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Beyond the blind spot of knowledge-based territorial development: the mission of Metropolitan Food Clusters

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ABSTRACT

The rise of knowledge-based territorial development has been fuelled primarily by aspirations of competitiveness and wealth creation. Another upcoming ambition is that of sustainability, not only as an accompanying goal but as a core mission driving territorial initiatives such as clusters development. This paper explores mission-driven territorial development along theoretical and empirical lines. The paper starts by discussing a basic heuristic model intersecting the three concepts of ‘mission’, ‘knowledge’ (distinguishing ‘substantive’ and ‘significant’ knowledge) and ‘governance’. This leads to an analytical framework for territorial development focusing on (1) mission formulation, (2) production and exchange of knowledge in supportive milieus, (3) embedding of substantive knowledge, (4) anchoring of significant knowledge, and (5) feeding of significant knowledge into the (re) design of institutions and strategies of policy design and implementation. This framework is applied to three cases of ‘Metropolitan Food Clusters’ to illustrate and test the framework. The paper shows how especially the continuous anchoring of significant knowledge poses major challenges to knowledge-based territorial development and should be a central issue in future research and policy.

The rise of knowledge-based territorial development

The economy increasingly has become knowledge-based (Caruso, 2016; Moulier-Boutang, 2011; Powell & Snellman, 2004). This knowledge-based economy is defined by ‘the systematic and permanent mobilization of knowledge in order to analyse the result of actions and to design new actions to be undertaken’ (Ascher, 2001 & Foray, 2004 in Crevoisier & Jeannerat, 2009, p. 1223). Moreover in knowledge-based economies – ‘… the design and implementation of new technical solutions and/or new products/services are not intermittent or occasional as is the case in traditional industry, but are ongoing processes’ (Crevoisier & Jeannerat, 2009, p. 1223). Productivity gains are propelled...
increasingly by ‘economies of learning’ in an ‘economy of variety’ rather than economies of scale (Moulier-Boutang, 2011). This implies that work, everyday life and politics are knowledge-based and that knowledge is more important to economic systems than other factors as labour or capital (Adolf & Stehr, 2014). This development coincided with the rapid emergence of knowledge management practices and knowledge networks, aiming to facilitate learning and innovation within and between organizations (e.g. Easterby-Smith & Lyles, 2011). Moreover, in territorial development studies, knowledge became recognized as fundamental for territorial development (Moulaert & Sekia, 2003) and various models of knowledge-based territorial development were developed in which territory functions as a supportive milieu for innovation (Lagendijk, 2006; Moulaert & Sekia, 2003), e.g. clusters, learning regions and innovation systems.

This paper explores the roles of knowledge in territorial development going beyond the conventional focus on innovation and competitiveness. In light of global challenges, territorial development is also seen as a core vehicle towards sustainability (Hansen & Coenen, 2015). While sustainability often accompanies primary goals of competitiveness and wealth creation, it is gaining more emphasis, tuning into a mission of territorial development initiatives. Such an orientation, we will argue, has important consequences for the conception of knowledge. Especially in more epochal accounts embracing notions such as the knowledge economy (Powell & Snellman, 2004) and the ‘knowledge society’ (Castells, 1996; Stehr, 1994), knowledge seems to emerge as a kind of ‘magic fuel’ boosting economic development (Dankbaar, 2003). While we would not like to underrate the importance of knowledge, we would take some issue with the rather forceful, singular view of knowledge expressed through such accounts. In our view, knowledge presents a rather multifaceted item, of a heterogeneous kind, imbued with values and intentions, in context-dependent manners. This particularly applies when knowledge is connected to major societal transitions, such as the move to sustainable food production on which this paper will focus. Knowledge does not really flow as fuel, but travels through constant translations and manipulations. At each step, human agency plays a role, in the consideration of significance, options and values, in choosing means and ends of knowledge conversion (e.g. Bathelt & Glückler, 2014; Loasby, 2014). Therefore, we aim to introduce and discuss various conceptualisations that may help to sharpen our understanding of how knowledge processes occur and how they shape territorial development in light of broader societal needs and ambitions.

Because of the specific role of agency and motives in knowledge processes, it is highly relevant how knowledge processes relate to governmental or governance processes by (networks) of public authorities, businesses, and other actors in relation to territorial development. Public authorities engage in research, innovation and industrial policies, entrepreneurs cooperate with one another in sharing knowledge and developing information, NGOs pressure public authorities and businesses and research organizations communicate benchmarks for change and support initiatives of other actors with information. More generally, aspirations to meet broader needs and ambitions – such as sustainability – result in the drafting and enacting of more or less explicit missions of territorial development involving all these stakeholders. Therefore, we will also focus on governance aspects of knowledge-based and mission-driven territorial development.

The broad aim here, therefore, is to expand the understanding of how knowledge and governance processes intersect in a setting of mission-driven territorial development. More specifically, our goal is to highlight which challenges knowledge development
faces within a context of sustainable development, zooming in onto sustainable food clusters. To do so, we will first explore the core nexus between the three core aspects of mission, knowledge and governance (Figure 1), and elaborate an analytical framework. The latter will be applied to three cases of sustainable food cluster developments in India, Mexico and the Netherlands.

**Mission-orientation: sustainable territorial development**

In the 1990s scholars in organization studies (e.g. Collins & Porras, 1994) noted that organizations formulated missions to develop strategies for their development. Initially, policy and innovation literature dealt with this approach to missions in which missions were ‘… largely framed in technical terms’ (Kuhlmann & Rip, 2014, in Coenen, Hansen, & Rekers, 2015, p. 484). More recently, a new ‘wave’ of mission-oriented innovation policy has emerged that interprets missions as ‘grand challenges’ (Gassler, Polt, & Rammer, 2008). These challenges

… refer to open-ended missions that require a mix of technological and social innovation, open up for contestation, both with respect to policy aims and means, and involve new actor constellations that include a larger variety of actors, and consider new roles for traditional actors (Kuhlmann & Rip, 2014, in Coenen et al., 2015, p. 484).

These grand challenges ‘… include problems associated with ageing societies, pandemics, public health, security, global warming and the increasingly difficult access to sources of energy, water and food’ (Coenen et al., 2015, p. 483). This approach to missions has increasingly become the focus of policymakers at various levels (Cagnin, Amanatidou, & Keenan, 2012) and in particular to national and EU innovation policies and to regional development policies.

Many of the grand challenged in this new-wave of mission-oriented innovation policies are concerned with sustainable development, ‘balanced’ with the pursuit of ‘competitiveness’. The grand challenges have primarily been associated with structural aspects of innovation systems – such as infrastructure, capabilities, networks and institutions (Coenen et al., 2015). There has been less emphasis on transformative aspects, although some attention has been paid to directionality failures of innovation systems, or the ability to steer innovations towards transitional change (Weber & Rohracher, 2012). A literature does

![Figure 1. Heuristic framework of mission-driven territorial development.](image-url)
exist in which sustainability is explored from a transition perspective (Coenen, Benneworth, & Truffer, 2012; Hansen & Coenen, 2015; Markard, Raven, & Truffer, 2012). A prevailing conclusion from this literature is that sustainable development, despite strong and persistent commitments, are hard to achieve (Schuitmaker, 2012), because it ‘… requires structural changes in social-technical systems and wider societal change, in beliefs, values and governance’ (Kemp, Loorbach, & Rotmans, 2007, p. 78). Directing such a systemic evolution or transition in a desired direction is a highly complex activity in which existing structures or institutions have to make way for the desired activity (Geels, 2002; Loorbach & Rotmans, 2006; Kemp et al., 2007).

While the literature on such transformations in relation to mission-driven territorial development is scarce, we came across different manifestations of mission-driven sustainable development focusing on knowledge in what we call ‘sustainability clusters’. In these clusters, individual and groups of related companies aim to increase the sustainability of their firms, value chains and territories supported by stakeholders at public authorities, science, society and business. Moreover, knowledge and governance co-evolve with the changes in technical aspects of the relevant sustainability missions (Kemp et al., 2007; Van Assche, Beunen, & Duineveld, 2013). Empirically, there is a strong interest in sustainability clusters, as expressed through initiatives to develop the circular economy, in various case studies of industrial symbiosis (Verguts et al., 2016) and Metropolitan Food Clusters (MFCs) (Gerritsen, Giesen, & Chakravarthy, 2011; Hoes, Regeer, & Zweekhorst, 2012; Smeets, 2011). In these examples of sustainability clusters from these studies, much emphasis is put on knowledge gathering, knowledge sharing, learning and innovation. Therefore, sustainability clusters, as elaborated here, can help to gain insight into how knowledge and governance processes are organized to advance and utilize sustainability missions.

Knowledge in territorial development

The literature on territorial development employs the concept of knowledge in two basic ways. First, as a production factor, boosted by the emergence of a knowledge-based economy, and, second, as a relational territorial development process, associated with localized, intensive forms of interaction and coordination (Storper, 1997). In the first meaning, knowledge is often reduced to information or codified knowledge that can be owned, shared and traded as a commodity and can be transferred with relative ease and little cost (Bathelt, Malmberg, & Maskell, 2004; Adolf & Stehr, 2014), thus approximating the notion of ‘fuel’. Knowledge as territorial development process stresses the tacit (Polanyi, 1967) and relational (Bathelt, Feldmann, & Kogler, 2011; Brown & Duguid, 2000; Faulconbridge, 2017) nature of knowledge.

The second interpretation of knowledge as tacit and relational is particularly relevant for actual practices and processes of transformation. What counts is the epistemic nature of knowledge development, as knowledge is often developed by epistemic networks (Cohendet, Grandadam, Simon, & Capdevila, 2014; Dunlop, 2013; Haas, 1992). Epistemic networks are characterized by a shared mission, stemming from ‘a shared set of normative and principled beliefs; shared causal beliefs; shared notions of validity’ policy enterprise’ (Haas, 1992, p. 3). These epistemic networks rely on established institutions, which will enable them both to strengthen the community as to exploit and commercialize their knowledge (Cohendet et al., 2014).
Tacit knowledge has often been perceived as equal to local knowledge (Cohendet et al., 2014) or local buzz (Bathelt et al., 2004) that can be diffused because of the geographic proximity of economic actors, enabling knowledge spill-overs and inducing economic development, especially in metropolitan areas (Cohendet et al., 2014). This focus on local tacit and non-local codified knowledge has been criticized because territorial development in fact draws heavily on pipelines to global networks (Bathelt et al., 2004), both for tacit as for codified knowledge. Moreover, the local knowledge building and global knowledge accessing practices are intrinsically interwoven (Bathelt & Cohendet, 2014), although these dynamics have changed profoundly the last decades, with the buzz often taking a virtual shape in addition to face to face contact (Bathelt & Turi, 2011).

Crevoisier and Jeannerat (2009) have elaborated the complex geographical manifestation of knowledge processes by focussing on the importance of supportive milieus that are both locally autonomous and capable of existing within distant interactions. According to Crevoisier and Jeannerat (2009), the challenge is to connect knowledge from outside the territory and anchor it in local contexts, practices, projects and actor-networks. Embedding is concerned with a movement from the context where it is generated – and embedded – towards a ‘new’ context (Crevoisier & Jeannerat, 2009). Anchoring is the way ‘in which this new knowledge interacts – or not – with its new context’ (Crevoisier & Jeannerat, 2009, p. 1236).

To expand these distinctions, we draw on a recent classification by Crevoisier (2016), which pays specific attention to the way knowledge forms part of territorially embedded systems of meaning. Knowledge, according to Crevoisier (2016), is ‘in the air’, not only to support local economic activities and improvements, but also as a shared understanding of what is at stake, how to meet pressing challenges and where to go. Central to this notion is a basic distinction between ‘substantive’ and ‘significant’ knowledge (Table 1). Whereas substantive knowledge is content – and transaction-based, significant knowledge serves to deal with less technical, more politically and personally sensitive issues. Substantive knowledge generally becomes de-contextualized and traded (or protected from trading); it can be disentangled from the organization or actor controlling or owning it. Significant knowledge is subject to (re)interpretation and (re)contextualization within a specific context.

**Table 1.** Substantive and significant knowledge. Adapted from Crevoisier (2016).

<table>
<thead>
<tr>
<th>Properties</th>
<th>Substantive knowledge; (controlled, owned)</th>
<th>Significant knowledge; (shared, authored)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic value</td>
<td>Stabilized, finite, identified, convergent; embodied in functional devices&lt;sup&gt;a&lt;/sup&gt;</td>
<td>Evolving, open, divergent; embedded in systems of meaning.</td>
</tr>
<tr>
<td>Linked to people, communities and/or contexts; based on sharing, diffusion and adaptability.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concrete forms</td>
<td>Based on the content of the knowledge and its valorization on different markets (exploitation); Based on exclusivity.</td>
<td>Embedded in personal interaction as well as in objects (papers, scientific articles, books, statutes, exhibitions, etc.).</td>
</tr>
<tr>
<td>Evolution</td>
<td>Embodied in capital goods (machinery, software, reports, etc.) but also in individuals under the control of firms (salaried experts, for example).</td>
<td>Continuously transcended through differing interpretations and contextualization (goal searching).</td>
</tr>
<tr>
<td>Actors</td>
<td>On demand, through investment, specialization and de-contextualization.</td>
<td>Author (authority), peer or institution that is recognized as a source of knowledge; diffusion towards stakeholders/citizens.</td>
</tr>
<tr>
<td>Mobility</td>
<td>Identifiable owner that controls the knowledge</td>
<td>Through sharing and subject to the rules (reference points) of the community.</td>
</tr>
<tr>
<td></td>
<td>Through contractual exchange and quality standards.</td>
<td></td>
</tr>
</tbody>
</table>

<sup>a</sup>For the objective of this paper we include other artefacts than devices, such as databases and maps.
organizational setting, to which it tends to be anchored. Substantive knowledge is spatially *embedded* through its link to localized owners, activities, capital goods, etc. Significant knowledge is spatially *anchored* through its connection with communities, systems of meaning and localized processes of identity and strategy making.

**Governance**

Governance bears in multiple ways on mission-driven territorial development practice. Public authorities engage in regional development and technology and innovation policies, such as cluster policies, research policies and – in the European Union – smart specialization policies. The private sector also engages in governance, by collaborating in innovation trajectories or by innovating alone to establish a competitive advantage. In between, there is much collaboration by universities, companies and public authorities and societal actors collaborate and coordinate all kinds of knowledge-based territorial development processes (Benneworth, Coenen, Moodysson, & Asheim, 2009; Charles, 2006; Uyarra, 2010).

Governance clearly is an aspect of territorial development (e.g. Bathelt & Glückler, 2014). We share the interpretation of ‘governance as a broader process of managing the rules, the patterns of coordination and the complex structures of hierarchies, networks and markets’ (Kjaer, 2004, pp. 48–49). Therefore, we approach governance as a versatile mode of coordination of interdependent activities, involving exchange, organizational hierarchy and self-organizing ‘heterarchy’ (Jessop, 1998). We do not adhere to governance as a synonym for self-governing networks or as a substitute to government (Driessen, Dieperink, Van Laerhoven, Runhaar, & Vermeulen, 2012; Kjaer, 2004). A problem is, however, that the conceptualization of governance has received little attention in the literature on knowledge-driven territorial development (De Propris & Wei, 2007; Ebbekink & Lagendijk, 2013). When attention is paid to governance issues, this is often limited to simple normative assertions about interventions often at odds with a dynamic approach to innovation. In the words of Flanagan and Uyarra (2016, p. 178). ‘… it rarely considers policy emergence and change, the agency of actors in relation to policy and outcomes, and their influence on institutionalization processes’.

Nevertheless, attention to the governance of knowledge-based and mission-driven territorial development can be found in work on ‘cluster governance’ (Bell, Tracey, & Heide, 2009; Berthinier-Poncet, 2014; Crone, 2009; Ebbekink, 2017). Cluster governance has been defined as ‘a deliberate plan adopted by a group, institution or government to guide decisions and actions and achieve desired objectives’ (Crone, 2009, p. 3). Cluster governance is conceived of as ‘… a multi-lateral/-level process of negotiated power, a co-creating partnership between a wide range of cluster stakeholders’ (Ebbekink, 2017, p. 624). Cluster governance thus enables the effective pursuing of missions by interaction, collaboration and collective action (Ebbekink, 2017). Crucially, cluster governance is driven by significant knowledge, articulated, shared and used by cluster-specific epistemic networks through which a shared set of beliefs, notions of validity and a common enterprise are developed (Ebbekink, 2017). Therefore, cluster governance relies on high levels of mental proximity (Sacchetti & Sugden, 2009) between cluster actors.

Cluster governance provides us with an idea of the type of governance activities in mission-driven territorial development. Yet it lacks an explicit approach to what mode
of governance it relates to. We propose to see cluster governance as a type of knowledge governance (Gerritsen, Stuiver, & Termeer, 2013; Van Buuren & Eshuis, 2010). Central to knowledge governance is the understanding that engaging in knowledge processes and knowledge management activities is a means for coordinative action and societal change (Michailova & Foss, 2009; Stehr, 2005). Knowledge governance takes this a step further and stresses the creation of ‘... new insights, and innovative solutions which tempt actors to leave traditional insights and practices and get away from inert interaction patterns, stalemate negotiations, and interest conflicts’ (Van Buuren & Eshuis, 2010, p. 284). In knowledge governance actors deliberately engage in a largely self-organizing and reflexive social learning process centred on transdisciplinary knowledge development (Gerritsen et al., 2013). Obviously, this may result in certain more ‘established’ organizational forms. By setting up tailor made institutions or boundary arrangements that enable feedback of the produced knowledge to decision makers (Gerritsen et al., 2013). This expands the set of possible actions to decision makers they can consider when taking decisions, potentially achieving a breakthrough in advancing the mission they pursue. Accordingly, knowledge governance draws on significant knowledge and helps to set in motion activities that produce, exchange and use substantive knowledge that, in turn, enables change. This stresses the processual and transformative aspects of mission-driven territorial development.

**Analytical framework**

The second part of the paper explores the heuristic triad discussed so far for three cases. To do so, the triad is operationalized in five steps, detailed in Table 2.

These steps are:

1. Setting of a territorial development mission,
2. Production and exchange of knowledge in supportive milieus,
3. Embedding of external substantive knowledge,
4. Anchoring of significant knowledge, and
5. Feeding of the acquired significant knowledge into the (re-) design of institutions and governance of (policy) design and implementation.

Steps 1 and 4 are derived from the discussions of missions, step 2, 3 and 4 are related to knowledge, and step 5 to governance. These steps are firstly to be seen as a list of key analytical aspects of mission-driven territorial development. For policy development, they can serve as a first move towards an overarching normative framework.

**Case study set up and methodology**

The stepwise framework developed so far will serve to describe and analyse knowledge and governance dynamics in actual mission-driven territorial development practices. Three cases have been selected from India, Mexico and the Netherlands, which all present manifestations of sustainable food clusters, and notably of ‘Metropolitan Food Clusters’ (MFC). Notwithstanding, the very different territorial settings of the cases, they are comparable in their mission, in their cluster approach, in the industry
and in their knowledge and governance processes. MFC is a concept that aims for the sustainable development of the agrifood industry by increasing resource use efficiency, co-locating food companies, increasing yields, adding value to it and improving value chain integration (Smeets, 2011). The mission of MFC is to increase food security in metropolitan environments while also decreasing the environmental pressure per unit of food by increasing resource use efficiency. This concept and the related practices constitute an excellent example of mission-driven and knowledge-based territorial development.

The case information has been derived from a secondary analysis of notes, logs, interview data and especially technical reports produced in different contract research projects. Much information has been acquired through the direct involvement of authors in developing MFC’s. This involvement included participatory observation, advice and knowledge-based interventions to change the territorial development process. This enabled us to understand the meaning and context of the territorial development processes in these cases and to use these insights for theoretical conceptualisations. To prevent perception bias, the analyses were done in collaboration with a researcher who was not directly involved in the case. In the case descriptions below, we take the knowledge related characteristics (2, 3 and 4) together.

### Table 2. Analytical framework for mission-driven territorial development.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Setting a territorial development mission</td>
<td>The starting point is an exploration of the socio-economic and political context, of what mission is formulated regarding (sustainable) development, with what broad set of governance interventions.</td>
</tr>
<tr>
<td>2. Production and exchange of knowledge in supportive milieus</td>
<td>Territorial knowledge processes initiated to advance missions require supportive milieus that are self-organizing, focusing on social and reflexive learning and on transdisciplinary knowledge production. Key questions are how such milieus are constituted, how they produce and exchange substantive and significant knowledge, and how they connect with external knowledge sources.</td>
</tr>
<tr>
<td>3. Embedding external substantive knowledge</td>
<td>Substantive knowledge from outside of the territory is infused in the mission-driven process. A key question is how the external substantive knowledge is transported, transformed and embedded within internal territorial development processes. Of particular interest are the practices and projects of the embedding process and the role of the supportive milieu.</td>
</tr>
<tr>
<td>4. Anchoring significant knowledge</td>
<td>The developed and acquired knowledge is anchored in the territorial process. Key questions are how a shared understanding is created of the strategic needs for territorial development, as form of ‘significant knowledge’, how this knowledge is grounded in the territory, and to what extent it is derived from visions that were developed elsewhere. Again of interest are the practices and projects bearing on the anchoring process.</td>
</tr>
<tr>
<td>5. Feeding the acquired significant knowledge into the (re-)design of institutions and strategies of policy design and implementation</td>
<td>Significant knowledge generally warrants institutional change to be effective. This draws attention to the boundary arrangements enabling institutions to learn and adjust policies from the knowledge emerging from supportive milieus. It is of particular importance what arrangements and practices are used to bridge supportive milieus to decision-making networks and arenas.</td>
</tr>
</tbody>
</table>
**Case studies of sustainable food clusters**

**Greenport Venlo**

**Setting the mission**

Greenport Venlo is a horticulture cluster in the southeast of the Netherlands. It hosts 11,500 companies who produce, trade and process vegetables, fruits, mushrooms and decorative plants, mostly for the nearby Ruhr-Area in Germany. The cooperative ‘Royal ZON Fruit & Vegetables’ coordinates the trade and logistics of the produce at a dedicated business park near the city of Venlo. Since 2005, the cluster has the status of a ‘Green Port’ in regional and national policies, recognizing its national importance to the national economy.

In the 1990s, the horticulture cluster came under societal pressure to reduce its environmental impact, such as high energy use and damage inflicted on nature and landscape. They responded by engaging in an innovation-based approach that aimed at increasing both sustainability and competitiveness of the firms and the regional economy (Laurentzen, Kranendonk, & Regeer, 2009). At that time, the horticulture cluster was considered to be relatively competitive, but the cluster companies, associated regional organizations, and public authorities decided there was a need to reduce production costs, optimize logistical practices, increase the efficiency of the production process and add more value to the produce. Moreover, cluster stakeholders aimed to establish closer relations with the consumers and the inhabitants of the Venlo region. The strategy to boost sustainability and competitiveness was to support the development of sustainable innovations by creating linkages between horticultural production, logistics, nature and landscape, and society, also in relation to intensive livestock breeding and feed production in the region (Laurentzen et al., 2009).

Mission and strategy prompted a wide range of projects and initiatives, with firstly, limited coordination and alignment between them. After some years, cluster stakeholders decided to concentrate their investments on a selection of most-promising innovations. This received a further impulse in 2012, when Venlo became the site for the organization of the 10-yearly Floriade world horticulture exhibition. The Floriade was expected to give a major boost to cluster development, and especially to its sustainability, competitiveness and image (Laurentzen et al., 2009).

**Engaging in knowledge processes**

The cluster invested strongly in a variety of knowledge processes. After 2000, the province of Limburg, the municipality of Venlo, a representative of the entrepreneurs in the cluster (KnowHouse), and two universities applied successfully for the four-year project ‘Streamlining Greenport Venlo’ under the national TransForum innovation programme for sustainable agriculture (2005–2010). In this project, cluster stakeholders would develop a more concrete mission that would lead to a more focussed territorial development and cluster strategy.

Applying for TransForum funding and status also meant that extra-territorial knowledge was brought into the territorial knowledge process. Through its network TransForum was a source of both substantive and significant knowledge on sustainable agriculture, consumer demands and the governance of innovation processes. Moreover, TransForum demanded from its projects to share knowledge with other projects. This resulted in the
circulation and adoption of novel learning-oriented concepts, such as ‘transdisciplinary knowledge’, value creation and working in networks, and sustainability concepts, such as ‘Cradle2Cradle’ (Kranendonk & Kersten, 2011). Such exchange was supported by a new applied research programme for the Greenport Regions funded by the Dutch Ministry of Agriculture, Nature and Food Quality.

The TransForum project triggered intensive deliberation between entrepreneurs, regional civil servants, politicians, and representatives of research and education. They discussed the possibility to develop a stronger ‘regional profile’ to strengthen the cluster’s vision and mission. During the project, the participants invested in getting to know one another and exploring common interests. Various experts supported this learning process, e.g. by sketching visions for the future of Greenport Venlo, by reflecting on the process, by explaining new concepts and by organizing excursions (Kranendonk & Kersten, 2011). Participants were constantly pushed to look for new opportunities and perspectives. Researchers and other key participants regularly explored and shared new concepts and perspectives, notably concerning sustainable landscape design, quality of life, and resource efficiency. The regional organization KnowHouse forged interactions between local businesses and individuals and organizations from outside the region. These activities aimed to embed the new substantive (concerning sustainability innovations) and significant knowledge (concerning the visions for the future and the Greenport Venlo mission) in the cluster activities. The collaboration with universities also resulted in initiatives towards EU funding and other funding possibilities.

The activities of the TransForum project produced a shared strategy, an implementation plan and an organizational strategy. In 2009, plans and strategy were submitted to, and endorsed by, the regional political leaders (Kranendonk & Kersten, 2011). The focus then shifted from learning and developing significant knowledge to coordination and implementation, building more on substantive knowledge. The latter focused on three distinct processes:

1. ‘the basics’, meaning the land development for the exhibition area of the Floriade 2012 expo and the development of a new business park;
2. ‘innovation’, focussing on the attraction of new industries and economic activities and new business case development, and
3. ‘quality of life’, aiming to improve the attractiveness of the region for its inhabitants and workers.

**Feeding the significant knowledge into institutional and policy redesign**

The separation into three processes led to the setup of distinct organizational structures and networks, each elaborating their own targets. The innovation process became focussed on more business-driven innovation, but the other two shifted to marketing activities, financial revenues and solving regulatory issues. Each process communicated its own aspirations and progress. The exchange and interplay between the three processes had little priority; researchers were side-lined. As a result, the overarching significant knowledge developed earlier was partly lost. Various conflicts emerged on what actors and which processes should feature how in the development of the Greenport Venlo cluster. The
programme suffered, in other words, from a lack of anchored significant knowledge. After the ending of the TransForum programme (2010) the Floriade exhibition (2012), Greenport Venlo entered a stage of stagnation. Compounded by the general economic downturn, the horticulture industry faced a crisis and many of the installations built – including the landmark office tower ‘Innovatoren’ – became (partly) vacant.

In sum, the development of Greenport Venlo shows a rather mixed picture. The status as a national Greenport, the establishment of an associated national research programme, the selection as site for the Floriade and the inclusion in the TransForum programme all fostered institutional change. While this resulted in many knowledge and mission-related initiatives, a significant core failed to materialize, and the interest from policymakers and other actors waned. Not all was lost, however. Some important ideas and practices developed under ‘Streamlining Greenport Venlo’ were revived, for instance, in the recent establishment of the Brightlands Campus (materials, health, and food) at the former Floriade exhibition area.

**Metropolitan Food Cluster Mexico**

**The mission**
The Mexican state of Aguascalientes is home to agrifood companies of national importance, including cheese factories, vegetable and livestock processors and logistical firms. However, the sector’s development is threatened by water scarcity as a result of both droughts and excessive depletion of the available water resources (Van Mansfeld et al., 2012). The problem is compounded by the fact that most of the land is used for water-intensive forms of agriculture, such as extensive livestock production and arable farming, while the suitable climate for greenhouse production is underused. Another issue is the low value added to agricultural produce and the dependence on the import of agricultural produce.

Mexican actors from government and business jointly decided that there is a need and potential to increase the productivity of Mexican agriculture, cutting imports and increasing added value. Moreover, it was recognized that an expansion of agricultural production called for a more sustainable production in terms of reducing water use. These challenges were addressed by a national government-led investment fund, endowed with the mandate and the means to experiment with promising innovative approaches to agriculture, such as dedicated agricultural business parks, such as a first ‘agropark’ consisting of clustered high-tech and water-efficient greenhouses that was developed in 2006 in the state of Querétaro. The investment fund found the state of Aguascalientes prepared for collaboration in engaging in innovative approaches to the development of the agrifood sector.

**Engaging in knowledge processes**
The government-led innovation fund saw the concept of MFC as an inspirational approach and conceptual framework to address sustainability challenges alongside boosting agriculture. A project was set up to explore how the concept could be implemented and what its feasibility would be, led by the investment fund and the state government in collaboration with a team of academic consultants from the Netherlands, supported by Dutch technology providers, the embassy of the Netherlands and a Dutch government agency.
The introduction of the MFC concept was used by the core group of Mexican and Dutch actors to align the sense of urgency and the ambition for change among Mexican stakeholders. In workshops and during site visits to local companies, a shared vision and mission were created (Van Mansfeld, Smeets, Zwartkruis, & Bruinsma, 2011). As such, significant knowledge was developed to enable ‘leapfrogging’ with the help of business investments. To advance this shared vision, feasibility studies were conducted to explore the level of interest among private parties and possible opportunities for increased resource use efficiency through clustering. The studies encouraged entrepreneurs to explore opportunities that arose from the use of advanced technologies in their own companies, and to discuss possibilities for business-to-business collaboration. Consequently, the technological innovations proposed in the cluster went far beyond the concept itself and stretched deeply into the dynamics of individual companies and value chains.

Following the feasibility studies, first drafts of a conceptual master plan for an MFC were created, including a vision on state-wide developments and the designation of zones for the development of key MFC components, including agroparks, consolidation centres and rural transformation centres (see Smeets, 2011). The conceptual master plan was again the result of an interactive process of stakeholder involvement, mainly through workshops. To enhance inspiration and to develop a shared understanding, site visits were organized for Mexican stakeholders to examine good practices in the Netherlands (Van Mansfeld et al., 2011). This knowledge exchange promoted the local embedding of both substantive (on sustainability innovations and business opportunities) and significant knowledge (the MFC vision for the Mexican food cluster). This fostered a mutual understanding of strategic needs. One of the key outcomes was that, in the Mexican context, agribusiness companies, the state government and academics were brought together, which traditionally keep a distance from each other. Moreover, efforts were made to establish business-to-business, government-to-government and university-to-university connections between Mexico and the Netherlands.

However, the initial momentum of mutual understanding, exchange and vision did not hold. A temporary standstill occurred as a result of a one-year ‘halt’, in which the government was acquiring land for the project in one of the areas indicated in the feasibility study. This resulted in the appropriation of 280 ha from 250 landowners, done in secrecy to prevent the risk of land speculation. Moreover, the government wanted to set up the MFC in public-private partnership (PPP), and that required much time and effort, because the state government was only allowed to participate in PPP through a so-called ‘special purpose vehicle’. Moreover, the state government was only entitled to hold the newly acquired land rights for a year, after which they had to be transferred to a private party, which put major pressure on the process.

Feeding the significant knowledge into institutional and policy redesign

The delay and associated troubles had a serious impact. Many entrepreneurs participating in the vision left the process because the project did not meet their own timelines. Newly interested entrepreneurs and new stakeholders came in, but these tended to bring in their own agenda. Attention shifted form innovation and sustainability towards profitability. Moreover, because of the increasing role of local context, notably regulatory issues, the project assistance was transferred from the Dutch academic consultants to a local engineering firm primarily focusing on the construction of the agri-business park.
Consequently, the project continued largely on the basis of substantive knowledge, while previously accumulated significant knowledge was no longer shared among all participants.

However, not all was lost. Some knowledge reached out when the MFC approach became adopted in the national policy context. In collaboration with the federal government, the investment fund also applied the developed approach in the states of Nayarit and Chiapas. Meanwhile, the federal government embraced MFCs as a corner stone of its national food policy by designating a ‘National System of Agroparks’. This framework heavily built on substantive knowledge and selection criteria and did not include the significant knowledge that was developed in the Aguascalientes project. In Aguascalientes itself, the conceptual generic master plan was finalized in 2014, providing the stakeholders with the framework for the future implementation of the MFC vision. At present, the actual implementation in Aguascalientes is yet to happen, but concrete steps have been made, such as the acquisition of land and the transfer of the land to an established special purpose vehicle.

**Greenport Nellore**

**The mission**

Although the majority of all inhabitants of the Republic of India are dependent on agriculture to make a living, its contribution to GDP is much lower and steadily decreasing. While India is an agricultural exporter, the country also remains very dependent on imports of processed food. Caused by fragmented land ownership, a large percentage of perishable produce ending up as waste, outdated logistical and processing infrastructure and the little value that is added to the produce. Agriculture is also causing high environmental pressures, for instance by using pesticides and by depleting water sources.

Key actors from government and businesses in the south of India concluded in 2007 that there was sufficient potential to improve conditions in agribusiness (Smeets, 2011). The State of Andhra Pradesh hosts relatively high-productive farms with opportunities to increase productivity and sustainability. Moreover, some of these firms add value by processing food commodities and exporting them. The Indian Farmer Fertilizer Co-Operative (IFFCO) had approval of the state to develop a site of 2,800 acres of land near the city of Nellore. Plans were developed to establish an agricultural special economic zone (SEZ) there to enable the development of a modern, export-oriented agriculture. The Metropolitan Food Cluster (MFC) concept was adopted as a promising concept for the SEZ and for meeting the regional ambition to push the competitiveness of the Indian agribusiness industry and to improve conditions for smallholders.

**Engaging in knowledge activities**

From 2008 onwards, a series of projects started that would lead to a generic masterplan for ‘Greenport Nellore’. Next to Indian actors these projects included academics, consultants and entrepreneurs, mostly from the Netherlands. The Dutch embassy supported the collaboration and the Dutch innovation programme TransForum enabled a close monitoring of the cluster development. First, a partnership was sought with a private infrastructure developer interested in developing food-based business parks. This collaboration was
not formalized, however, because it was deemed too sensitive for a private firm to benefit from land owned by local farmers.

The Greenport Nellore initiative started with the exploration of the MFC concept as a viable proposition under local conditions and context. This also included the addition of novel elements to the concept, such as Rural Transformation Centres that would function as satellites to the agropark. Meetings were held with private and public actors who were keen to pursue change of the agribusiness sector through adopting the MFC concept (Gerritsen et al., 2011). Studies were carried out to discover what would be possible and feasible at Nellore and the surrounding area, what would be needed for park management and under what conditions investors could be attracted. To do so, the knowledge on glasshouses from the Netherlands was applied and adjusted to the hot and dry conditions of the South-Indian climate. Entrepreneurs participated in the planning phase exploring business opportunities and elaborating realistic assessments of key estimates such as scale of business operations. Public authorities and societal actors were consulted and informed at the state and national level. Process facilitation techniques, network meetings and joined excursions were used to enable actors to detail and discuss needs and options and share insights with others (Gerritsen et al., 2011). All this had a bearing on the masterplan, which included significant knowledge on the direction agriculture, agribusiness and particularly logistics needed to take and the commercial development strategy for the MFC.

Regular discussions also took place between IFFCO, the project infrastructure developer, and associated consultants and academics. This resulted in decisions on what to include in the MFC and how to develop the land, especially regarding landscaping, water storage and water use. Some differences in understanding remained, especially concerning whether the business activities would be export oriented or serve local demand, and about the importance and content of sustainability.

The result of these activities was a generic masterplan for the agropark and its surrounding rural transformation centres, envisaging dairy and meat production, greenhouses, facilities for dairy cows and chickens, a rice mill, a power plant, processing industry, R&D activities, exhibition facilities, and a residential area (WUR & Yes Bank, 2011). In addition to the master plan, business models were explored, supply and demand analysis was conducted, an education and training strategy was established, and a geographic decision support system was prepared to kick-start the development.

Similar to the previous cases, the project’s fate turned when the generic masterplan was implemented. The implementation was coordinated by a newly establishment business unit of IFFCO, whose employees were less acquainted with the significant knowledge developed so far. The unit hired a local engineering firm to implement the masterplan, with again little knowledge of the previous process. The activities increasingly were directed towards engineering issues, such as designing and building infrastructure, a boundary wall, water storage, etc., and less towards organizational and social innovation issues, such as business models (Gerritsen et al., 2011). Therefore, the focus shifted from significant knowledge towards substantive knowledge directed towards engineering. With the termination of the cooperation with the project infrastructure developer, most know-how on how to develop and manage business parks was lost.

Another issue was that not all stakeholders that had been involved in the initial talks became owners of the mission, while some of the later entrants had had no involvement at all. Although some interaction was established with the Union ministry of commerce,
national government was mostly not connected to the cluster development (Gerritsen et al., 2011). Local IFFCO cooperatives were largely not included in the process. Surrounding villages became increasingly opposed towards the SEZ, which was increasingly framed as a hostile takeover by large enterprises of an area that was previously mostly used by small landowners and livestock farmers.

**Feeding into institutional and policy redesign**

Despite limited reach and growing opposition, Nellore developed a shared mission resulting in the acquisition of resources such as land, funding, political support, a connection to the national highway, and interest from reputed companies and expertise. This allowed a boundary fence to be built around the SEZ area and infrastructure and facilities to be developed. The expectation of many stakeholders was that, with these steps, the agropark would soon become operational. Much pressure was put on quickly delivering concrete results that would directly benefit farmers, as was also stressed by the then prime minister of the state of Andhra Pradesh. Observed by thousands of people, the prime minister showed his support by laying the ceremonial first stone, which made the development instantly politically relevant.

No prompt results were forthcoming, however. IFFCO was prepared to take up the park management and to co-invest, but the actual business activities were left to the initiative of capable firms. Formal letters of intent were acquired and agreements were reached with a few potential first tenants. However, key requirements to start, such as the SEZ status, the availability of electricity and a connection to the railroad were not obtained, and therefore no business case could be established (Gerritsen et al., 2011). Some pilot projects were initiated concerning maize growing, the set-up of farm mechanization facilities and for a large-scale dairy farm at the Greenport Nellore site. Although the Ministry of Commerce approved the plans for an agropark as formulated in the masterplan, in 2013 the SEZ Board rejected the plans, because they concluded that the plans did not conform to the SEZ Act. Thereafter, trust from partners and local stakeholders eroded and actual development is yet to take off.

**Conclusion**

Mission-driven territorial development focusing on sustainability requires modes of governance steering the absorption, development and application of knowledge. This paper argues that such initiatives build on ‘significant knowledge’, locally anchored ‘intelligence’ on how to develop a territory. Analysis should focus, accordingly, on the characteristics and potentials of knowledge-based governance processes in mission-driven territorial development. Our specific goal here was to understand, conceptually and empirically, the challenges sustainable food clusters meet in knowledge development and application. To do so, the paper elaborated a five-step analytical framework, consisting of (1) mission formulation, (2) production and exchange of knowledge in supportive milieus, (3) the embedding of substantive knowledge, (4) the anchoring of significant knowledge, and (5) the feeding of the acquired significant knowledge into the (re) design of institutions and strategies of policy design and implementation. The framework was applied to three cases of sustainability clusters from the food sector: Greenport Venlo, MFC Mexico and Greenport Nellore. The case studies revealed the challenges faced by
sustainability clusters, illustrated how governance and intelligence worked in practice, and how the project evolved from conception to implementation with the help of external experts.

With the analytical framework we could identify crucial issues. The application of the framework illustrated that while initial ambitions were high, the cases revealed serious tensions notably in the phase of implementation, due to vested interests, ideas and habits. It turned out to be difficult in particular, to reach a sufficient alignment and embedding of significant and substantive knowledge. Consequently, contributions and views of important stakeholders were excluded, while projects centred mainly on technical issues rather than the social and institutional aspects of sustainability and economic development missions. Each case illustrates how accumulated significant knowledge became side-lined, and how stakeholder networks changed their constitution. At that stage, most of the available resources were directed at developing substantive knowledge to implement more technical aspects of the vision. The lack of anchoring of significant knowledge caused conflicts and disappointments to emerge blocking further institutional redesign and development. On the positive side, the diminished attention to significant knowledge enabled certain actors to implement specific parts of the mission, such as hosting the Floriade exhibition, building a wall and setting up a special purpose vehicle.

We conclude that harvesting the benefits of knowledge and governance for mission-driven territorial development proves highly challenging. All cases faced the challenge of maintaining anchorage of significant knowledge to conquer major obstacles and to elaborate the vision of the sustainability clusters obstacles in the face of specific local interests and conditions. Even with the help of dedicated experts and methods for handling knowledge and learning, with connections to extra-territorial knowledge, and substantial local support for sustainability, cluster missions are difficult to achieve. The initial anchoring amongst the main strategic actors did not pose a major problem. It is the anchoring of significant knowledge in everyday structures, projects, rules, cultures, and habits of the cluster network that proves difficult. In these networks, cluster visions and initiatives tend to be co-opted by pre-existing skills and orientations, through which they are tactically and opportunistically tweaked. Vital steps such as mobilizing private investments, aligning policies of different government agencies, maintaining a focus on sustainability innovations and forging enduring cluster relations can then become insurmountable hurdles for the implementation of sustainability missions.

In research as well as policy, accordingly, more work needs to be done on how missions can be implemented effectively in highly complex settings in which stakeholder act from perspectives, habits, capabilities, beliefs and ambitions that tend to oppose the implementation of sustainable territorial development missions. We hope the analytical framework developed here can be of use for this.

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