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[Some comments on this chapter]

- I have not decided on the precise structure of the analytical parts and chapter yet;
- The initial idea was to keep separate chapters for analyses on cases from Estonia/Saxony
- However, as this part offers the potential to discuss and analyse the cross-cutting aspects on the specification of innovation processes for the cases from both case study regions in parallel → part 5 would then become some kind of introduction for regionally separated analyses (6 and 7) aiming at identifying cross-cutting themes between cases within same contexts as well as detailed analysis of individual and information rich cases. Which could then be brought together again in part 8 where regional comparison and conclusions are drawn;
- One issue I come across on analysing cases: strategies on how to discuss finding/aspects/implication from individual cases and bring these together in a manner that produced a nice to read text;

5 Constitution and emergence of innovation processes

In the context of uneven developments processes and increasing regional disparities many regions in central and eastern European countries, but also beyond, have to cope with processes of transformation and decline resulting for instance in economic stagnation and population decline. Against this background, firm innovations are widely considered effective means to counteract ongoing economic peripheralisation processes and to stabilise regional development trajectories. The capacity of firms in peripheral regions to innovate is therefore regarded a critical element in processes of development. The central objective of this research is to gain a more substantial understanding on the mechanisms that facilitate the emergence and drive the dynamics of innovation processes by firms from peripheral regions. In order to do so, the study looks at firms located in peripheral regions which have successfully implemented innovation processes in the past. It adopts a micro-level and actor-centred perspective and

explores and traces concrete innovation processes/projects to capture various dynamic processes that underlie these innovation processes [cross-reference/CF to methodology chapter]. Thereby, seeks to explore the spatial and relational configurations of the networks firms construct for their innovations activities.

Chapter 5.1 provides an overview on the innovation processes investigated as part of this study. It provides an aggregate picture on the innovation processes along some of their basic features such as innovation type and dimensions of innovation (5.1.1), the time horizon of innovation processes (5.1.2) and the activated diffusion channels (5.1.3) and illustrates the diversity of innovation processes pursued by firms from the Erzgebirgskreis. The chapter also sets ground for interpretation of the findings from individual cases in subsequent chapters and further allows for some theoretical as well as methodological reflections on the very concept of innovation.

Chapter 5.2 then focusses on the early stages of these individual innovation processes and analyses in particular the emergence of the ideas giving rise to innovation activities. The chapter illustrates on the one hand that firms proactively formulate innovative ideas and initiate related projects within the boundaries of their organisation. On the other hand, the analysis also points towards the significance that can be attributed to external mechanisms: idea for innovation and opportunities for participation might also arise outside the own organisation and requires firms to actively act upon such emerging opportunities. Along these lines the analysis highlights that firms (and indirectly also their regional contexts) can benefit even if they only take on partly shape innovation or participate as partners in external processes.

5.1 Specifying investigated innovation processes

Table 1 provides an overview on the main characteristics of 13 cases investigated as part of this study in the Erzgebirgskreis case study area.¹ It illustrates characteristics along the dimensions of innovation type, their time frame and the diffusion of innovation which structure the remainder of this chapter. In this context it needs emphasizing again that the cases can by no means claim representativeness of innovation activities and firms in the wider case study regions [CF to methodology chapter]. However, selection procedures resulted in differently structured and differently organised innovation processes.

Table 1 further contain information on the origin and direction of the innovation impetus, aspects that will be dealt with in section 5.2.2.

CASE/ innovation	INNOVATION TYPE	IMPETUS	APPROX. TIME FRAME	DIFFUSION
ERZI functional working clothes	(potentially leading to) product/market innovation	external, participation in project	Project started few months ago	internal, within the project consortium, project documentation

¹ The Estonian cases might also be integrated here.

CASE/ <i>innovation</i>	INNOVATION TYPE	IMPETUS	APPROX. TIME FRAME	DIFFUSION
ERZ2 <i>multifunctional bag/case</i>	product/market innovation; facilitating organisational changes	external, project request (customer)	18 months	via customer, trade fairs
ERZ3 <i>flax wallpaper</i>	product/market innovation; facilitating organisational changes	mixed, exploitation of expertise accumulated during 'failed' project	multiple years; ongoing	Trade fairs, online social shop, showroom, media, sales cooperation, new projects
ERZ4 <i>process efficiency glassine</i>	technical process optimisation, cost reduction)	internal project	12 months project duration; plus preparation and follow-up	internal and with project partner, project documentation
ERZ5 <i>aquaponics</i>	technical process elaboration	external, project request	start in XXX ongoing	internal with project partner: pilot project
ERZ6 <i>injection moulding</i>	implementation of new technology, facilitating new product range	internal, long term project	6 years	technology: internal with partners; products: web shop, flagship store, social media, key clients, trade fairs
ERZ7 <i>solar panel under-construction</i>	technical process with market potential; construction of new component	external, partner from prior project	18 months	project documentation
ERZ8 <i>fair & regional clothes</i>	start-up; product/market innovation with social dimension	internal, establishment of company/project	established in 2014	crowdfunding campaign, internet, social media
ERZ9 <i>isolation fabrics</i>	product/market innovation	external, customer request	6 months	via customer, website
ERZ10 <i>iron sheet furniture</i>	start-up; product innovation	internal, establishment of company	established in 2014	website and social media, trade fairs, showroom
ERZ11 <i>wooden pipes</i>	optimisation of technological process; facilitating new product	external, project participation	start in 2014, ongoing	internal with project partners; project documentation; follow-up project
ERZ12 <i>abrasive sludge extraction</i>	continuous development of key product range	Internal; market monitoring, customer requests	ongoing	trade fairs, customer visits, website
ERZ13 <i>age appropriate furniture</i>	product/market innovation	internal; project initiation	18 months, ongoing	project documentation, sales cooperation; key customers

Table 1: overview on innovation processes from the Erzgebirgskreis; source: own summary

5.1.1 Types and dimensions of innovation processes

TYPES OF INNOVATION PROCESSES

Looking at the investigated cases illustrates the wide range of innovation activities companies from Erzgebirgskreis are actively engaged with. Due to the study's sectoral focus on manufacturing firms operating in low- and medium-low tech environments [CF to section] companies are active in a wide variety of industries which might partly drive the heterogeneity of individual innovation processes. Table 1 highlights that innovation activities pursued by and engaging actors from peripheral regions constitute both product and process innovation with ranging degrees of novelty being implemented. The cases illustrate that the often propounded clear distinction between market specific product innovation and process-oriented innovation (technological and organisational) cannot necessarily be observed empirically. What can be observed instead is that processes of product and process innovation appear largely interrelated. Most of the investigated innovation processes have either been dependent on or

induced substantial changes in areas/fields other than the primary focus of the actual innovation process. A number of innovation processes with an intrinsic orientation towards product developments (e.g. ERZ7, ERZ6, ERZ9, ERZ11) relied on significant process changes which only allowed for product developments in the first place. Thus, product innovation is largely intertwined with upstream process changes. For instance, in order to successfully establish a new and substantially less expensive product range with the ultimate goal to expand markets and customer reach, ERZ6 firstly had to identify, understand and implement a completely new production technology. Development of the new product range with the specified characteristics was only feasible after the new technology was accustomed to and implemented within the process chain.

On the other hand, product developments might as well induce significant downstream changes. There are two cases in the sample (ERZ3, ERZ13) where product development not only expanded the company's product portfolio but was also associated with accessing completely new market environments. Both companies were so far only engaged in business to business sales, however, product development resulted in directly engaging with private end consumers. Here, product innovations further triggered substantial changes and extensions of existing marketing strategies and channels, such as the establishment of web-shops and showrooms, or the participation in strategic sales co-operations. In another case (ERZ2) product development induced comprehensive organisational changes to the procedures in which incoming orders by the lead client of the product are handled.

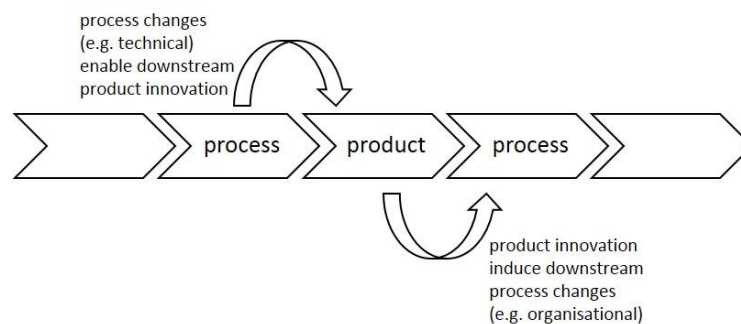


Figure 1: overlapping types of innovation; source: own elaboration

The start-up companies investigated in the Erzgebirgskreis (ERZ8, ERZ10) further reflect the close connection between different kinds of innovation, as the establishment process of such new ventures essentially involve the development of a central product and associated to this, the implementation of various organisational structures and processes, mostly as overlapping activities. On the other hand,

there are also cases in the sample (e.g. ERZ1, ERZ4) where innovation processes did not, implicitly or explicitly, induce substantial changes in other parts of the organisation.²

These observations indicate that innovation processes, initially concerned with the development of new products or the implementation of new processes might induce more comprehensive and long-term organisational changes and learning processes. When analysing innovation activities it appears important to adopt methodological procedures that enable to also capture the wider changes induced by innovation activities. It seems that innovation activities which involve a higher degree of novelty tend to also have wider organisational effects. Figure 1 illustrates the interrelatedness between different types of innovation observed in investigated cases.

DIMENSIONS OF INNOVATION PROCESSES

As stated in the theoretical discussion on different innovation typologies [2.2.4] the degree of novelty innovation processes are concerned with can be understood as a continuum ranging from small-scale incremental innovations to processes with potentially disruptive implication – for both markets as well as innovating organisations. Because the degree of novelty constitutes a continuum, characterising innovation processes along these lines is not always possible. Independent from the degree of novelty concerned, innovation processes induce organisational learning and capacity building. But still, evaluations by the interviewees on the degree of novelty of the respective innovation processes and indications on whether the product/process is new to the firm or new to the market, allows for some reflections. These reflections suggest that processes investigated in this study range from rather incremental to rather radical innovations as well as innovations located somewhere in between the two poles. Some of the innovation processes suggest more radical changes which might potentially not only induce change within the own organisation, but also affect the wider market environment:

“The MIM-Technology is new to us. We were looking to apply this technology because all solutions available at the market, similar products and competing products made of stainless steel, are always machined. Which causes high production costs and therefore high product prices. So we were saying that a cheaper option must be feasible and intended a high-quality but also affordable product [...]. I realised the MIM-Technology is future-oriented for us and I see potential not only for this safety razor but also for other items” (ERZ6).³

“The product is very innovative. Because we enter a market which has been very stable for YEARS. [...]. It is hard to enter a market with a new product, new product in the sense that it does not yet exist. The market

² For these cases it has to be mentioned though that one case is still at an early stage (ERZ1) and that one case the intended modification of a technological process could not be realised (ERZ4).

³ Translation: „Das MIM-Verfahren ist neu für uns. Uns lag es daran, dieses Verfahren zum Einsatz zu bringen, denn alles was es bisher am Markt gibt, an ähnlichen Produkten oder Konkurrenzprodukten in Edelstahl, die sind immer gefräst. Damit gehen sehr hohe Produktionskosten einher und damit auch eine sehr hoher Endverbraucherpreis. Und wir haben gesagt, das muss günstiger gehen, wir wollen ein Produkt was sicherlich hochwertig ist, aber auch erschwinglich. [...]. Dann habe ich aber gemerkt, dass das MIM-Verfahren für uns schon was Zukunftsfähiges ist. Ich sehe das Potenzial nicht nur bei diesem Rasierhobel sondern auch bei anderen Teilen.“

for wallpaper exists, but its functionality is very limited. Basically, it has always been the same, there are only few disruptive changes, but flax could be one” (ERZ3).⁴

“We generally do patent researches when developing new themes, and we have conducted research also with respect also to the under-construction. There were no related patents in Germany. Worldwide this might be different, but we did not find anything similar (ERZ7).⁵

Similarly, there are also cases in the sample where the novelty of innovation processes pre-dominantly concerns the direct firm environment. Such indications relate for instance to processes regarding continuous improvements and market relevant adaptation of the existing product portfolio (ERZ12), specific adaptation of existing products (ERZ9) or production and design of furniture (ERZ10).⁶

5.1.2 Time horizon of innovation processes

Table 1 also exhibits the various time horizons of the innovation processes. The two projects which lasted longest (ERZ3 and ERZ6) relate to rather comprehensive product developments that have, as previously discussed, additionally induced substantial organisational changes. In the case of ERZ3 the origin of the product innovation introduced to the market in 2016 can be traced back as far as 2007 when the organisation first participated in a project where flax was first used raw material. Even though the initial project was not specifically related to the development of the flax wallpaper, the relevant actors clearly refer to this initial project as the product’s ultimate origin – in terms of material specifications as well as building successive experience related to flax as raw material. On the other hand, some innovation processes lasted for only few months (ERZ9) or have a time horizon of up to two years (ERZ2, ERZ4, ERZ7, ERZ13). On a more aggregate level, data suggests that the duration of innovation processes corresponds with the degree of complexity involved for innovating organisations and the number of actors involved in innovation processes.

At the same it has to be mentioned that data on the duration of innovation processes can only be seen as rough approximations as the ‘events’ bracketing the process, i.e. emergence of idea and implementation of product/process, remain largely fuzzy. This fuzziness partly relates to the methodological approach of exploring innovation as a process [CF to methodological section], which emphasizes the indefinite and fluid nature of this process. Based on the investigated cases, and in line with Rehfeld (2012), innovation can be understood as long-term and continuous processes that are subject to recurring

⁴ Translation: „Das Produkt ist definitiv innovativ. Weil wir in einen Markt kommen der JAHREN etabliert ist. [...]. Es ist unheimlich schwierig ein neues Produkt an Markt zu platzieren, neues Produkt in dem Sinne, dass es nicht bereits existiert. Der Markt Tapete existiert schon, aber Tapete ist relativ begrenzt wie es funktioniert. Es ist eigentlich immer die gleiche Sache, aber es gibt nur wenige disruptive Schritte, Flachs könnte einer sein.“

⁵ Translation: “Also was wir schon grundsätzlich als erstes machen ist eine Patentrecherche zu solchen Themen, also haben wir auch zu der Unterkonstruktion gemacht. Das gab es im deutschen Bereich so nicht. Ich meine weltweit ist das noch anders, aber wir haben nichts Vergleichbares gefunden bei den Recherchen.”

⁶ Production of iron sheet furniture items is not related to novel functional properties. Assessments on the novelty in terms of design features lie outside the scope of this research.

intervals of high and less intensity or even temporary interruption. Start-up companies (ERZ8, ERZ10), which can themselves be understood as organisations which rather continuously implement novelties both related to their specific core product but also with respect to relevant processes, reflect this infinite and fluid nature of innovation processes. Additionally, these aspects are especially noticeably in the two cases running for various years (ERZ3 and ERZ6). It seems logical that the innovating small and medium sized enterprises do not have the capacity to pursue such long-term innovation processes with a constantly high intensity, especially as the circle of individuals dealing with such non-routine activities within the organisation is rather small. After the first initial flax project ERZ3 was engaged in had to be ‘unsuccessfully’ terminated, related efforts were significantly reduced, however, the project and related ideas were not altogether abandoned:

“We did not abandon the project internally, but have constantly taken loops in 2009, in 2010, 2011, 2012, 2013 and 2014. Always another loop. OK, let us try something out again. What can we improve? We haven’t given up quickly. [...]. There have always been attempts to see if that could be the solution. But we have not anymore put so much energy into it [...].” (ERZ3).⁷

The main reasons to constantly work on the flax theme was that related technological capabilities were gradually built through practical experience and that flax was deemed a raw material to potentially widen market access in various directions. In fact, besides the investigated wallpaper there have been smaller flax-based developments (e.g. surfboards, mattresses, bags and cleaning rags) and pre-developments for the automotive sector along the way. Based on the newly developed flax wallpaper ERZ3 initiated the development of a comprehensive internal design concept in collaboration with a research partner.

Another example reflecting the infinite nature of innovation processes relates to the optimisation of technological processes for the production of wooden pipes (ERZ11). Here, the initial project has been followed up by a closely related subsequent project, transforming efforts related to process optimisation into long-term and rather continuous activities. These examples further indicate that certain innovation processes are not necessarily subject to immediate time and commercialisation pressures, but rather allow for strategic and successive development of experiences, competences and markets.

5.1.3 Innovation diffusion

Having a closer look at the diffusion strategies related to the individual innovation processes reveals the wealth of channels by which insights and results from these processes are diffused. These channels can either relate to internal or external circulation. Internal diffusion of novelties, experiences and expertise amongst the partners involved in the process tends to be the dominant mechanism for process-oriented

⁷ Translation: „Wir haben das Projekt intern aber nicht aufgegeben, sondern immer wieder Runden gemacht, in 2009, in 2010, in 2011, 2012, 2013 und 2014. Immer noch eine Runde. OK, lasst uns da wieder kurz was versuchen. Was kann man verbessern? Es ist nicht so, dass wir das schnell aufgegeben hätten. [...] Immer wieder gab es kleine Versuche um zu sehen, ob das die richtige Lösung sein kann. Wir haben aber nicht mehr so viel Energie da rein gesteckt [...]“

innovation (e.g. ERZ4, ERZ5, ERZ11, partly ERZ1, ERZ3 and ERZ6). These cases suggest that innovating organisations do not necessarily have an interest in broadly diffusing their insights. Insights on how internal processes were adapted, optimised or implemented processes build the basis for long-term organisational learning and competence building and can therefore be considered factors for competitive advantage. Here, diffusion mainly relates to internal coordination with project partners, documentation of project results or the utilisation for follow-up projects. Diffusion beyond the organisations involved in the innovation process is the dominant strategy for market-oriented innovation, i.e. if there is a product to be sold. In these cases (ERZ3, ERZ6, ERZ8, ERZ10, ERZ12, ERZ13) diffusion channels clearly target customers and markets and range from the use of trade fairs, online channels such as websites and social media to showrooms, sales co-operations and consultation with and identification of key customers. ERZ2 and ERZ9 are exception in this respect as products were developed for external customers which organise innovation diffusion and marketing. Furthermore, the cases also suggest that innovation diffusion and market identification are not necessarily immediate activities, especially if the newly developed products are part of a wider product portfolio. Time is allowed for identifying target markets and lead customers and for establishing specific marketing channels (ERZ3, ERZ13) or for continuously developing product specifications such as design features (ERZ3, ERZ6). These practices in terms of innovation diffusion further reflect, although along a different dimension, the infinite and fluid nature of innovation processes discussed in the previous section. On the other hand, proactive and immediate innovation diffusion are essential for start-up companies that mostly draw on only one specific key product (ERZ8, ERZ10).

5.2 Emergence of innovation processes

With the aim of providing in overview on the innovation processes investigated as part of thus thesis, the previous chapter discussed the nature or these processes along the lines of types of innovation, time frames and diffusion channels. This chapter takes a closer look at the early stages of innovation activities and explores specifically processes and actor constellations that facilitate the emergence of certain ideas and the further formation of these ideas into specific innovation projects. Data reveal that the impetus for innovation can either be linked to predominantly firm-internal processes and strategies (5.2.1) or that the pivotal impulse comes from outside the organisation (5.2.2). Both internal and external dimensions constitute significant directions for the emergence of innovation processes (see Table 1).

5.2.1 Internal impetus for innovation activities

[to be developed]

This section will focus on presenting and analysing cases in which the central idea for the innovation processes was largely developed within the boundaries of the organisation [ERZ4, ERZ5, ERZ6, ERZ8, ERZ10, ERZ12, ERZ13].

5.2.2 External impetus for innovation activities

ACTORS AND CONTEXTS INITIATING INNOVATION

Exploring external impulses stimulating innovation highlights that the initial impetus can originate from private (firms, customers) and the rather public (research institutions, larger project consortia) actors. External impulses relating to requests by private companies (ERZ2, ERZ5, ERZ7, ERZ9) should be seen in the light that these actors pursue own and specific commercial interests with their development processes. While conducting own innovation activities, actors purposefully search for appropriate partners to get involved, for instance to provide technological expertise or to cover certain tasks and functions.

One of the firms from the sample (ERZ9) was approached by an existing customer with a specific and precisely formulated request, looking for a specific technical fabric to be used as isolation panel for chilling cabinets. Thus, basic specifications of the fabric were largely determined. While this request had to be practically handled, e.g. regarding technical feasibility or the production of samples/test materials, ERZ9 was not directly involved in elaborating actual properties of the insulation fabric. The request was dealt with, with the goal to meet the specifications initially formulated by the customer. Rather than facilitating a collaborative process between ERZ9 and its customer, the request was linked to the fulfilment of a specific task, i.e. delivering the insulation fabric with the required properties. Thereby, although contributing significantly to the external development, the existing supplier-buyer relation was largely reproduced.

On the contrary, the sample also contains also a number of cases (ERZ2, ERZ5, ERZ7) in which external requests initiated a process of collaborative action. Companies were approached by external actors with ideas in terms of wider development projects, open enough to be further co-developed and shaped by collaborative action – going beyond mere fulfilment of (technological) requirements. Rather than merely being supplier for a certain yet newly developed part, firms comprehensively participated in external developments, became important consultants and thereby actively shaped the paths of developments. In developing a multifunctional bag/case on request by a furniture manufacturer, ERZ5 for instance provided extensive input and experience regarding the choice of basic materials and finishing, thereby actively contributing to the specifications of the final product:

They [the external actor] had the idea of developing such a system, but they did not yet have all specifications determined. They first had to get an overview on what we can offer and which materials are available.

[...]. This has evolved as a dialogue which is something customers appreciate, the consultancy we offer” (ERZ2).⁸

ERZ5 is another example that illustrates that rather open external requests can induce close collaboration and facilitate intense exchange relations between partners. ERZ5 was approached by a partner from a joint previous project with the idea of developing a functionally new under-construction for solar panels. The idea was to come up with a construction based on metal sheets, which could be flexibly assembled using origami-inspired folding techniques, avoiding the use of specialised tools. ERZ5 was approached with this idea due to its specific competences in metal sheet processing. Although the idea was initially raised by an external yet previously known partner, it was largely developed further and actively devised by ERZ5. Eventually, ERZ5 took on the lead of this development and decided, based on the identification of market potential related to the idea, to approach and develop the idea systematically by transforming it into a formal development project, including application for public innovation funding. Compared to ERZ9 where external request by a customer reproduced the exiting supplier-customer relation, the cases of ERZ2 and ERZ5 illustrate that external requests might also facilitate the emergence of (new) collaborative and reciprocal ties, going beyond mere production arrangements and expanded sales opportunities.

	impetus originating from	
	commercial actor (e.g. customer)	research partner/consortia
‘concrete’ request	specifications largely determined, limited scope for joint developments; facilitating supplier relation	---
	ERZ9	
‘open’ request	initial idea formulated but specifications not yet determined; scope for joint developments; facilitating collaborative ties	external project with multiple partners; specification not yet determined scope for joint developments; facilitating collaborative ties
	ERZ2, ERZ5, ERZ7	ERZ1, ERZ11

Table 2: actors and dimensions of external innovation impetus; source: own summary

Besides the previously illustrated stimuli for innovation originating from predominantly commercial actors, it is noticeable that also public and less commercially driven actors such as research institutions and/or larger project consortia provide stimuli for innovation (ERZ1, ERZ11). In these cases, it is apparent that rather collaborative interactions between the different partners have evolved, based on

⁸ Translation: “Die [externer Akteur] hatten eine Idee, dass die so ein System machen wollen, aber eine konkrete Ausformung hatten die noch nicht im Kopf. Die mussten erstmal sehen was bei uns überhaupt möglich ist und welche Materialkombinationen es gibt. [...]. Das hat sich im Dialog entwickelt - und dass schätzen die Kunden auch, unsere beratende Tätigkeit in dem Bereich.”

which initial ideas and specifications are developed further in mutual and recursive exchange. Within the framework of a comprehensive project in the field of functional workwear, ERZ1, a sportswear manufacturer, was contacted by Chemnitz University coordinating the project as lead partner. The involvement of ERZ1 in this project is mainly down to its specific technological capacities (e.g. specific industrial knitting technology) and was enabled and mediated by its membership in a textile network which constitutes the actual institutional origin of the workwear project.

“We are one of five or six partners in this project, so basically only one cog within the entire project. What we try in this project is to bring in our competences in terms of knitting technology as well as the experiences built due to our sports affinity” (ERZ1).⁹

Against the background that firm-internal innovation is described by ERZ1 as typically being rather incremental in nature, participation in external innovation activities that suit the orientation of the firm is described as a frequently mobilised strategy to also engage in more substantial innovation activities.

Similarly, ERZ11 became partner in a project which is coordinated by the Technical University of Dresden and part of a wider ‘bio-economy’ cluster consortia. The ultimate goal of the project is to develop pipes made of beech wood and the role of ERZ11 in this project relates to the elaboration, optimisation and adaptation of the various technological processes (wood preparation and processing, bending methods, etc.) that condition the production of pipes. While covering a specific part in this process, ERZ11 closely collaborates with University partners which not only leaves scope to jointly develop and shape the path of the project, but which has also resulted in the establishment of a follow-up project (with a third project proposal being elaborated at the time of the interview). Table 2 provides a summary on the different actors and dimensions related to external innovation stimuli.

EFFECTS AND IMPLICATIONS OF EXTERNAL INNOVATION STIMULI

The previous section highlighted that firms from the Erzgebirgskreis seem to frequently participate in external innovation processes. A central question emerging from the observation is to what extent the involvement in external processes induces beneficial implications. In this respect, the investigated cases exhibit a number of aspects that highlight how participation in external developments might induce internal change in a number dimensions.

From an economic point of view, participation in external projects might relate to either immediate but also more indirect/long terms pecuniary outcomes. Generally speaking, participation in external projects provide opportunities to expand existing product portfolios and increase sales. Expanded sales might either be realised rather directly when projects exhibit an overt supplier-customer relation (ERZ2, ERZ9). However, such pecuniary outcomes might also be less immediate but rather long-term and

⁹ Translation: Wir sind ein Kooperationspartner von fünf oder sechs, also nur ein Rädchen von dem ganzen Projekt. Da versuchen wir sowohl unsere Kompetenz was das Stricken angeht mit einzubringen, als auch unsere Kompetenz die wir natürlich durch unsere Sportaffinität vielleicht noch mit einbringen.

strategic in nature (ERZ1, ERZ5, ERZ7, ERZ11). In this respect, participation of external processes leads to the identification of certain market niches which might eventually be exploited:

“For us it is about looking left and right from our own production and to potentially get new input on what is possible. Which can sometimes be more easily identified by third parties rather than us with our day-to-day routines. On the other hand, we also have to see how we can access new markets. In this sense, the workwear project is quite interesting as this is a new market for us [...]. Therefore, it is in our interest to successfully finish such projects to be in the position to eventually place products in such markets” (ERZ1).¹⁰

“It needs to be a reasonable and realistic idea which complements our product portfolio. This was the case with the idea for the under-construction. Additionally, there should also be scope for transferability into other segments, or at least an additional value for other segments” (ERZ7).¹¹

The case of ERZ5 highlights another dimension of strategic considerations. ERZ5 was approached by a start-up company which is establishing a large-scale aquaponics farm and which was looking for a partner to develop and provide the specialised water treatment system. This development, with all its technical specifications, was pushed forward in close coordination between ERZ5 and the requesting start-up company which eventually resulted in ERZ5 acquiring a stake in the start-up in order to directly benefit from its potential future success.

Besides such direct and more strategic pecuniary implications, the cases further suggest that participation in external innovation activities also triggers capacity building (technological but also organisational) from which not only individual organisations but also their regional settings might benefit. Comprehensive technological learning processes were and are induced especially when firms from Erzgebirgskreis participated in projects where they covered tasks relating to the development or optimisation of technological processes (ERZ5, ERZ7, ERZ11). Here, the respective firms were able to build new and expand existing capacities in specialised technological fields. Participation in external innovation processes therefore enabled the companies to increase overall firm competitiveness through technological advancement and to gain valuable experiences within strategically valuable technology fields with future potential.

However, competence building is not merely confined to technological learning, as the case of ERZ2 illustrates. Here, the external development and the resulting establishment of a new supplier-customer relation, facilitated a process of organisational modernisation. Established internal routines, in retrospect viewed as ‘outdated’ by the interview partner, were lifted to the state-of-the art:

¹⁰ Translation: Für uns geht’s darum, vielleicht mal rechts und links von unserer eigenen Produktion zu gucken und neuen Input zu bekommen. Was noch alles möglich ist, das ist ja manchmal für Außenstehende leichter als für die Firma selbst, die tagtäglich mit den gleichen Sachen zu tun hat. Andererseits muss man natürlich auch gucken wie kann man sich neue Märkte erschließt. Das Projekt zur Arbeitsbekleidung fokussiert einen Markt wo wir im Moment noch gar nicht vertreten sind, [...] das wäre natürlich sehr interessant. Und so ist es natürlich auch in unserem Sinne da ein erfolgreiches Projekt abzuschließen um da auch irgendwann auch mal die Sachen produzieren dürfen.

¹¹ Translation: „Es muss eine vernünftige und realistische Idee sein, die auch zu unseren Produktbereichen passt. Dass war ja bei dieser Idee zur Unterkonstruktion eigentlich alles gegeben. Zudem sollte auch eine Übertragbarkeit in andere Bereiche, oder zumindest ein Mehrnutzen auch für andere Bereiche ersichtlich sein.“

“The project has brought the company forward [...], procedures were changed and improved, or better to say modernised. Existing procedures have been brought to a stage which might already be common practice in other firms, but which have so far not been required here. Typically you only implement what is needed, this time we had to go further” (ERZ2).¹²

The latter aspects on technological and organisational learning processes induced by external innovation processes further illustrate again the interrelatedness between product and process innovation which has already been touched upon previously (see 5.1.1)

INTERIM CONCLUSIONS

The previously discussed aspects highlight that firms from peripheral regions take frequently part in innovation processes which have external origins. The functions and roles covered in such external processes vary across cases.

However, the cases suggest that firms benefit on various dimensions from participation in external activities which might function as important levers for overall organisational development such as market access and capacity building. In order to make use of and benefit from opportunities for innovation that emerge outside the own organisation, it appears crucial for firms to act as organisations that are *open* for external knowledge and stimuli. This openness might relate to multiple dimensions. On the one hand, openness can be understood in the sense of monitoring and actively searching for external opportunities for innovation. On the other hand, and in line with the specific examples of cases referred to above, openness might as well refer to pro-actively act upon specific requests by external actors. In this respect, visibility of firms and their specific capacities plays a key role. Visibility ensures that firms can be identified as potential (collaboration) partners by external actors searching for specific competencies/capacities matching their requirements. This holds especially true if there was no previous contact between partners as it was the case in the majority of cases analysed previously. Looking at the facilitators of these external innovation opportunities cases exhibit various channels on how innovation-inducing visibility has been realised: trade fair participation (ERZ2), network membership (ERZ1, ERZ11) and further channels for external marketing (ERZ5).

Thus, innovation should not necessarily be understood in a way that innovating organisations can only benefit from internal developments. There seems to be a clear potential for firms and regional contexts, based on their specific competences, to be integrated into external innovation processes which are collaboratively organised between multiple organisations and across various localities. Along these

¹² Translation “Das Projekt hat uns als Unternehmen schon voran gebracht [...], Abläufe wurden geändert, verbessert oder modernisiert müsste man sagen. Abläufe wurden auf einen gewissen Stand gebracht der in anderen Firmen vielleicht schon Gang und Gäbe sein mag, aber hier bislang noch nicht gefordert war. Der Bock springt immer nur so hoch er muss, jetzt war es eben so weit.”

lines, firms and regions might be seen as starting points (5.2.1), transit locations or destinations of innovation processes – each of which can induce certain benefits (Müller et al., 2015)¹³.

¹³ Felix C: Müller, Verena Brinks, Oliver Ibert, Suntje Schmidt: Open Region: Leitbild für eine Regional Innovationspolitik. Working Paper, Erkner, Leibniz-Institut für Regionentwicklung und Strukturplanung (IRS), 2015.