuses, the practice of fleet management refers to the operations involved in the handling of a vehicle fleet. It can equally be seen as an integrated complex of vehicle selection, financing/leasing, maintenance, driver control/support, fuel management and remarketing. In line with practice theory, we define an organization in this study as a site of social life composed of a nexus of practices and material arrangements (12).

Practice perspectives are particularly useful for studying organizational innovation embedding, because their key strength is elucidating the tensions between reproducing normality and the enactment of change in everyday processes (35). In contrast with other organizational perspectives (such as the Resource-Based View (36)), practice perspectives share core theoretical assumptions with systemic perspectives on transitions. Agency is seen as embedded in heterogenous configurations, which consist of social and material elements. And yet, the socio-technical transitions literature has unnecessarily confined the use of practice theory to consumption by private individuals, leaving insights for organizational processes in transitions unexplored (35,37).

Social practice studies challenge the stability portrayed in innovation adoption accounts by providing a dynamic account of innovation embedding (38,39). In the context of renewable energy, Juntunen et al. (38) use the term domestication pathways to identify multiple open-ended co-evolutionary processes between innovation and users. For example, the meaning of domestic photovoltaic energy to a household changes from self-consumption towards being grid-connected electricity producer or co-provisioner of energy in a community. In line with this view, in our study innovation embedding refers to the integration of an innovation in a practice, a process which also involves changes to the practice itself.

While the literature on practices and sustainability overwhelmingly focuses on private consumption, a limited number of studies have addressed innovation embedding in organizational practices (35,40). Using a case from the food processing industry in the United Kingdom, Langendahl et al. (41) describe a firm as a bundle of practices, such as production and sales. A firm's "sustainable innovation journey" then involves developing new practices, redeveloping existing, and ending problematic practices. In another study of "professional" practices, Verkade and Höffkken (42) study the connected energy practices in policymaking, commercial activity, and grid management to better understand energy communities.

In sustainability studies, the practice perspective of Shove et al. (13), which identifies meanings, materials and competences as practice elements, is used widely. Slightly adapting Shove et al.'s practice elements scheme, in the context of smart meters, Christensen et al. (43) identify *engagements* such as saving money, reducing environmental effects, and increasing self-sufficiency; *materials* (devices) including rooftop photovoltaics and phone apps; and *competences* of reading the smart equipment and awareness of energy use. To better capture the orientation of organizational practices towards certain goals, we will also use the term engagements rather than meanings below (Fig. 1). Engagements are Warde's (44) interpretation of Schatzki's (12) *teleoaffective structures,* which can be defined as "a range of normativized and hierarchically ordered ends, projects, and tasks, to varying degrees allied with normativized emotions and even moods" (page 80).[1]

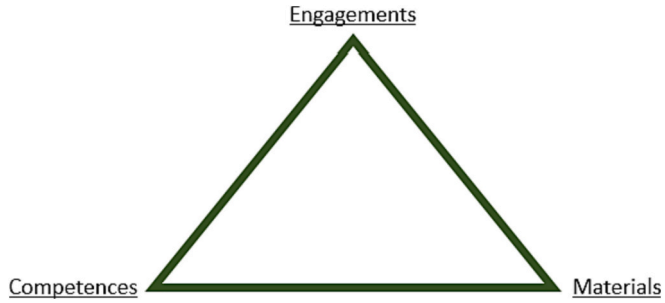

Fig. 1. Practice elements included in this study: Materials, competences, engagements.

In this study we complement the 'elemental' practice analysis, with an institutional logics perspective to better capture interactions with sectoral dynamics during innovation embedding. Some practice theorists also use existing practice concepts to study wider societal phenomena such as socio-technical systems (16,47). Others, however, have argued that although socio-technical transitions are reproduced in practices, additional concepts remain necessary to explain processes of change in socio-technical transitions (35,40,48). In line with the latter position, we will draw on the notion of institutional logics to capture the wider structures in which the process of innovation embedding during socio-technical transitions unfolds. In transition studies, institutional logics have proven helpful for describing the dynamic context in which organizations operate. For example, Fünfschilling and Truffer (15) have observed that actors in Australia's water sector are guided by a dominant hydraulic logic valuing security of supply and national welfare. Additionally, a market logic aimed at efficiency and a water-sensitive/sustainability logic valuing environment and livability guide actors in the sector to a lesser extent. Moreover, in organization studies, a Practice-Driven Institutionalist (PDI) perspective has emerged, specifically exploring the link between sectoral and organizational levels in change processes, such as innovation embedding. This perspective is elaborated below.

2.3. The co-evolving context in which innovation embedding takes place

Although they share a theoretical lineage that runs through the structurationist approaches developed by Bourdieu (49) and Giddens (50), social practice theory in the manner of Schatzki and Shove and neoinstitutional theory in organization studies have developed in different directions. Institutional theorists emphasize how organizational practices are structured by higher-order principles such as norms, rules and belief systems (51). They propose that organizations conform to their institutional context to obtain legitimacy, which in turns enables them to obtain the resources for survival. The content of the institutional context can be specified with the concept of institutional logics – "symbolic systems [that offer] ways of ordering reality, and thereby render ... experience of time and space meaningful" (14). Various authors have identified seven ideal-type logics for Western societies – corporation, profession, market, state, community, family and religion which are reconfigured and translated into 'field-logics' at the level of socio-technical systems. The presence of multiple conflicting field-logics is referred to as institutional complexity. For organizations, logics indicate "how to interpret organizational reality, what constitutes appropriate behavior, and how to succeed" (51).

In the organization studies literature, a practice-driven institutionalism (PDI) perspective is developing, emphasizing the performance of institutions through situated and generative practices and the

[1] As an example of 'normativized ends' one could think of norms of cleanliness that hold together the practice of washing. People who explain how they wash themselves will not refer to some cultural norm, but still their actions will likely follow some general norm, which is (imperfectly) reproduced in washing practices (45). Although Schatkzi located teleoaffective structures outside practices as motivating force and orientation towards the future, engagements are conceptualized as practice elements (44,46).

importance of everyday practices as a locus of institutional change (19,20).[2] PDI foregrounds the capacity of practitioners to engage in improvisation and adaptation in situations of institutional complexity. For example, in a study on the first Islamic Bank in Germany Gümüsay et al. (53) explain how practitioners deal with conflicting logics of religion and market and develop feasible hybrid work practices. Studies such as this complement previous work on "logics hybridization" that showed how, in fields characterized by institutional complexity and turbulence, the instantiation of logics varies per organization (54,55). Moreover, PDI studies have also started to consider the spread of new practices and logics. For example, Smets et al. (56) describe how, after a merger between an English and German law firm, different professional practices and their underpinning logics clashed. Through 'situated improvising' lawyers came up with solutions in their everyday work. A more Anglo-Saxon way of working subsequently spread in German firms by means of 'unobtrusive embedding', i.e., active participation in the practice itself. This diffusion occurred quietly 'below the radar', in the community of practitioners, which reduced resistance.

Some recent studies have aimed to link organizational practices and logics with a focus on sustainability. In a theoretical exercise, Silva and Figueiredo (57) review existing literatures on institutional logics and practices. They argue that the recurrent execution of sustainability practices by institutional entrepreneurs eventually leads to the establishment of a new sustainability logic. Silva and Figueiredo (57) also emphasize that sustainability is dynamic and relies on the doings of agents in everyday life. Silva and Nunes (58) further reflect on the emergence of an institutional logic of sustainability and see practices as a dimension of this logic. They emphasize that for this logic to become dominant, contextual structures and firm-internal competences and routines need to align; otherwise sustainability practices are only adopted ceremonially. This resonates with Rossoni et al. (59) who find that prevailing institutional logics affect the extent of adoption of sustainability practices. They conduct a case study of the uptake of a sustainability standard in two chemical road transport companies. In the company that follows a professional logic effective adoption of the standard is observed, whereas the firm following a market logic demonstrates ceremonial adoption and less internalization of the standard.

Finally, it is important to reflect on which contexts should be taken into account when studying innovation embedding in organizations during transitions. Organizational scholars use the term 'organizational field' to identify the relevant institutional environment that guides actor behaviour (60). Fields have been identified at the level of socio-technical systems (15), but can also form around thematic areas or professions (61). For innovation embedding within firms, it can be expected that an important role is played by facility managers, fleet managers or site managers, who are tasked with organizational embedding of innovations in domains like energy, mobility and food (62,63). These actors are part of profession-related communities of practice, a concept which has been defined as *"a joint enterprise that binds members together through relationships of mutual engagement, by which they produce a shared repertoire of communal resources, such as experiences, stories, routines, artifacts, and vocabularies"* (64,65). To qualify as a community of practice, Wenger (65) described the characteristics of a shared domain of interest, community and shared repertoire of practices. Gautier et al. (64) find that, contrary to their conservative image (62), communities of practice can also help diffuse institutionally divergent practices, for example by sharing new 'best practices'. Their perspective also points out the material component of communities of practice, for example by identifying a professional directory that became important for practice diffusion.

In short, drawing on social practice theory and neoinstitutional thinking on institutional logics, we have developed a lens to analyse innovation embedding within organizations during socio-technical transitions. It allows us to jointly investigate organizational practices and context, and so identify processes through which innovation, organization, and institutional context co-evolve. Below we use this framework to shed new light on the embedding of V2G in vehicle fleets, a case of which the challenges in embedding have shown to be hard to grasp using existing frameworks (24,25,66).

3. Methods

In this study, an abductive research design was followed, using systematic combining of data and theory (30). Following initial case study findings, the perspective of practice theory was combined with institutional logics to enable further analysis of meso-level change processes within the empirical data. V2G-EVs can be seen as critical case (28) that have strategic importance for the general problem of technological innovation embedding by organizations during socio-technical transitions towards sustainability. The most radical elements of V2G-EVs are in the organizational domain. For organizations operating vehicles their embedding requires reworking existing processes around fleet management, which are often highly institutionalized in the organization, making them hard to change. Introducing V2G-EVs involves reconciling classic business and sustainability goals. Moreover, V2G represents the coming together of the previously disconnected domains of mobility, energy and site management, increasing the complexity of embedding.

The case study concerns a V2G trial project held in the United Kingdom (2018–2020). The Vehicle-to-Grid Oxford (V2GO) project was funded by Innovate UK, which is a UK Government-funded agency supporting businesses in developing new ideas. The potential of V2G to use car batteries for a smart and sustainable grid, as well as opportunities to stimulate innovation in both automotive and energy sectors, excited the UK government to invest £30 million in various V2G projects (67). The government expects successful implementation of V2G to make a considerable contribution to solving short-term fluctuations in availability of solar and wind energy. This will save money and resources that will otherwise have to be spent on grid upgrades and stationary storage. In spite of its promises, V2G was only applied in a handful of trial projects and its exact configurations and uses remained largely uncertain in 2018 (24).

V2GO's aim was to explore the viability of introducing V2G solutions in vehicle fleets of organizations. The organizing partners were small and large firms from the electricity and mobility sectors, a local council and a university. Participating organizations that would eventually use V2G vehicles were recruited in and around the city of Oxford (Table 1), mostly through local business networks. Their participation in the project demonstrates that they had at least some interest in sustainability, although the extent to which they had already implemented sustainability measures varied considerably. Not included in the sample were self-employed 'fleet owners' with only one or two vehicles, who are often active in sectors such as construction. We tried to use interviews with industry professionals to gain at least some insight in their practices of fleet management and potential adoption of electric vehicles.

Data was collected from interviews, sectoral reports and other archival data, and by attending fleet conferences over the course of 2018 and 2019. We collated a database with 145 briefings and reports using internet search and consultation with experts. The selected documents have been prepared by industry, consultancies, institutes, government organizations and NGOs. They cover the period 2000–2018, have a geographical focus on the United Kingdom, and give insights into the

[2] In consumer studies, a perspective is developing which more directly draws on Schatzki's (12) ontology. Practices are seen as telic, which means they are performed for ends outside of the practice itself, for example the pursuit of profit (37). These ends can be captured by Schatzki's notion of teleoaffective structure. Although teleoaffective structures are specific to individual practices, Welch (52) has proposed the broader notion of teleoaffective formation. For consumption he describes teleoaffective formations as large-scale configurations of discourse and practice specifying understandings of the consumer for actors on both the demand and supply side into 'consumer sovereignty', 'emancipatory consumerism' and 'promotional sustainable consumption'.

Table 1
Participating organizations in the Vehicle-to-Grid trial and fleet managers interviewed.

Organization	Interviewee job title	Interview number
Large supermarket chain, online division	Operations development manager	1
Recycling social enterprise	Director	2
Library	Director	3
Fire service	Business and operational support manager	4
Heritage site	Director	5
NGO, social focus	Operation support manager Sustainability officer	6 (double interview)
Furniture company	Director Fitter	7 (double interview)
Moving company	Operations manager	8
Vehicle hire company	Fleet director	9
Utility company	Fleet manager	10
Travel and tourism company	Director Operations manager	11 (double interview)
Council services social enterprise	Transport manager Head of transformation	12 (double interview)
Office furniture, family business	Managing director	13

practices of fleet management, the fleet management community, and the introduction of EVs and V2G-EVs.

As our main data collection effort, 17 interviews were conducted with all fleet managers participating in the V2GO project (Table 1) and with additional industry professionals (Table 2). Fleet managers were interviewed on-site and first queried about their existing experiences regarding embedding of "regular" EVs in their fleet management practices. They were then asked to adopt a forward-looking orientation and consider the potential embedding in fleet management of V2G-EVs, which were not available or competitive at the time of the interviews. Questions focused on the decision-making, preparations, and expected hurdles and facilitators of V2G-EV embedding in their organization's fleet management. The interviews' forward-looking orientation means we are unable to consider unexpected events and other emergent contingencies in innovation embedding, which are topics to be addressed in future studies. The research assumes that the accounts of the fleet managers offer a reasonable description of how their organizations are currently responding, and will respond, to technological innovation processes in vehicle fleet management. Substantiating this assumption, the interviews provide detailed insight in the decision-making processes and preparations as key phases in innovation embedding. Besides, the asking of backward-oriented questions about EV embedding in fleet management practices in recent years may well have sensitized interviewees to potential complications and issues that might arise with the embedding of V2G-EVs.

Some researchers have questioned the usefulness of interviewing to study the performance of practices, which are often conducted 'unthinkingly'. However, as convincingly demonstrated by Hitchings (68), interviews are not logically inconsistent with practice approaches and people are able to meaningfully reflect on routines they conduct. Hitchings (68) advises not to shy away from asking about the 'mundane' or seemingly obvious, and in line with this suggestion we asked fleet managers to talk us through different parts of fleet management processes in detail. Indeed, we obtained highly specific 'accounts of praxis' considering the embedding of EVs and V2G-EVs, which we triangulated between informants and between interviews and documents. We subsequently asked fleet managers about the fleet management community and their interactions in this community. The first author additionally attended fleet conferences *Fleet Live* and *Cenex Low Carbon Vehicle Event* during the research period and made notes during sessions and at stands that featured electric vehicles. These events were selected because they devoted substantial attention to the introduction of electric mobility.

Table 2
Industry professionals interviewed.

Organization	Interviewee job title	Interview number
Telematics firm	Marketing manager	14
Vehicle leasing company	EV specialist	15
Local authority (area with around 250.000 inhabitants)	Fleet manager	16
NGO, sustainability focus	Electric vehicle specialist	17

Interview transcripts and notes were coded using the program NVivo. We obtained detailed accounts of the practice of fleet management and the embedding of EVs and V2G herein. These were first coded using in vivo codes and categories which emerged from the data. For example, we attached labels such as 'driver training', 'community' and 'telematics'. We then made links to social practice theory because some codes could be directly interpreted through practice theory concepts. For instance, 'telematics' was linked to the concept of 'materials'. Some other findings, such as descriptions of fleet management community dynamics, were harder to interpret, and we searched for additional theoretical perspectives to help explain our findings. This led us to include recent work on neoinstitutional theory, in particular institutional logics, which we subsequently used to code data.

Using this iterative process between data and theory, at the level of the fleet management community (zooming-out), we identified the presence of a 'market', 'sustainability' and 'professional logic'. From the interview data we observed two main mechanisms, 'best practice sharing' and 'doing together', by which practices were shared in the fleet management community. We compared our emerging findings with collected documentary evidence on fleet management to clarify and refine explanations. At the level of the organization (zooming-in), we used the data related to the elements of practice theory (engagements, materials, competences) to identify three pathways by which organizations embed innovations, 'sustainability', 'market-sustainability' and 'professional-sustainability'. Finally, after having written up a draft of our results, we used member checking (69) and asked a sector expert to reflect on the findings and concepts to increase the reliability of the research.

4. Results: embedding V2G-EVs in fleet management

In this section, we start by zooming out and analyse prevailing logics in the fleet management community in Section 4.1. Drawing on the experiences fleet managers already had with EVs and exploration of the integration of EV-V2G in practices, we subsequently zoom in and describe three pathways of innovation embedding in organizational practices during transitions in 4.2.

4.1. Zooming out: the co-evolving context in which innovation embedding takes place

The organizational embedding of the innovation of V2G-EVS takes place in the context of the fleet management community. Although this community satisfies Wenger's (65) criteria of community of practice (shared interest domain, community and shared repertoire of practices), it is not a rigid structure. Among the larger organizations with a dedicated fleet manager in our study, that fleet manager is typically part of one or more organized networks, which organize meetings and conferences. The people that 'do fleet' in smaller organization meet each other more informally, for example in local business networks. As part of the community of practice, there are also various fleet magazines and websites, including benchmarking tools (which can be used to compare fleet performance to that of others) as an important material element. A dedicated fleet manager of a local authority recounts the partly overlapping networks:

> "Well, there's a couple of aspects. There's the local authority fleet management sector … they have some value and it looks at it from the perspective of local authority ... I'm a member of the Institute of Road Transport Engineers, we share best practice through meetings and things like that. So [my focus tends to be on] heavier vehicles and there is a common sort of sharing of best practice amongst staff ... Also [for] vans ... there is a community and you do share practice. I meet with our local fleet engineers, ... we have sort of a localised arrangement. Nationally we do the APSE [Association for Public Service Excellence] meetings. We [also] do FTA (Freight Transport Association) engineering conferences" (Fleet manager, local authority, INT#16).

Within the fleet management community, a *market* logic has become highly dominant in the past decades. Prominent discourses connected to it are rationalization, profit maximization and outsourcing. The practice of benchmarking, in which fleets compare their economic efficiency to industry standards, further entrenches business efficiency in fleet management. During fleet management conferences and in fleet publications 'best practices' of fleets that have made their operations more cost-efficient, for example by outsourcing administrative tasks, are being shared.

In contrast, the emerging *sustainability* logic is concerned with balancing economic pursuits with environmental and social goals. It connects to discourses of Corporate Social Responsibility, green capitalism, stakeholder involvement and environmentalism. Sector reports on the fleet market and regular fleet magazine publications now have extensive coverage of sustainability best practices in which organizations embed innovations such as V2G-EVs. Regarding the social dimension of sustainability, vehicle safety issues are often stressed. For example, the magazine *Fleet News* organizes the annual Fleet News Awards, which among market-oriented categories such as 'Fleet of the Year' also includes a 'Safe Fleet' and 'Ultra-Low Emissions Fleet' award. The level of detail by which the more sustainable fleet practices are described in a short news article is noticeable and includes specific references to *materials* involved in the fleet management practice such as telematics:

> "The company achieved a 24% uplift in mpg [miles per gallon] performance and cut the average CO_2 emissions of its 124-car in-house fleet by 28%, from 103g/km to 74g/km. A real-world PHEV trial involved 20 ALD company car drivers, chosen because of their unique driving profiles. They swapped petrol and diesel cars for Mercedes C350e PHEVs, fitted with telematics devices. The PHEV fleet managed an overall average of 54.48mpg, which rose to 56.44mpg after the first month. The best recorded mpg was 110.54 by a driver averaging 7,000 miles per annum." (70)

Finally, the *professional* logic in the fleet management community relates to technological and operational expertise. It is exemplified in organizations with their own dedicated fleet manager, who is also responsible for vehicle maintenance. Driven by the rise of the *market* logic and the increasing technical and legal complexity of fleet management, this logic has considerably declined in importance over the past years. The report titled 'The Future of the Fleet Manager' by service provider Venson (71) opens with lamenting the fleet manager's decline:

> "Historically, vehicle management was the domain of the fleet/transport manager, but over the last two decades or so, many companies have abolished that role opting to outsource the management of company cars … In the intervening years, despite fleet in most organizations being the second largest expense after payroll, the number of employees solely dedicated to managing vehicles has continued to shrink. Instead, we have seen 'fleet management' hived off into numerous other areas of businesses – particularly HR, finance, procurement and even becoming the responsibility of the managing director's PA."

Indeed, for most interviewed fleet managers in our sample "doing fleet" was a part of their job, next to other responsibilities.

Two specific interaction mechanisms through which practices were shared stood out. These linked specific organizational practices to the wider community: *best practice sharing* and *doing together*. Although we observed a strong tendency of sharing practices associated with upcoming logics such as *sustainability* in the community, some practice sharing also reinforced the existing dominant *market* logic.

In the fleet management community, there is a considerable number of meetings dedicated to sharing 'best practices' regarding embedding of EVs. Best practice sharing can be defined as highly contextualized communication by frontrunner organizations about the execution of their practices.

For example, in conference meetings, someone from such an organization talks in an enthusiastic manner to the audience in great detail about their practices of EV embedding. Typical topics addressed are engagements such as *helping the environment* and *competences* in the form of particular challenges and how they were overcome. Among the participants of the V2GO project were also a handful of early EV adopters who had given best-practice talks at many meetings. As not all people responsible for fleet management attend dedicated fleet manager conferences, local business networks are also important here. 'Best practices', often including a list of lessons about EV embedding, are also shared in professional publications such as *Fleet News*. Sector organizations hand out prizes including the 'Environmental Fleet Award' and interviews with winning fleet managers contribute to further awareness of their specific fleet management practices. Experiences from conferences or publications are also shared with colleagues in informal conversations.

Best practice talks often end with speakers handing out business cards for further questions and inviting other fleet managers for a visit to experience and learn about the embedding of EVs in the speaker's organization. We refer to the joint execution of practices with the aim of learning about their workings as *doing together*. For example, trying out EVs at other organizations is common. In demonstrations *competences* such as managing the charging infrastructure are shared. The importance attached to personal experience of fleet managers fits well with the often time-constrained nature of fleet management, which leaves little room for more formal analyses of the best fleet options. Nonetheless, the peer-to-peer diffusion model can also generate dilemmas for organizations that have established a frontrunner reputation within the community:

> "With the University ... because of its reputation a lot of people are interested in coming out of curiosity and that can take up a lot of our time. So we try to minimize that as much as possible and we [only] do … [it] strategically when there's genuine interest by other universities. But we don't go out and promote it in that sense. … [This] does raise an issue because if we are doing something well ... with electric vehicles [and] vehicle-to-grid then perhaps that should be written up and promoted at conferences" (Director, Library, INT#3).

4.2. Zooming in: embedding pathways within organizations

Zooming in on the level of the organization shows how the logics are instantiated in the practice of fleet management in an organization (Fig. 2). We identify three pathways by which organizations embed V2G-EVs. These embedding pathways indicate processes of reconfiguration of the fleet management practice with a certain directionality. They are distinguished by the main logics and associated engagements that drive embedding. In the *sustainability* pathway, the embedding follows from two engagements related to the sustainability logic: environmental sustainability and helping local communities. In the *market-sustainability* pathway embedding is driven by cost efficiency, enhancing operational continuity and environmental sustainability. In the *professional-sustainability* pathway, embedding follows engagements of

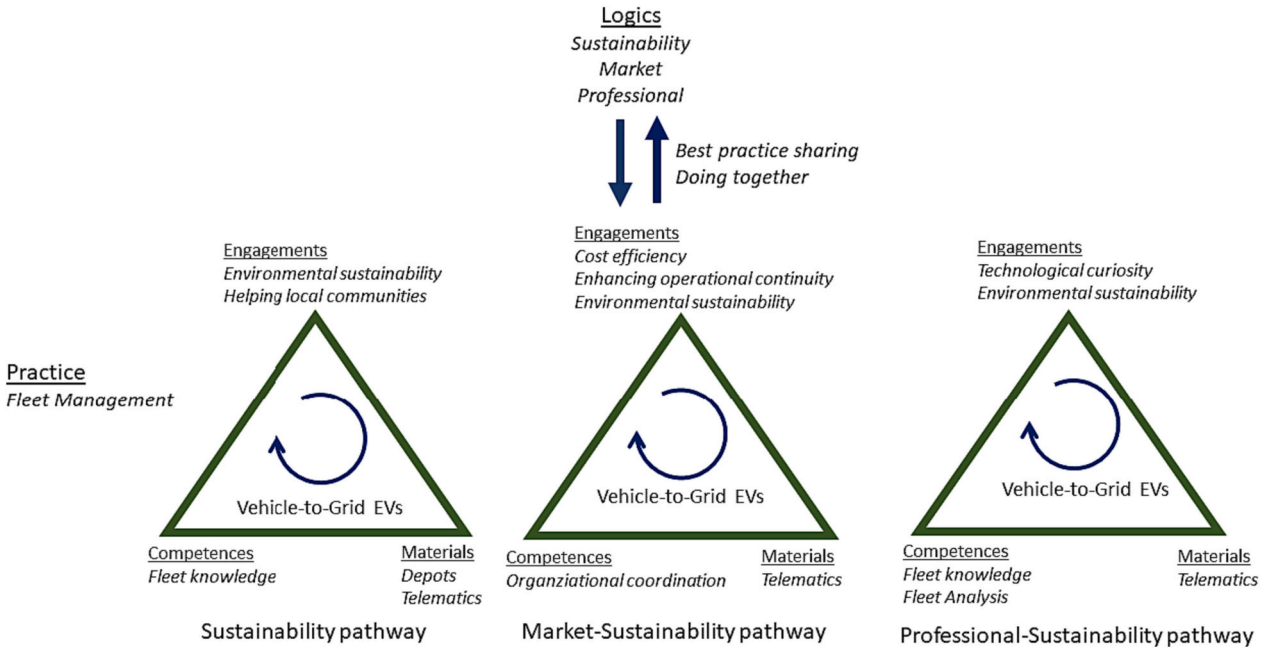

Fig. 2. Community-level logics and different organizational pathways of innovation embedding. The pathways are driven by a distinct set of engagements linked to logics at the community-level.

technological curiosity and environmental sustainability. As outlined below, the practice elements of engagements, competences and materials co-develop. We use these practice elements to identify processes that stimulate and hamper V2G-EVs embedding for each of the pathways. Finally, as embedding is a social process, the identified mechanisms of sharing best practices and doing together help spread embedding pathways across organizations.

4.2.1. A sustainability pathway of innovation embedding

A sustainability pathway involves embedding the innovation as part of a reconfiguration of the practice of fleet management towards the *sustainability* logic. About a quarter of organizations in our sample followed this pathway. In terms of engagements, in this pathway *environmental sustainability* and *helping local communities* become dominant. Transformation processes are embedded in the context of the existing practice, and involve trial and error, but considerable changes are made to fleet management. In this pathway, engagements related to local communities, such as "looking after [the local area]" (Managing director, Office Furniture Company, INT#13), are seen by fleet managers to be particularly conducive to V2G embedding. This relates to the configuration in which V2G helps to increase use of on-site or locally produced renewable energy, typically from solar.

In terms of the practice element of competences, a sustainability pathway involves providing driver training in new competences, for example eco-driving in an EV:

"So this is about looking at driver behaviour … [drivers] need to understand that although the power's already there in the vehicle you don't necessarily need to use it. You can put … [the vehicle] in ecological mode or economy mode … which makes it accelerate slower but probably more like what a current diesel engine is like so it's no different." (Director, Library, INT#3)

With regard to the practice element of materials, *telematics* systems can be installed that help use V2G-EVs in such a way that they make optimal use of renewable energy when it is available. Telematics refers to the combined use of telecommunications and informatics to monitor vehicles. Using telematics to optimize V2G's use of solar and wind energy entails letting go of engagements of cost-saving that relate to the *market* logic. Instead, use of such systems involves prioritizing engagements related to the logic of *sustainability*.

Another material element of the practice are *depots*. Because of economies of scale resulting from collective charging, V2G could for some organizations also accelerate changes to a model in which company vehicles are parked up overnight in *depots*, instead of at employees' homes. *Depots* would ideally be placed in locations with ample parking spaces and a good electricity connection. For organizations that already have *depots,* moving locations exemplifies the difficulties associated with a sustainability pathway. The locational practices of organizations are highly entrained with mobility and residential practices of employees. Still, depot relocations related to the electrification of vehicles are sometimes observed, particularly in large cities:

> "[For] fleets that operate in city centres it might actually be very difficult to have a depot of say a hundred charging stations somewhere because the land's just not there, right. We've seen companies move away from centres to you know business parks and warehouses because that's the only place that they can have charging infrastructure." (Marketing manager, Telematics firm, INT#14)

Perhaps easier, suitability for V2G-EV use can be taken into account for the location of new sites. As indicated by a fleet director of a vehicle hire company, criteria such as capacity of the local substation, suitability for rooftop solar panels, and a site lay-out that enables as many vehicles as possible to concurrently connect to the grid could be included in site selection practices.

In sum, in a sustainability pathway, V2G is embedded as part of a wider practice transformation process in which engagements, competences and materials fostering sustainability become dominant. *Helping local communities* is identified as a particularly strong driver for V2G configurations with local energy generation. In terms of materials, the embedding of V2G vehicles can bring about further changes in fleet management, because it provides an impetus to switch to a depot-based model of fleet management.

4.2.2. A market-sustainability pathway of innovation embedding

A market-sustainability pathway concerns embedding the innovation within engagements, competences and materials that instantiate a crossover between the market and sustainability logic. Roughly half of organizations in our study followed this pathway. An important engagement related to the sustainability logic that enhanced

implementation in this pathway was *helping the environment*. However, fleet managers also struggled to balance this engagement with those related to the market logic, i.e. *enhancing operational continuity* and *cost saving*.

Regarding *enhancing operational continuity,* fleet managers are focused on servicing the mobility needs of the organization with minimal disruption. This translates into risk aversion, which obstructs EV-V2G embedding. For example, a fleet manager at a small firm worried about temporal breakdown of EV chargers, which might severely impact his business operations. To reconcile *ensuring operational continuity* with EV-V2Gs, another fleet manager proposed to put clear arrangements in place for replacement vehicles in case of breakdown. In fleets of freight vehicles, there is an even stronger version of *enhancing operational continuity* present, namely the notion that a vehicle has to be on the road. This is in clear tension with the fact that EV-V2Gs need to be parked and thus idle to be connected to the grid. For example, during an interview, the interviewer and an interviewee looked over the organization's parking place:

> "Interviewer: 'Are there any vehicles that are also parked during the day here?' Respondent: 'Well they shouldn't be because then they're not making money [laughs].' (Operations Manager, Moving Company, INT#8)

Cost-saving can also obstruct V2G-EV embedding within organizations given the required investment in charging infrastructure. One fleet manager therefore suggested that an online dashboard providing an overview of economic benefits to the organization might enhance V2G embedding.

In terms of competences, a common skillset in fleet management which reflects the *market logic* has developed. As elements of fleet management are often outsourced and/or conducted part-time as part of a wider role within an organization, people responsible for fleet management often have a fairly limited understanding of their own fleet as well as new technologies. Instead of using formalized analyses and processes, fleet managers often draw on experience combined with on-the-fly calculations based on limited sets of available data. This resourceful and improvisational approach can benefit EV embedding and a wider shift towards the *sustainability logic* in some instances as it provides flexibility. For example, fleet managers in our sample had combined simple Excel calculations combined with freely available online EV spreadsheets to make decisions about EV adoption. However, this way of working relies on the experience and estimates of the fleet manager for making (V2G-)EV-related decisions, for example about vehicle mileage driven per day, and such estimates turn out not to be always correct.

Organizational coordination is a key competence in fleet management because multiple stakeholders within and outside the firm are involved. An important anticipated consequence of V2G-EV introduction is the increasing intertwinement of fleet management and site management, which can already be observed for the case of EVs. The installation of V2G-EV charging infrastructure and the time and duration that vehicles can charge and park require efficient coordination between fleet and site manager. Such intertwinement of roles is a very concrete implication of the coming-together of energy and mobility systems in the embedding of V2G in fleets of organizations. Influenced by engagements of *cost-savings*, this might result in problems requiring novel coordination competences, for example related to the question of who will benefit from the discount to electricity bills that V2G brings.

Finally, as an important material element of the practice, *telematics* use is mainly initiated in relation to the *market logic* and associated engagements such as *cost-saving*. Telematics products are often promoted in the fleet community with slogans about how 'telematics will increases an organization's productivity by x% and reduce fleet costs by y%'. Over time, however, telematics has become more closely intertwined with the *sustainability* logic. Telematics has played a facilitating role in the introduction of EVs and synergies with V2G embedding are widely expected as well. Having an accurate overview of daily vehicle routes is important for a potential switch to V2G-EVs, because it helps identifying vehicles that can be most easily converted to EVs. It also aids Total Cost of Ownership calculations for V2G-EVs over one fleet cycle and comparing these to fossil fuel cars. During daily operations of V2G-EVs telematics devices are anticipated to contribute to route planning in relation to V2G-EV charging, as well as reporting of energy use and potential battery degradation. In turn, V2G-EVs also provide greater incentive for organizations to engage in more detailed and explicit fleet management than fossil fuel-powered vehicles for which fuels are purchased at certain fixed price-levels. A dynamic electricity price in combination with the possibility of discharging electricity are likely to stimulate the use of more refined fleet management systems. Finally, the interviews also suggested that telematics could assist in relieving drivers' range anxiety related to driving an EV.

In sum, in the market-sustainability pathway the organization embeds the innovation within a practice that instantiates a crossover between the market and sustainability logic. Existing engagements related to the market logic, such as cost-saving form a barrier. In terms of competences, the on-the-fly way of managing fleets associated with the market logic can provide flexibility for V2G embedding, but lack of fleet knowledge forms a barrier. The material practice element of *telematics,* initially associated with the *market logic*, is highly synergetic with EV-V2G introduction. EV-V2Gs can also further ingrain the use of telematics, hence bringing about more changes to the fleet management practice.

4.2.3. A professional-sustainability pathway of innovation embedding

In the final pathway the embedding of the innovation is driven by engagements related to the professional and sustainability logic, respectively *technological curiosity* and *helping the environment*. Around a quarter of organizations in our sample followed this pathway. *Technological curiosity* is an engagement of fleet management that can be observed in the various fleet publications discussing details of new vehicles and in the shared enthusiasm of fleet managers watching a demonstration at a trade show. This generates interest in EV, even among people who are more skeptical about its future applications.

In terms of the practice element of competences, extensive *fleet knowledge* existed in some organizations, with fleet managers having detailed knowledge about current and prospective EV models. One organization had partnered with a university to increase *fleet analysis* competences and develop models regarding V2G-EV implementation. However, interviewed fleet managers often talked about competences related to the *professional* logic as insufficient or lacking, and hence as a barrier in innovation embedding. For example, for organizations that do not make Total Cost of Ownership calculations, it is harder to see the benefits of EVs, which are characterized by higher upfront but lower operating costs. Also, fleet managers in our sample were not always aware of concepts such as 'smart charging'. This lack of knowledge is likely even more problematic for embedding of V2G, which is a complex concept many of our interviewed fleet managers admitted not to grasp fully. In fact, V2G can even cause confusion among fleet experts:

> "I mean I do a lot of work within the electric vehicle space within my capacity and I still don't know a huge amount about vehicle-to-grid, I know a bit but not much and it's something that is interesting to me but not everybody's going to understand what it's about or be interested in it but I think people need to become interested in it." (EV specialist, Lease Company, INT#15)

Fleet analysis competences also affect the use of the material practice element of *telematics*. A lack of analytic capabilities regarding telematics data is a widely acknowledged problem in fleet management. This is influenced by a strong orientation towards cost-saving which diminishes time and resources for telematics analysis.

> "I think the issue for [my colleague, pseudonym] Eva and I is actually we've not had any time and the ability to actually do something with our data, the only data that we've managed to do something with is we understand how many personal business, personal miles staff are driving and we made a decision to remove private mileage from 2022 because of that." (Operations support manager, NGO, INT#6)

All in all, in the professional-sustainability pathway, V2G vehicles are embedded in fleet management practices that instantiate a mix of these two logics. In this regard, the engagement of *technophilia*, related to the *professional* logic, enhances interest in sustainable technologies such as V2G. Competences associated with the *professional* logic, such as a deep *fleet knowledge* and *fleet analysis* capabilities, further facilitate V2G-EV embedding.

5. Discussion

We can now reflect on the generalizability and implications of our findings for understanding the embedding of technological innovations in the practices that enable production or service delivery within organizations during sustainability transitions. In our case study in the UK fleet sector, we identify a sustainability pathway, market-sustainability pathway, and professional-sustainability pathway of innovation embedding. The fleet management community has a strong European dimension, with international conferences and ample organizations that operate across borders. It can hence be expected that similar logics and pathways can be observed in other European countries as well. In terms of generalizability towards other organizational activities, some domains have, like fleets, over the past decades been labelled as outside of the "core business" of organizations by theorists and practitioners (72). These include building management, catering and other facilities. In these domains authors have observed similar dynamics in logics (e.g. a decline of the professional logic) and drivers and hurdles of sustainability innovation to the ones in this study (73,74). Extending towards other organizational domains and geographical areas, we consider the identified pathways as propositions to be examined in further studies, possibly to be adapted or complemented with additional categories.

The respective dominance of the identified embedding pathways will influence the future development of V2G-EVs and likely sustainability outcomes. The main difference between possible futures of V2G-EVs lies in the logics and engagements that undergird embedding. For example, a strong presence of the sustainability logic would stimulate use patterns in which V2G-EVs are employed to optimize storage and use of intermittent solar energy. A dominant market logic, on the contrary, implies usage patterns of V2G-EVs maximizing operational efficiency. The current prominence of the market logic influences V2G-EV embedding notably in smaller organizations with strong cost efficiency engagements. It has stimulated the outsourcing of large parts of fleet management to leasing companies. Potentially, V2G could benefit from the economies of scale provided by these external parties. However, the decision-making around embedding V2G-EVs remains within organizations. Barriers to embedding have emerged in these organizations because coordination of fleet with energy and other operational domains is difficult, and knowledge levels regarding fleets are low. Finally, one likely development across organizations is a further increase in the use of telematics, which fits well with all of the identified embedding pathways. It can therefore can be seen as a "no-regret option", the use of which facilitates V2G-EV embedding.

Our analytical framework allows us to unpack the role of organizational and institutional factors in V2G-embedding. In the complex dynamics of fleet management, the agency of fleet managers lies in how they decide to relate to, and come to champion, different engagements, logics and ultimately different versions of the practice of fleet management. Our findings here relate to those by Pel and Boons (73) who study the role of traffic managers in changing mobility systems. In contrast to dominant representations, "the people keeping things running" can also be change agents, as they have room for maneuvering in the large uncertainties stemming from the interactions between daily practices and socio-technical systems. In particular, we observe how the connections between fleet managers in various, overlapping communities of practice facilitate bringing about change in fleet management on a broader scale.

The declining importance attached to fleet management within organizations points to a potential limitation of our research. We chose the fleet management community as 'organizational field' – i.e., as the most important institutional context in which the organizational practices regarding fleet management take place. For most of the organizations we interviewed, the fleet management community was indeed a relevant context. However, smaller organizations in particular might be influenced more strongly by different 'fields', such as the sector in which they are active. The innovation processes of the organizations in our study could also be influenced by their simultaneous embedding in multiple fields, such as sectors or regions. Additionally, we have studied innovation embedding from a fleet management perspective. Alternative perspectives on organizations could focus on the role in innovation embedding of internal organizational conflicts, senior management or other elements that make up the organization. As a final limitation, although many interviewed fleet managers had some experience with EVs, the research interviews predate the actual embedding of V2G-EVs. While this anticipatory approach is useful for obtaining insights for a technology that is in early development stages, the actual use of V2G over time might generate new and important insights into its interactions with the practice of fleet management, which will require further study.

Finally, sustainability and transition research has turned its attention to the big forces of capitalism (74), geopolitics (75) and cultural change (76). This is to be welcomed as the effect of these forces on transition trajectories has either been underexplored (capitalism, cultural change) or regained importance (geopolitics). As the literature further "zooms out" to consider those forces, it is also important to "zoom in" on the organizational level if transition scholars are to understand how bigger structural changes are negotiated in the complicated realities of everyday life (17). For example, organizations embed EVs in ways that deviate more or less radically from the market-oriented status quo. The variegated reproduction of different forms of capitalism in organizational practices could also be elaborated upon with the zooming in/zooming out strategy we developed. In this regard, the "market-sustainability" and "professional-sustainability" pathways of innovation embedding we describe resonate with market-led versus coordinated routes towards sustainability that Varieties-of-Capitalism-inspired studies have identified, each with their own merits and pitfalls when it comes to enabling sustainability transformations (77).

6. Conclusions

This study has explored organizations as users of innovations during sustainability transitions. Existing studies have considered the role of organizations in transitions mostly by looking at producers in energy-intensive or resource-intensive sectors (2,3). However, organizations across the economy are strongly affected by transitions in their role as users of products and services. Beyond innovation adoption perspectives, we have studied organizational embedding of technological innovations during transitions towards sustainability as a process that involves dynamics between innovation, organization and wider context. We have drawn on recent advances in social practice theory and neo-institutional theory to develop a lens for analyzing innovation embedding in practices that enable production or service delivery. A case study was conducted of the embedding of vehicle-to-grid electric vehicles (V2G-EVs) in the fleet management practices of organizations.

We argue that studies of technological innovation embedding during transitions demand the joint examination of the co-evolving context (zooming-out) and organizational processes (zooming-in). In terms of the co-evolving context, we have identified the community of fleet

managers as the most important context structure in our case. Here, we observe the presence of multiple logics: a market logic, professional logic and sustainability logic. The market logic is dominant, while the professional logic is in long-term-decline and the sustainability logic is on the rise. In this situation of institutional complexity, there is heterogeneity in the extent to which these different logics are present in different organizations. This heterogeneity is also reflected in the embedding pathways that organizations follow to embed V2G-EVs. A sustainability pathway involves embedding the innovation as part of a wholesale reconfiguration of the practice of fleet management towards the sustainability logic. Noticeable here is the extent to which front-runner organizations following this pathway share detailed accounts of their practice within the wider fleet management community. At the core of the market-sustainability pathway lies the challenge of reconciling market-oriented engagements of *enhancing operational continuity* and *cost saving* with *helping the environment*. Innovation embedding here is characterized by 'classic' dilemmas between cost effectiveness and environmental sustainability. However, our practice perspective also identified synergies present in the market-sustainability pathway. The material element of telematics, which is often installed to increase cost efficiency, is an important enabler for V2G-EV embedding. Finally, in the professional-sustainability pathway engagements such as technophilia and in-depth knowledge of fleet management are mobilized to embed innovations. Many organizations nowadays lack the fleet knowledge traditionally associated with the professional logic. This forms a barrier to V2G-EV implementation, particularly in organizations where knowledge levels about fleet management are very low. On the other hand, the outsourcing of fleet management could also provide scale advantages beneficial to V2G-EVs implementation.

This study's findings add to the emerging literature on organizations in transitions (2,3,9). First, this study analyses organizations as users of goods and services in transitions. An increased understanding of firm behaviour in transitions is developing, but mostly for cases where firms are producers. We have shown the role of a professional community of practice characterized by multiple institutional logics in innovation embedding, and identified different embedding pathways at the organizational level. These are co-evolutionary processes: the embedding of innovation brings about further changes in organizational practices, which are shared again between organizations. Second, we used social practice theory as "theory of the firm" in a sustainability transition study. A social practice perspective is relatively compatible with existing systemic approaches to transition (17), and is increasingly used in organizational studies (20,56). It helps to address persistent challenges of reconciling firm-level perspectives common in organizational and system-perspectives in transition studies. We used the perspective to analyse the practices of organizations as users, it could also be applied to organizational practices of production, to analyse changes in core production processes of organizations.

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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