



Designing for sustainable work during industrial startups—the case of a high-growth entrepreneurial firm

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Abstract New firms face challenges regarding pace, time, scalability, and societal changes, requiring increased attention to sustainable work prerequisites. However, this dimension of social sustainability is less studied than economic and ecological sustainability. This paper addresses how sustainable work is considered in an entrepreneurial startup carrying out a greenfield project within a new industrial domain. Data were collected for 30 months in a longitudinal case study. The study shows that (i) working condition challenges were drivers for innovative solution-oriented approaches with potential for rapid decision-making, flexibility, and to attract, recruit, retain, and develop talented people; (ii) a strategic focus on sustainability and collective contribution to a purpose-driven vision were important enablers for taking steps of operationalising sustainable work dimensions during the startup; and (iii) the firm's early stakeholder collaboration addressing working conditions was an important means for design for sustainable work and their role as agents of sustainable work. Research implications are how sustainable work can be considered during startups and through stakeholder collaboration.

Furthermore, the case contributes to increased knowledge of how the three pillars of sustainability—economic, ecological, and social sustainability—are interrelated and are suggested to be continuously considered over time, specifically during rapid major changes.

Keywords Entrepreneurship · New firms · Health · Working conditions · Social sustainability · Startup ecosystem

JEL classifications D22 · J28 · L26 · M13

1 Introduction

Starting a new firm with the ambition to grow is considered specifically valuable due to benefits in society, e.g. through creation of new job opportunities and innovations (Henrekson and Johansson 2010; Haltiwanger et al. 2013). In these types of entrepreneurial environments, cultural factors, socio-economics, and geographical location are crucial to consider (Hopp and Stephan 2012), as well as aspects with impact on prerequisites on sustainable working conditions due to the chaotic, rapidly evolving and uncertain context (McMullen and Shepherd 2006; Wiklund et al. 2019). Specifically, in the early development phases of high technology firms, there are many influencing aspects needed to be regarded, which are interrelated and change over time (Klofsten and Normman 2013). Furthermore, social sustainability dimensions related to work in production organisations are still overlooked (Sutherland et al.

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2016), where prerequisites are created in development phases. However, these issues might not be a major concern in startups, where entrepreneurs might not have the capability to design and realise the plans on their own, thus requiring external stakeholder collaboration (Davila et al. 2010). Hence, there is a need to achieve deeper understanding of dynamics in growth journeys and to pay increased attention to factors for both growth and survival in development phases (Bager-Sjögren et al. 2017). By taking an organisational perspective, the aim is to investigate how sustainable work is considered in an entrepreneurial context, where a case study is presented of a new firm carrying out a major green-field project within a new industrial domain. Specifically, this paper focuses on organisational challenges related to working conditions in early development phases, approaches, and stakeholder collaboration regarding sustainable work and the role of startups as agents for designing for sustainable work.

2 Literature overview

2.1 Sustainable work, part of social sustainability

There has been increasing interest in sustainability and a common understanding that sustainable development needs to consider three pillars: ecological, economic, and social sustainability (Brundtland et al. 1987). Out of these, social sustainability is increasingly important for industrial development (Sutherland et al. 2016), although less studied than the other pillars (Vavik and Keitsch 2010; Cuthill 2010) and referred to as a ‘concept in chaos’ (Vallance et al. 2011). As the social dimension pillar considers an extensive range of issues such as safety, diversity, labour rights, justice, health, equity, and governance, it is challenging to operationalise these dimensions (Sutherland et al. 2016). Furthermore, research emphasises the necessity to consider social sustainability dimensions specifically related to work, as trends such as globalisation and information technologies have impact on working conditions, with increased risks for work intensity and work-related stress (Docherty et al. 2002, p.5). Research related to sustainable work focuses both on an individual and organisational perspective, where this paper focusses on the latter perspective. Social sustainability in relation to work is described with the concept of sustainable work systems, for which Docherty et al.

(2002, p.11) have addressed four basic areas with impact on organisations where people are part of regeneration processes and allowed to grow:

- The regeneration and development of human resources skills, knowledge, co-operation and trust, motivation, employability, constructive industrial relations, training systems
- The promotion of quality in working life and competitive performance
- The nature of sustainable change processes for renewal and learning
- The provision of employment (increased employment levels)

Recent research advocates increased attention to social sustainability in fast-changing industrial contexts. Socially sustainable workplaces are regarded as a means to successfully progress towards the Industry 4.0 paradigm, where new-generation workplaces will arise according to technology development, also requiring abilities to handle increased complexity (Sutherland et al. 2016; Romero et al. 2020). Hence, training opportunities are vital and abilities of designing attractive and competitive workplaces. Demographic changes also have an impact as this will require longer working life, thus requiring ability to provide workplaces that attract, develop, and sustain people (Berlin and Adams 2017). There is also research advocating that health is an enabler for the ability to achieve vital goals (Nordenfelt 1995); thus, it is crucial to consider human growth and well-being when developing new production systems (Gregori et al. 2017). Hence, social aspects such as working environment, worker satisfaction, and safety need to be integrated with the traditional aspects of cost and productivity (Rodrigues et al. 2016; Cherrafi et al. 2016). In a recent review-based framework for production systems, Pinzone et al. (2020) identified four main social sustainability dimensions: safety management, ergonomics/human factors, learning and training, and work-life balance. Other dimensions are labour practices and decent work (including employees’ development, diversity, health and safety, job creation, talent attraction, and retention and human rights (Delai and Takahashi 2011). Furthermore, in a literature review on social sustainability, performance areas were identified including health and safety risk, operator’s learning, human capital, knowledge and information capital, innovation and knowledge, physical and psychosocial

well-being, and attractiveness of workplace (Pinzone et al. 2020). However, it is common that these dimensions are addressed mainly at a corporate level, rather than in operations in production (Winroth et al. 2016). A comprehensive literature review highlights that major changes, such as rationalisation, also stress risks in changing work environments creating negative health effects (Westgaard and Winkel 2011). Reasons mentioned are increased physical and psychosocial workload, and that efforts are needed both from an individual and an organisational perspective to gain long-term sustainable health effects, also claimed by Docherty et al. (2002). Specifically, in work environments with high job demands, research emphasises that there are increased health risks such as burnout, even though organisations provide work support and improve job resources (Fagerlind Ståhl et al. 2018). Thus, there is a need to reduce conflicting demands, work pace, and workload.

Backström et al. (2002) further advocate that work systems are complex and ‘always on the move’ and hence require consideration of changed conditions over time. Zink (2014, p.127) also states the need to ‘consider the surrounding environment to achieve economic or operational objectives’, thereby advocating that the three sustainability pillars need to be worked on in parallel. This is further illustrated in a model showing the interdependencies and potential conflicts between the three pillars over time, and that environmental, social, and economic concerns should all be addressed and that none of them can be achieved alone, also put forward by Sutherland et al. (2016) in manufacturing contexts. Having considered dimensions of sustainable work, the following section will look more closely at these aspects in relation to entrepreneurial contexts.

2.2 Entrepreneurship and sustainable work

Previous studies in entrepreneurial firms have reported sustainable work from both an individual and organisational perspective. Challenges on an individual level are, for example, working conditions perceived as an ‘emotional rollercoaster’ with periods of stress, long work hours, and trade-offs of their own physical health (McMullen and Dimov 2013; Cardon and Patel 2015). On the other hand, work in entrepreneurial organisations involving challenging tasks is also perceived as attractive due to a competitive mindset (Foo et al. 2009). Literature points out several success factors for new

firms in early development phases related to turnover, liquidity, and solidity measurements, but also that ‘soft values’ have impact and need to be increasingly regarded (Klofsten and Norrman 2013). These soft values are, for example, the history of the firm, such as the founders’ background, prior experiences, and motives (Henriksen and Johansson 2010); contextual understanding of the home market as well understanding of local prerequisites (Qin et al. 2017); and abilities of finding, recruiting, developing, and retaining human capital with the capability to innovate (Cadorin et al. 2019). ‘Active engagement’ in entrepreneurship is another important soft value for success in entrepreneurial organisations which is also strongly associated with well-being due to higher degree of autonomy and individual self-organisation in entrepreneurial work compared with ‘non-entrepreneurial’ work (Shir et al. 2019). In nascent entrepreneurial communities, it is important to build relationships and social networks enabling fruitful synergies (Audretsch et al. 2011), where a dynamic collaboration between interdependent actors and stakeholders in an entrepreneurial ecosystem are found vital for success (Bank et al. 2017; Volkmann et al. 2019; Audretsch and Belitski 2017). Hence, innovative collaborations with entrepreneurial suppliers, customers, government, incubators, and public funding organisations for accelerator programs are strongly recommended.

When a new firm evolves, structures are needed along with the ability to relate to regulations and to regularly develop internal routines and relationships among employees (McKelvie et al. 2018). This also includes establishing external relationships with stakeholders such as suppliers and customers (McMullen and Dimov 2013). However, new firms are subjected to uncertainties, and it takes time and resources to create organisational structures and processes (Wiklund et al. 2010), which is a challenge in fast-growing organisations. Over time when project phases come closer to operational phases, collaboration with external actors might also be needed due to the lack of the entrepreneurs’ own expertise to design and realise the forthcoming plans (Davila et al. 2010). To keep up with fast changes, it is necessary to develop both organisational approaches and approaches for skills and training (Brynjolfsson and McAfee 2011). Earlier studies identify advantages and the need to establish relationships in early phases in a startup ecosystem, e.g. collaboration between organisations that support the creation of the startup in a region, e.g. entrepreneurs, investors,

educational institutions, government, funding agencies, etc. (Tripathi et al. 2019). Furthermore, it is important for new firms to collaborate with suppliers and customers to build relationships among employees and to develop internal routines and structures (Sako 2018; Wiklund et al. 2019). In particular, it is crucial to create capabilities to innovate as well as to have the collective ability to identify and respond to opportunities (Akehurst et al. 2009).

Primary concerns in entrepreneurial organisations such as new firms, emerging ventures, and other incubator environments are to successfully transform ideas towards realisation and fulfil their business vision and mission. A rising trend is that European businesses strive towards purpose-driven entrepreneurship, wanting to contribute ‘to making a difference in the world’ (Bosma et al. 2020), thus paying greater attention to environmental and social components in the organisation and development processes. Also earlier studies in entrepreneurial contexts report on several areas that influence sustainable development of new firms and their potential to succeed, e.g. growth paths and abilities to grow at a fast pace in early phases as well as ability to maintain this growth over time (Coad et al. 2013; Haltiwanger et al. 2013).

3 Case description and research design

The empirical findings are based on a single-case longitudinal study of a new firm which carried out a major greenfield project for establishing a new industrial domain (van de Ven 2007). The case study was found appropriate as a methodological approach in social science (Flyvbjerg 2006; Kuhn 1987) and offered a unique possibility of empirical studies in a fast-moving environment enabling opportunities to contribute to research on entrepreneurship and sustainable work. The case was selected as it was nationally considered one of the largest and most important industrial startups, crucial for industrial competitiveness and transformation towards a fossil-free society. The unit of analysis was in this case the organisation during the early startup of the firm (Miles and Huberman 1994) and included the start of the firm and its first 3 years, until the start of production in the R&D production facility. Furthermore, the research design was conducted in line with Yin (2003), with the following steps: an initial overview of the firm’s early development phase possible to study in the case, identification of focus

areas, description of field procedure including anchoring approaches, case study issues, and a synopsis for a report. A flexible approach was applied during empirical data collection in the longitudinal study (van de Ven 2007; Pettigrew 1990), and on a regular basis, there was an interactive collaboration with a research project’s steering group constituted of one assigned researcher, top management at the firm, and a representative from the funding agency of this case study. Due to confidentiality, recording was not possible; thus, data was documented in a timeline, then summarised, and stored digitally.

The firm’s growth was studied for 30 months, starting 3 months after the new firm was officially launched. The selected focus areas were as follows: year 1, the startup context including a retrospective study of the site selection process (i.e. production location); year 2, recycling approaches and development of future industrial workplaces; and year 3, the transition from a project organisation to industrialisation, when the first operators onboarded the firm.

Data collection was carried out through workplace observations, participative meetings, open and semi-structured interviews, and document studies. The workplace observations focused on the daily teamwork and collaborations in the open office landscape. In total, observations were carried out during 65 occasions (approximately 134 h), of which 32 occasions included observations during interactive participative meetings. Furthermore, 43 open interviews and 46 semi-structured interviews (from 0.5 to 1.5 h) were conducted with employees where the interview respondents were initially selected in co-operation with the research project’s steering group. During the first year, managers were interviewed, who further identified employees, mainly engineers, and external stakeholders in municipalities as respondents. During the second year, one team was selected where all employees were interviewed, combined with additional interviews to gain further understanding. During the third year, respondents were mainly production management, the first operators and technicians in the R&D production facility. The external stakeholder interviews included three employee organisations. Furthermore, internal company documentation, such as meeting minutes and reports, and external documentation, i.e. reports, website information, seminars, and public events, were supplementary to the collected data.

The data were filed in a structured folder with possibilities to track time, place, and respondent category

(van de Ven 2007). The following steps were carried out analysing the data (Yin 2003; Miles and Huberman 1994; Bryson et al. 2004): (i) collection of data from different sources; (ii) manual documentation in a Word template with categories such as market/investors, organisation, product, production, environment, partnerships, site selection, actual issues/bottlenecks, and researcher reflections; (iii) summarising milestones and critical events using software tool Visio; (iv) coding data in SWOT dimensions for ‘the startup journey’ and the ‘site selection’ process; and (v) reporting aggregated results in an extended abstract to the firm followed by refining the report. Results were validated through the various types of interactive participative meetings, such as monthly firm information meetings, stakeholder meetings, work council preparations, and the project’s steering group meetings.

4 Findings

4.1 Preparation phase and the firm’s development during years 1–3

The entrepreneurial firm had an overarching vision to contribute to alleviating climate change through industrial transition towards electrification. Its mission was to develop and build products and sustainable solutions for energy storage. During a preparation phase, the new firm was registered, and a thorough master plan was developed with a long-term strategy and ambitions to accelerate the pace. Furthermore, financial support enabled establishment of a project organisation that set up the first work stream processes and began operationalising the business plan. Two of the founders were previously senior executives in a large-scale startup in a similar domain and had identified momentum for their business ideas and anchored their plans with potential strategic stakeholders. The initial aim was to build a competence cluster within a new business domain, with required resources and production capacity. A further aim was to develop a scalable concept also useful for forthcoming manufacturing facilities. This included models and replicable approaches for regional production ecosystems around each factory, vertical integration, standardisation, recycling solutions, control of advanced manufacturing processes, traceability through advanced artificial intelligence, work organisation, and competence development.

During the first 3 years, the new firm grew from scratch to 500 employees representing over 50 nationalities with several development projects in parallel, constantly escalating. The first year focus was on preparing conditions and finding a geographic location for establishing a large-scale factory and a test and industrialisation factory including a R&D facility. The large-scale factory planned to recruit over 2500 employees and include around 15 integrated production processes. During the second year, the firm proceeded with additional projects and extended production facility development, for example, planning for an additional assembly factory located abroad. Furthermore, the funding for a second large-scale factory was secured in a new international joint venture. During the third year, an initiative started aiming to develop a pilot recycling plant including R&D. The time pressure was demanding, as the order books already were fully booked during construction phases, 5 years ahead of time. However, the employees were excited to be part of the greenfield project.

4.2 Work challenges and approaches towards sustainability

The employees’ work tasks were continuously developed. During the entire startup period, there were employees onboarding constantly from all over the world, where the firm worked actively with cultural issues and social factors related to employees’ need for support to adjust to a new country, as well as to a new high-growth firm. There were assigned resources to support issues regarding housing, permit procedures, schools, peer support activities in the company, language, etc. to create practical conditions as well as an innovative inclusive ‘we-culture’ and transparent supportive leadership daily ‘walking the talk’. Organisational structures and work processes were developed according to actual needs; hence, it was challenging to continuously update and develop relevant structures and support in the evolving firm. For example, there was an increasingly structured onboarding process, leadership training, and development of digital solutions enabling transparency. Furthermore, the human resource team dedicated time for mentorship to support employees from other countries. Management at all levels were trained to create an inclusive and open communication, striving to support individuals and teams in the fast-moving environment. Top managers and team members were recruited globally, and besides requirements on specific expertise, it was important that the employees were flexible, team players, and solution

oriented. In common, the employees had strong individual drivers to contribute to the unique industrial green-field project and shared ecological sustainability focus, as expressed in the firm's overarching vision and mission. During the second year, the team was strengthened with senior industrial employees, contributing to a holistic perspective and management for merging the complexity towards the common mission.

'Sustainability without compromising' was the expressed goal, and strategic efforts were made to develop new cost-efficient concepts, specifically regarding recycling and circular economy. Sustainability, from several perspectives, was constantly communicated and expressed by the firm's employees in illustrative quotes, see Table 1.

There were several initiatives on social sustainability approaches addressed in policy and strategic documents. For example, the 'Code of Conduct' described the firm's ambition to take responsibility for areas such as decent employment and safe work environments, also beyond directly contracted organisations. Other examples of the firm's attention to ecological and social sustainability were the establishment process of the planned factories in the municipalities. This included its relationship building with stakeholders and citizens, ambitions to construct, and design production facilities that would contribute to new job opportunities and development of society, thus building trust and positive relationships with stakeholders in the production location municipalities. A sustainability team was part of top management and the board from the start where they daily worked across internal and external borders, 'switching roles' and finding solutions in processes for procurement, production process development, finance, talent acquisition, etc., as well as building structures and concepts for the future.

4.3 Stakeholder collaboration addressing sustainable work

To fend off future obstacles, the firm expressed the need for close collaboration with many stakeholders and had an approach 'to partner up with people taking you to the next level'. Challenges were regarded by the employees as potential competitive factors, and the firm initiated several activities with stakeholders to jointly develop new solutions. Table 2 illustrates examples of processes of stakeholder collaboration with ambition to proactively consider human aspects in early development phases.

From a society perspective, a top manager also expressed the new firm's possible impact through stakeholder collaboration:

I see this startup project as a fantastic opportunity also driving social sustainability. To make this a platform to integrate people who are outside the labour market today, or don't have our national background, into our society. We could create 3000 direct jobs, maybe 13,000 indirect jobs in areas where there is large unemployment.

The firm's three core value words—passion, boldness, and excellence—were frequently used in the attempt to build a united firm culture where they were operationalised in leadership training and team building. The aim was to create a strong team spirit, good attitude facing challenges, enjoyable work, and commitment to push targets and to expect and offer feedback. For example, individuals and teams were given the task of transforming the value words on the basis of their own work situation and further set up actions. These values were means to build a strong company culture working towards the same goals. As expressed by a manager:

We have a larger scope in this company for the environment and for the work environment. In a few years it would be great to show that this is the coolest company, with women both in management positions and on the board, with diversity from around the world, and an inclusive work environment where everybody can be their best.

Furthermore, the firm saw a unique opportunity to design for good working conditions from scratch with potential for rapid decision-making and flexibility in work tasks between employees across roles, as well as branding advantages. They established a woman council, culture education, assigned resources for support integration of employees in the society, language training, team-building activities, as well as family activities in the firm. Furthermore, health and safety issues were considered important as they needed to deal with a wide range of subcontractors from many countries during ground preparation and construction.

In the effort to build a strong company culture, benchmarking activities were carried out to successful global companies. Part of gaining knowledge, the strategy was to establish relationships with stakeholders such as

Table 1 Indicators of the new firm's attention to sustainability dimensions

Quote No.	Examples: illustrative quotes M = Management T = Team member	Sustainability dimension		
		Economic	Ecological	Social
01	This is not a sprint - it's a marathon. We need to develop a corporate culture that is sustainable over time – both economically, for the environment and for people. (M)	X	X	X
02	By reaching zero CO ₂ in production we see a huge competitive advantage over our competitors. (M)	X	X	
03	Everyone has opportunity to raise capital, equipment, etc., but to get hold of people, the best employees is not as easy. We need to find and retain the best talents. (M)	X		X
04	We need to take actions a lot faster than all competitors. People, working methods and organisation enable advantages and ability of acting faster than other big players. (M)	X		X
05	Others might see problems with waste from the production – but we see it as an opportunity because we are going to reuse, sell and turn it into added value. (T)	X	X	
06	Our iterative cross-functional collaboration enabled us to go far beyond the legal environmental requirement targets which must have made it easier for authorities to rapidly decide on environmental permits. (T)	X	X	X
07	In addition to industrial transformation, I see this project as a great opportunity for driving social sustainability – to make this industrial project a platform to integrate people into society. (M)	X		X
08	It is through vertical integration we have full control of sustainability perspectives. Even the social aspects, from mining to recycling. (M)	X	X	X
09	It is not sustainable in the long run to get as much as possible from each employee in a very short time. A project can be intense, but in the long term it must be an attractive workplace in the future. (M)	X		X
10	There is a growing movement in which investors increasingly want to take environmental and social responsibility into their investments. Sustainability is a unique selling point for potential investors. The movement is in our favour. (T)	X	X	X
11	We want to reach even further than national regulations on emissions and stretch these targets and produce our product sustainably both for the environment as well as for health and working conditions. (T)		X	X
12	We take care of employees and their families from different countries, manage language challenges, support permit procedures, develop onboarding procedures in the company and many team-building activities, etc. (M)	X		X
13	It is important to involve everyone locally in the workplace and start local communities, so that they become carriers. Then we can together find the best solutions for flexibility, work environment and work organisation issues. (M)	X		X

social partners, human resource managers, and senior production managers. Specifically, an early process was established with employee and employer organisations jointly collaborating with issues regarding work flexibility requirements during the startup, competences needed,

roles, leadership, recruitment, and development of good working conditions both during the high-growth phase and for design of future production workplaces and work organisation. Initially, they focussed important collaboration issues during the startup, e.g. handling working hours

Table 2 Examples of stakeholder collaborations considering prerequisites for sustainable work

Illustrative quotes	Development approaches and impact	External stakeholder collaborations
Switching tables and roles is our strength	New technology solutions in procurement processes for heat recycling → Reduction of emissions, safe work procedures	Potential machine suppliers
We strive to ‘shut down the flows’	Control of operation processes and refining of chemicals so that they could be brought back to the process → Reduction of emissions, minimizing health risks	Researchers Process developers
Data is ‘the new gold’	Platform with tracking solutions of the future product during the life cycle utilizing advanced information technology → Designing for opportunities to later on decide how the data could support further development of products, production processes as well as work procedures	IT system developers
Waste is ‘by default’ a competitive opportunity and a potential added value	Waste management strategies, i.e. by-products from production processes → Minimizing risks both from an ecological and work environment perspective	External firm’s seeing potentials in new businesses through joint collaboration
Talent, speedy decisions, and flexible work organisations enables unique competitive advantages	Design for prerequisites and solutions for flexible work organisation and future industrial workplaces (in addition to systematic work environment management approaches) → To demonstrate good working conditions, flexibility, innovations, and excellent manufacturing results and to strengthen the firm’s possibilities for a successful industrial establishment in the local context	Employee and employer organisations Industrial process leader (former chairman of a national employee organisation)

with peaks of work load during startup of new sites and safety; creating a work environment avoiding sick leave and staff turnover; creating flexible ways of working across borders, competence development included in work for all, and development of relations and networks; and creating an environment with possibilities to grow within the company and future collective work agreements that are suitable for a fast-changing work environment in the startup phase and flexible according to working across borders. Furthermore, the collaboration addressed cultural issues, onboarding, competence validation, policies, bureaucracy, work permits, safety, security, communication, training of personnel, working methods when everything is not in place, temporary premises, production organisation, roles, shift structure, and housing for employees.

5 Discussion

5.1 Startup and organisational challenges related to working conditions

Due to dynamic processes, workplaces are constantly developed and ‘on the move’, and literature advocates

the need to pay increased attention to social sustainability dimensions related to work (Backström et al. 2002; Romero et al. 2020). From both an individual and organisational perspective, it is vital to create work environments characterised by safety, well-being, and health, with possibilities for people to be part of improvement work, regeneration of processes, and individual growth. Human resources are necessary for sustainable development of organisations (Nordenfelt 1995). However, it is common that dimensions of sustainable work, part of social sustainability, are not a major concern in startups (Davila et al. 2010). As described in the findings, the firm evolved and grew rapidly to over 500 employees with over 50 nationalities during the first 3 years, where the fast development pace had high impact on working conditions. For example, issues related to working conditions were visualised during frequent introduction and onboarding of new colleagues in the firm, communication in a fast-moving and multi-cultural work environment, and in daily work when continuously needing to keep track of changes in parallel processes due to interdependencies. However, due to the entrepreneurial mindset in the organisation, it was observed that these

challenges were drivers for innovative solution-oriented processes, e.g. improving structures for onboarding processes, developing rapid communication channels for different purposes, and utilizing individual's secondary skills such as language, cultural understanding, etc. in vital collaborative work processes with stakeholders, etc.

Despite demanding working conditions, it was observed that the firm was found attractive where people were prepared to work hard, which is also recognised in similar entrepreneurial environments (Shir et al. 2019). However, warning signals for sustainable working conditions were observed such as high workload during a fast-moving development pace, lack of available resources, the needed ability to cope with actual and future uncertainties, and cultural differences. These aspects had high attention from top management, which led to increased focus on inclusive, transparent leadership, organisational development, recruitment, and strengthening teams. Thus, the firm had to cope with working condition challenges regarding high job demands with a fast work pace, heavy workload, and conflicting interests during the startup. These are all necessary to consider, however, as pointed out by Fagerlind et al. (2018), supporting approaches alone cannot compensate for health risks of high job demands. Examples of operational approaches observed in the findings to reduce workload and conflicting demands at work were mentorship, individual and leadership dialogue of the work situation, team activities aiming to strengthen a 'we-culture', characterised by helping one another regardless of role and function, cross-functional collaborations, and strong teamwork. These constitute examples of possibilities for employee's 'active engagement' which for Shir et al. (2019) is an important soft value for successful development of entrepreneurial organisations and strongly associated with well-being. In addition to other well-being aspects, it was observed in the case that employees shared the firm's purpose-driven vision, also recognised as a growing trend by Bosma et al. (2020), and despite the demanding workload, employees expressed satisfaction with the opportunity to be part of a greenfield project. The workload might be a risk in the long term, if performance measures related to working conditions are fuzzy. Thus, sustainable work dimensions need to be further operationalised with attention on

workplace level, as stated by Winroth et al. (2016) and Sutherland et al. (2016).

5.2 Sustainability approaches

The founders of the firm were convinced of the sustainability potential for their business and described 'sustainability' as one of the initial core work stream processes and key differentiating competitive factors. The firm had an overarching mission wanting to contribute to a better world, which also is in line with growing trends of purpose-driven entrepreneurship in European businesses (Bosma et al. 2020). This requires the ability to manage a broad view on sustainability combining a business, ecological, and human perspective, which is in line with other studies stating that aspects of corporate societal responsibility are of increasing financial importance (Schönborn et al. 2019). The study showed that the startup firm's approaches had reciprocal impact on economic, ecological, and social sustainability dimensions; see examples in Table 1: Economic-Ecological-Social (quotes no. 1, 6, 8, 10); Economic-Ecological (quotes no. 2, 5); Economic-Social (quotes no. 3, 4, 7, 9, 12, 13); and Ecological-Social (quote no. 11). This illustrates that dimensions of sustainability in practice are integrated, rather than isolated, and need to be regarded in a holistic perspective. This is in line with reasoning of Backström et al. (2002), Zink (2014), and Sutherland et al. (2016) that the three pillars of sustainability are interrelated and need to be regarded according to the actual state, as well as be reconsidered and evaluated over time. This is relevant when designing for sustainable work and specifically important in fast-moving working environments, such as dynamic startup firms aiming to design for good working conditions in new generation of industrial workplaces (Sutherland et al. 2016).

5.3 Stakeholder collaboration regarding sustainable work in early development phases

Furthermore, entrepreneurial research highlights the importance of building relationships and stakeholder collaboration in startup ecosystems (Audretsch et al. 2011; Bank et al. 2017; Volkmann et al. 2019). The findings describe examples of stakeholder collaborations regarding technological and production process solutions but also organisational aspects which had impact on working conditions. Even though a future

perspective of creating organisational structures and work procedures for managing potential risks is not usually a primary concern during startups (Wiklund et al. 2010), findings in the firm's early development phase show examples of proactive strategic initiatives with focus on working conditions.

Findings of efforts on stakeholder collaboration at workplace level were related to procurement and process development processes and efforts to eliminate health and emission risks. On the organisational level, the firm strived to collaborate with social partners, such as employee and employer organisations, with possibilities to find innovative and proactive solutions. This was illustrated in the firm's early collaboration with employee organisations with deep experience of industrial and sustainable work development in practice. After the initial contact, top management gained insights resulting in an established stakeholder collaboration with employer and employee organisations. This was described by stakeholders as an unusual proactive approach where both actual working condition issues and long-term issues were addressed at top management level where stakeholders together with the firm worked together to develop 'good working conditions from scratch' and concepts for the firm's future production organisation.

5.4 The role of startups as agents of sustainable work

From the start, dimensions of social sustainability were addressed in the firm's policy statements and included its aim of taking social responsibility in the value chain, thus striving to develop their role as agents. This was operationalised in several work procedures where they strived to build strong relationships with stakeholders such as investors, suppliers, customers, and partners. Some examples were collaboration with machine suppliers during procurement, municipalities during the site selection process, regional industrial companies, and employee and employer organisations for understanding of sustainable work prerequisites and local contexts. These are also illustrations of how external stakeholders became 'partners' with the firm in the entrepreneurial community, supporting the startup and at the same time learning about work environment conditions and flexibility needs during startups. As the external stakeholders also shared the firm's purpose-driven vision and high attention to sustainability, there were driving forces for solution-oriented collaboration. This example thereby shows how internal stakeholders in new firms

collaborating with external stakeholders in a startup ecosystem can act as facilitators for learning. Their collaboration resulted in the development of new work procedures and flexible collective agreements suitable for the specific work situation during the startup phase which were institutionalised (Crossan et al. 1999). This constituted a potential for development of future workplaces through the stakeholder collaboration in the startup ecosystem where they also could develop their roles as agents for designing for sustainable work both within and outside their own organisations.

6 Conclusions

The starting point of this paper was the challenge for startups to design for sustainable working conditions and the lack of documented studies on how to operationalise these issues in startups. This paper shows that (i) challenges during the startup were drivers for innovation, which also included working condition challenges which triggered innovative solution-oriented approaches with potential of rapid decision-making and flexibility, to attract, recruit, retain, and develop talented people; (ii) a strategic focus on sustainability and collective contribution to a purpose-driven vision were important enablers for taking steps of operationalising sustainable work dimensions during the startup; and (iii) the firm's early stakeholder collaboration addressing sustainable work dimensions was an important means for insight at top management level and enabled proactive approaches with attention to sustainable work in a long-term perspective. This collaboration was also considered a constructive arena for identifying challenges, initiating actions, as well as contributing to joint learning where both the new firm and the stakeholders could develop their role as agents for approaches to development of sustainable work, both within and outside their own organisations.

Practitioner's implications are operationalisation of the sustainable work dimensions in early development phases in applications such as startups, major changes, and transformations and in stakeholder collaborations in strategic value chains and with organisations in the society. This enables considerations of sustainable work dimensions in early phases which are vital as complexity increases over time. Furthermore, the empirical case contributes to increased knowledge of how in practice, the three pillars of sustainability—economic, ecological, and

social sustainability—are interrelated and need to be constantly regarded over time, specifically during rapid major changes and evolving organisations. Additional empirical research is suggested on the industrialisation phase of the startup, to enable studies of outcomes of the firm's approaches. Further, research on operationalisation of sustainable work in relation to entrepreneurial working environments and in other types of dynamic, fast-changing workplaces are recommended. By that the knowledge gap on relations between economic, ecological, and social pillars for sustainable development may be bridged, which will also increase attention to sustainable work as part of social sustainability.

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Data availability The data that support the findings of this study are not publicly available due to privacy and consent restrictions of participating key informants.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflicts of interest.

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