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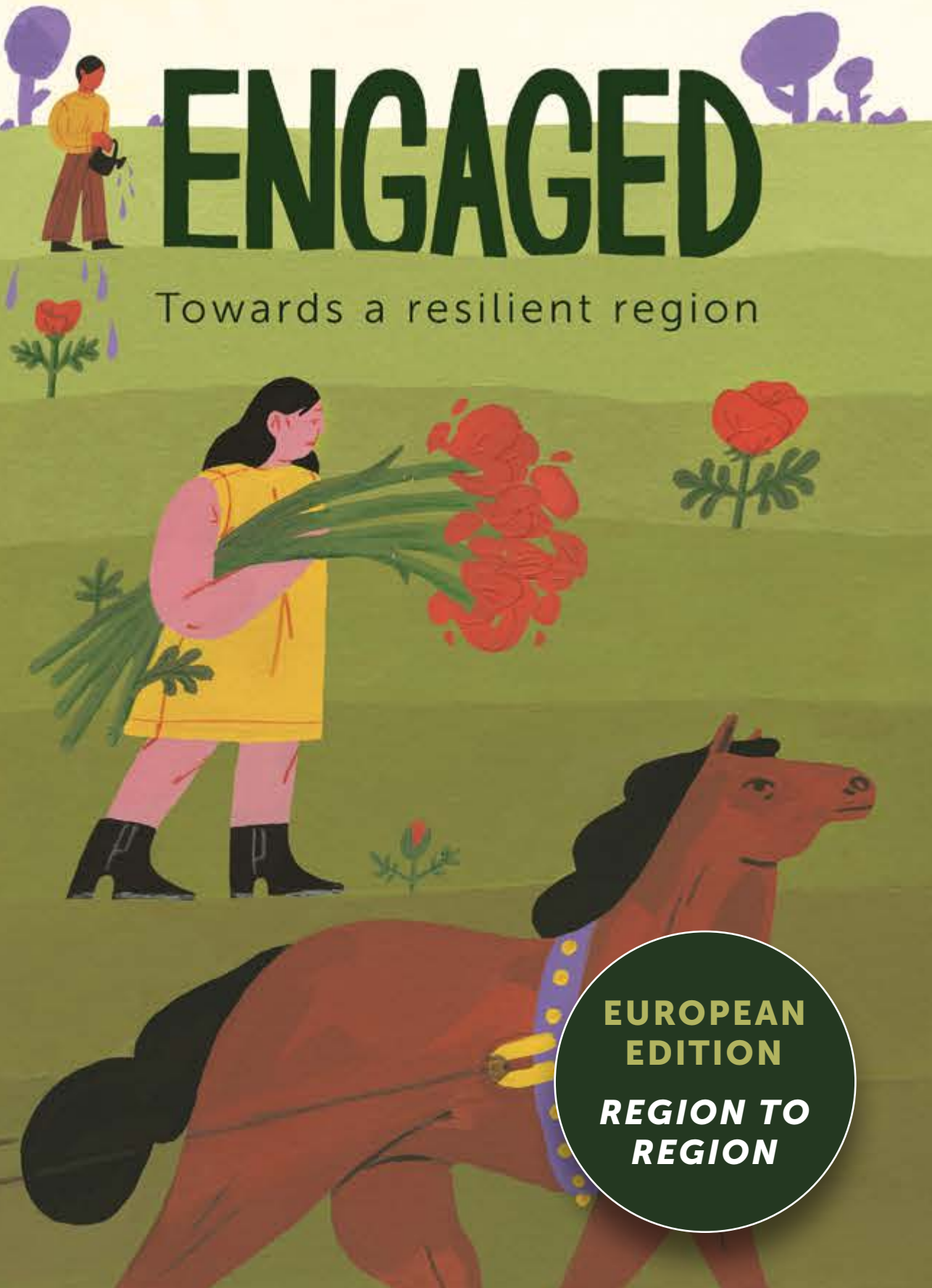
Towards a resilient region



EUROPEAN EDITION

REGION TO REGION

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Towards a Resilient Region

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Towards a Resilient Region

Willem Foorthuis
Anu Manickam
Karel van Berkel
Sabine Lutz

Hanzehogeschool
Marian van Os
Centre of Expertise Ondernemen

Authors: Willem Foorthuis, Anu Manickam, Karel van Berkel, Sabine Lutz
Editorial: Nico van der Sijde, José Eggink
Translations: Alexandra Codreanu, Negin Yarzadeh Dehkordi, Manimohan Manickam
Design & layout: The Creative Hub Groningen - powered by Canon
Cover: Jasmijn ter Stege
Illustrations: Erik Eshuis, InfoGraphics
Printing: MarneVeenstra, Groningen
Publisher: Marian van Os Centre of Expertise Ondernemen, Hanzehogeschool Groningen, 2021
ISBN: 978-90-5303-146-9

Special thanks to Jolanda Hekman

Hanzehogeschool
Marian van Os
Centre of Expertise Ondernemen

> Universities of Applied Sciences are important players in the region. They connect theory and practice, ideas and implementation, research and applications. This makes them a linking pin spanning research and education, business and society. Together with the regional partners, they form the backbone for transitions we need to face. I whole heartedly welcome this regional engagement and wish the partners every success.

- Mark Rutte, Prime Minister of The Netherlands
  Speech given at the first conference of UASNL
  (usnl.eu) October 2020

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FOREWORD

Share your talent. Move the world – is our motto that captures Hanze University of Applied Sciences (Hanze UAS) in a nutshell. In order to realize our ambition to tackle today's pressing challenges, collaborations with our regional partners are important. Regional partners include the business community, civic organisations, policymakers, politicians, fellow educational institutions, etc.

We at Hanze, have many strong bilateral collaborations that are specific to projects and with many different partners in the region. We participate actively in regional initiatives such as the University of the North, the New Energy Coalition and The Accord of Groningen and facilitate or participate in numerous living labs, which aim to foster regional innovation ecosystems focussed on knowledge development and dissemination.

We are on this journey that is still in progress, learning to find ways to successfully transfer lessons learnt from individual projects to ensure lasting impacts on the region and the innovation ecosystem. Prevailing collaborations need to go beyond individual projects on an ad hoc basis; we need to work towards sustained investments for a knowledge-driven regional economy. We intend to work closely with our regional partners in the coming seven years from 2021 to 2027 to enhance our regional innovation ecosystem.

What does this mean for our role as a higher education institution? We need to change – change our curricula and our internal 'architecture' to facilitate innovation. Following the recommendations of the European Commission's Joint Research Centre, we need to encourage and empower our staff and students to connect and develop their networks with SMEs in a sustained manner - to build long-term relationships to create common benefits. To this end, we need to understand current and potential capabilities of staff and students and how we can strengthen their efforts to enhance innovation for SMEs and the region at the institutional level. We also need to create open innovation spaces to host communities working on innovation and to develop new knowledge. There is a need for new knowledge and to have access to institutions of higher education by Small and Medium-sized

Entrepreneurs and local communities in the region. We need to develop new kinds of collaborative relationships urgently to deal with complex societal challenges where businesses, governments, educational institutions and civil society (the quadruple helix) join forces as learning and innovating communities.

Our new Strategic Plan is focussed on developing new collaborations at the global, European, national and local levels and engaging in dialogues about 'grand social challenges'. We have an important role to play – we need to educate current and aspiring professionals to translate new knowledge into applicable, sustainable solutions for such challenges. To realize this, we will offer accredited qualifications with appropriate learning pathways to everyone interested in furthering their professional development; conduct applied research for societal impact and for better curricula; and have an adaptive, resourceful and accessible organization.

A new development is the Regional Innovation Framework (RIF) which aims to generate a structure of continuous and meaningful collaborations that focusses on local and regional challenges that will be identified locally. Developing multidisciplinary and knowledge-based innovations will involve those affected and others with (local) knowledge, expertise and creative solutions. Education and research institutes will play an important role to bring new knowledge and tools to strengthen local developments. The framework provides a place where co-creation and knowledge sharing will be enabled whereby collective learning will be the norm. The RIF will support an ecosystem where young students, employees and local entrepreneurs develop new competences and knowledge in solving practical challenges and makes Lifelong Learning accessible. This new framework of collaboration fits well with Hanze's new 'Engaged University' strategy.

We realize that our region needs to connect to other regions. Based on the regional agenda, links to other regions in Europe or elsewhere in the world are crucial. Hanze UAS has an international network of strategic partners who are also experiencing similar developments and are involved in their regions and supporting developments of regional innovation ecosystems. Connecting to these partners is an opportunity to learn as peers from each other's' experiences in strengthening regional development. The strategic partnership of the Engaged European Universities has also committed to contribute to on-going discourses in EU policy developments in the fields of regional innovation, regional economy and labour markets and the role of universities, particularly of Universities of Applied Sciences.

This book offers a vision of future collaborations between universities and the region in regional innovation ecosystems. The book contains numerous examples from

Hanze to share our experiences and achievements, including various European collaborative projects. And finally, the book ends with a projection of regionally anchored place-based leadership in which partners can work together for more coherent regional development.

I am pleased to share our insights on designing new perspectives that support deeper collaborations and interactions in order to add value to the people living and working in the region.

Annemarie Hannink
Member of the Executive Board, Hanze UAS, Groningen

PREFACE

This book is a plea for strengthening regions through new forms of collaborating and organizing. We are in the middle of major transitions in our regions, as nations and globally, in many areas that impact our daily lives directly or indirectly. We have been witnessing these shifts for quite some time but the signs are more discernible now. Increasingly, more and concrete ways are emerging to shape these transitions.

Contributing to transitions

There are new prospects for a more inclusive regional economy. New economic clusters, regional innovation strategies and ecosystems for new entrepreneurship are emerging. Parallel to this, there is greater appreciation for the regional approach. It is interesting to be in the middle of these developments and see it unfold. Better yet, it is possible for everyone to contribute to the process.

The northern region has always been focussed on developing, retaining and sharing talent, working together as entrepreneurs, knowledge institutions and governments (the *triple helix*). Recently, the importance of citizens has been increasingly recognized and therefore we now speak of the *quadruple helix*.

The growing collaboration with the region and in the region is what we call ENGAGED. We explore the contexts of economics, policy and public administration and higher education in three chapters. The final chapter brings it all together: partners from business, civil society, government and knowledge institutions in a joint movement towards an ENGAGED region.

Finally, the book zooms in on a process that we are witnessing and engaged in - *learning by doing* at its best. In the Northern Netherlands, specifically in the 'Stadland Groningen-Assen' area, governments, businesses, knowledge institutes and civic institutions initiated a transition from ad hoc partnerships and joint projects to structured collaborations through trial and error. They seek a model that allows them to work together as equal partners for regional innovation and development that is financially viable.

Stadland Groningen-Assen
A glossary is provided that explains this and other concepts used in this book.

Innovation ecosystems

The main idea of innovation ecosystems is that not only are the partnerships changing, but also the character and quality of their collaboration. The partners move from a competitive to a collaborative economy together in which they create new value chains that are cross-boundary but also innovative connections. A shared regional agenda will support and shape such changes. Technological and social innovations result in new business models. Together, these processes contribute to the formation of a regional innovation ecosystem.

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A new form of structured cooperation with new tasks and responsibilities is described in this book. With an equal footing, knowledge institutions, businesses, governments and citizens work together on innovation and functioning from their current roles, interests and expertise. The core of this new approach lies in building a regional ecosystem together through a common strategic agenda and a platform (working structure) for knowledge creation and dissemination, research and innovation, programmes and projects.

Although the region is the realm of operations, the context is the world, Europe and the Netherlands. The book zooms in and out: introduces new theories on social and economic development in complex settings; cites advocates of a more inclusive (social and ecological) economy; and describes practical examples and experiments that aim to make the region more resilient and future-proof.

The ultimate goal is a whole new ecosystem in which societal challenges are no longer addressed from different viewpoints in isolation but in which partners work together, each with their own expertise and contribution, to find the best possible approach.

The book describes how such an ecosystem can be realized through the example of the Northern Netherlands' innovation workplaces, *gebiedscoöperaties* (place-based cooperatives) and the umbrella organization, the regional cooperative. We describe the positions, roles and responsibilities of relevant stakeholders and the chosen approach and the evolving processes.

It is an on-going process and still in development. But the process has begun. And the story is still unravelling.

August 2021
Willem Foorthuis, Anu Manickam, Karel van Berkel, Sabine Lutz

READER GUIDE

The book consists of four chapters and a special middle section.

The first chapter focuses on the transition to the 'next economy'.

- The first section describes new paradigms that mark the emergence of an inclusive regional economy. The concepts of paradigms and paradigm shifts are described, followed by an outline of the Anglo-Saxon neo-liberal models. Following this, new insights and some practical aspects of economic clusters, regional innovation systems, smart specialisation strategies, entrepreneurship ecosystems, inclusive and social entrepreneurship and collaborative and cooperative economies are described.
- The second section looks at the link between the regional and the global. Regions face global developments and form interregional partnerships to learn from each other. The section ends with a brief introduction to the principles of the 'Donut Economy' and the 'Purpose Economy' and their impact on global and regional networks.
- The third section deals with European vision, policies and regulations in relation to regional development. Key aspects of EU's latest policy guidelines and programmes are described. These include the *Green Deal*, priorities of the new regional and cohesion policy and the new industrial strategy. Finally, mission-driven policymaking is presented as a framework for delivering targeted, joint efforts that can help solve major social challenges. The section ends with an outline of the European science policy.

The second chapter is dedicated to 'next governance'.

- The first section briefly described the development of the cooperative as a business form, from its roots in the farmers' markets 800 years ago, through the first cooperatives in mid-18th century England, the cooperative shops in the first half of the 19th century and the cooperative credit unions of the same era. After a period of waning interest some hundred years later, there is renewed interest accompanied by a renewal of the cooperative idea. It is described that not only the subjects, but also the goals, members and governance of the cooperative are subject to new cooperative business models.

- The second section focusses on understanding complexity, complex problems and possible ways of tackling such problems. The concept of an ecosystem is explained as part of a regional approach. Similarly, the Cluster Emergence Model is presented. This model captures system dynamics, including influences from outside to inside and inside to outside in place-based developments. The model highlights innovation potential of creating unique combinations of people, resources and capabilities, and therefore the potential for system innovations.
- The final section that specifically addresses the lessons from commons, clusters and cooperatives for the formation of regional ecosystems. It describes how and why local structures and communities weaken but that it can lead to new decentralised initiatives, which can, however, easily disappear again if structural embedding is lacking. Next, the formation of a regional innovative ecosystem is discussed. Three examples are given: the commons, economic clusters and gebiedscoöperaties (place-based cooperatives). Finally, the most important conditions and principles for innovative entrepreneurship and governance are discussed.

The third chapter is about 'next education'.

- The first section presents a knowledge network from the beginning of the 20th century: the Dutch OVO Triangle of education, information provision and research. It was an approach initiated by the then Ministry of Agriculture. Ultimately, an infrastructure was established that, in a continuous process, raised the level of knowledge, innovative capacity and cooperation among agricultural entrepreneurs to become world class.
- The second section zooms in on the Innovation Workplaces: the concept through which Hanze UAS gives shape to flexible, regionally anchored and internationally positioned education and research. Responding to the circumstances in the Northern Netherlands, Hanze UAS developed these innovation spaces. Innovation Workplaces function as learning communities with partners from the regional quadruple helix. The section provides insights into how these innovation spaces are embedded in the curriculum. This offers a glimpse of how Hanze could fulfil its ambitions of becoming an engaged university.
- The final section outlines the vision of collaboration between the region and Hanze UAS for the next five years, specifically for the Centre of Expertise Entrepreneurship to create an entrepreneurial ecosystem. This could offer insights and inspiration for other HEIs to start similar processes to take concrete steps to operationalize entrepreneurial ecosystems in the region.

The final chapter brings the building blocks of next economy, next governance and next education together to form an ENGAGED regional knowledge ecosystem: the structural cooperation of the partners in the regional quadruple helix to achieve welfare and prosperity in their region.

- In the first section, the development of a regional knowledge ecosystem is described on the basis of concepts from the Complex Adaptive Systems theory. Seven ingredients are important to support the formation of a regional knowledge ecosystem: the context; the connections between different system levels; making use of differences; the players; the process of collective sense-making; and discovering new patterns. Finally, the models of *Gebiedscoöperatie* and *Regiocoöperatie* are described as concrete components of a regional knowledge ecosystem based on developments in the Northern Netherlands.
- The second section shows how players in the *Stadland Groningen-Assen* have begun this process 'in situ'. How did they define their regional knowledge ecosystem, what experiences do they draw on, what steps have they already taken on the road to an ENGAGED region, and what approaches do they envisage for the future? The section concludes with the ENGAGED Manifesto, in which the partners of the quadruple helix of the region set out their shared ambitions and steps.
- The last section describes new developments on *region to region* collaborations that builds innovation ecosystems across regional borders.

A middle section comprises a colourful palette of practical cases and examples. It is a kaleidoscope of stories that show how the region and the various knowledge centres and professorships of the Hanze UAS currently work together, how they inspire each other and what results this can lead to.

A separate section on Hanze's European linkages reflects the need to be more visible and offer complementary perspectives on regional and societal challenges and recommendations for new research and innovation pathways. Similarly, participating in interregional projects reflect the importance of learning and innovating jointly with other regions to gain synergies and to have greater impact. Engaged is also key in the selection of projects and networks presented in this section.

A glossary, list of abbreviations and a list of contributors with thanks has been included at the end of the book.

Transition towards 'next economy' is at the core of this chapter.

The first section describes new paradigms that mark the rise of inclusive regional economies. The terms 'paradigm' and 'paradigm shifts' are explained followed by a description of Anglo-Saxon neoliberal models. New insights and practical aspects on economic clusters, regional innovation systems, smart specialization strategies and ecosystems for enterprises, social entrepreneurship, and collaborative and cooperative economies.

The second section explores the relation between regions and global developments. Regions have to deal with global developments and forge international partnerships to learn from each other. The section ends with a brief look at the 'Doughnut Economy' and the 'Purpose Economy' and their implications for global and regional networks.

The third section looks at European vision, policy and regulations framing regional development. At the time of publication, the European Parliament, the European Council and the European Commission agreed on the new European multiannual financial framework for 2021-2027. Policies that are examined are the *Green Deal*, priorities of the regional and cohesion policy and the new industrial strategy. Other areas that are examined are mission-driven policy to frame focussed, collective initiatives to tackle urgent societal challenges. The section ends with a sketch of EU scientific policies and instruments.

1

Transitions in regional economy - towards next economy

1.1 THE PARADIGM SHIFT: EMERGENCE OF AN INCLUSIVE REGIONAL ECONOMY

INTRODUCTION

The fragility of the neoliberal economic paradigm is increasingly unfolding in both public and academic discourse. Economic growth and the pursuit of maximum profit are key to this perspective. However, an increasing number of policy makers and scientists are critical that too little consideration is given to negative economic, social and ecological consequences. In addition, abstract economic macro models based on such premises have proven inadequate in interpreting and predicting micro developments and correlations in local contexts. As a result, experimentation with new, more inclusive economic paradigms abound. A recent illustration of this is the Nobel Prize in Economics awarded to Abhijit Banerjee, Esther Duflo and Michael Kremer. They demonstrated that it is not the macro models and the policy based on these models that can lead to effective interventions, but rather controlled field experiments in which participants make choices in their normal daily environment. Their work has transformed the fight against global poverty in a very short time. (The Committee for the Prize in Economic Sciences, 2019).

In the next part, we briefly discuss the concepts of paradigm and paradigm shift. Afterwards, the Anglo-Saxon neoliberal paradigm, which has dominated policy in many countries since the 1980s with its impact on daily life around the world, is described. Next, several new policy and scientific insights and practical elaborations are described that could form the basis for a new socio-economic and ecological paradigm:

a paradigm that takes local circumstances and regional differences into consideration.

PARADIGM AND PARADIGM SHIFT

In the social sciences, the concept of paradigm is usually defined as "deeply rooted ideas shared by many people in a particular period and cultural context about how the world works" (Hutchin, 2012, p. 124). Social institutions such as schools, educators, churches, governments, scientific publications, leaders, media and social networks contribute, consciously or unconsciously, to the creation and maintenance of a paradigm. Procedures, processes, structures, systems and laws are developed based on a shared world view, which in turn shapes social cohesion. Paradigm shifts are therefore not easy to accomplish. Initially, it was thought that a (political) paradigm shift could only be achieved through external events that were completely contrary to the existing beliefs (Hal, 1993, p. 291). However, major crises such as the global financial crisis of 2007-2008, the Euro crisis of 2010, the climate crisis, the energy crisis, and possibly also the coronavirus crisis, may not immediately lead to paradigm shifts. Instead, paradigms evolve over time. The way in which crises develop is often a power struggle between gatekeepers of the current paradigm and advocates of new ideas; this power struggle results in the adaptation of the paradigm towards the new reality (Carstensen & Matthijs, 2018). Dominant perceptions of reality need to be adapted because drawbacks of prevailing assumptions become visible. This leads to a growing receptiveness for renewed and more appealing paradigms that can solve existing problems. And yet, a paradigm shift is not self-evident even at this stage since governing institutions are committed to prevailing paradigms and conventional structures. Many of them will initially resist emerging ideas and try to safeguard existing systems through various 'quick fixes'. This process continues until disadvantages can no longer be ignored; and a crisis threatens as people increasingly realize that they need to change. 'Influencers' with new narratives inspire people open to new ideas which can lead to awareness in larger groups through the snowball effect. This, in turn, eventually leads

to new ways of thinking, which in turn, leads to adaptations of the existing paradigm. Our awareness that the earth revolves around the sun instead of the sun around the earth also worked in this way. Similar processes are reflected in energy transition developments and notions related to economic success. How we organize and structure our world is highly influenced by paradigms – they determine which goals, structures, rules and measurement indicators are highly valued in society and therefore shape our reality.

A change in paradigm results in dramatic changes for our way of life and societal structures. Deliberately changing paradigms is not simple as described earlier. Nonetheless, interventions in dominant societal paradigm is one of the most effective ways to realize system transformations (Meadows, 1999).

Below we first describe the neoliberal paradigm and then the various developments that show that our world view is shifting.

THE NEOLIBERAL PARADIGM

The neoliberal paradigm has had its heyday since the 1980s. It is characterised by a focus on growth, efficiency and profits of competing companies, and on free trade on a global scale. Other features include low tax burden, deregulation, privatization, retreating governments and globalization. In the 1980s, Margaret Thatcher of Great Britain and Ronald Reagan of the United States were important advocates of neoliberal thinking. Neoliberalism has also had major impacts in other Western nations since especially since 1990s. The market economy became much more important as well as retreating governments, resulting in a wave of privatizations of banks and companies, less government regulations and greater scope for market forces (WRR, 2012).

However, shortcomings of neoliberalism have become apparent, and these are illustrated in the following:

- The worldwide recession of 2008 led to economic and financial crises and the Euro crisis. The crises were a result of the increasing gap between growing profits for companies and lagging wages for employees; the speculative financial markets; and the crashing of the US housing bubble and stock markets (Kotz, 2015 (a), 2016).
- The weakening of employees' legal rights, terms of employment and working conditions; increasing bankruptcies; and incidents of self-enrichment and fraud in privatized institutions (WRR, 2012).
- In search of maximizing profits, companies massively moved production to cheaper locations. The concept of 'low-wage countries' emerged. As a consequence, relocation of low-skilled work led to unemployment of low-skilled workers in the home country. In addition, no consideration was given to undesirable working conditions arising in low-wage countries (Piketty, 2015).
- Globalisation infringes on existing structures of regional and national economies. Currently, value chains are built worldwide: capital, goods and services, knowledge, technology and relationships are amassed from everywhere. Regions are less autonomous and dependent on what is happening elsewhere in the world (Kotz, 2015 (a).
- Multinationals have become increasingly influential whilst SMEs, employees and consumers are left behind (De Loecker & Eeckhout, 2017). To illustrate, income gaps have been growing between top management and employees (Wolfe, 2019). Corporations like Google, Facebook and Amazon are more powerful than many countries and are increasingly determining the flow of information.
- The Corona pandemic crisis of 2020 reflects many of the weaknesses of globalisation and neoliberal thinking. Global value chains were disrupted resulting in shortage of essential supplies. This applies not only to the health sector, but also to a wide range of industries like the automotive and mobile phone industries. Borders were closed, with impacts on trade affecting ports and shipping companies, airports and airlines, and the logistics sector as a

whole. In addition, many sectors have been affected with SMEs, self-employed and contract-based workers suffering the brunt of it, often with limited or no financial buffers. Governments have had to intervene to alleviate social and economic distress as the markets failed.

- Focus on short-term profits neglects long-term social and ecological effects. Higher CO_2 emissions from production and transport are not considered even as social impacts on local communities due to pollution, low-wages, etc.

These examples reflect new challenges particularly in lagging regions and their local communities: existing social structures are infringed; reduction of business establishments; increase in unemployment; migration of highly educated youth to successful and thriving regions; the elderly and the less educated are left behind; poverty is on the rise; and social and cultural facilities are disappearing.

The dominant neoliberal paradigm has resulted in interconnected system failures (Van Berkel & Manickam, 2019). Such interrelated problems are called 'Wicked Problems' (Rittel & Webber, 1973; Battie, 2008) and demand a paradigm shift. New scholars and advocates with new economic and political paradigms have been emerging, and we highlight a few.

Kate Raworth, a renowned scholar of a new economic paradigm, Doughnut Economics, postulates that economic growth ultimately leads to an ecological disaster and to increasing inequality between people (Raworth, 2017). She argues for a regenerative, circular economy, to counteract the depletion of natural resources and of earth itself; to not exceed ecological thresholds; and to embrace an inclusive social economy providing basic human needs such as water, food and (green) energy. The doughnut is the space between the ecological ceiling and a just social foundation.

Greta Thunberg is another example who is able to mobilize masses and influence narratives of world leaders on climate change. Other examples are: the 'yellow vest' movement that started in France; the Dutch farmers' protest with their

tractors; and youth protesters on democracy in Hong Kong. Jacquelien van Stekelenburg (NRC, 25 October 2019) made an interesting observation on an emerging pattern of mass protests across the world that signals the weakening of current dominant paradigms.

NEW ECONOMIC THINKING

The growing realization that things need to change and that alternatives exist is elaborated through several concrete developments and concepts. What is clear is that such developments are moving in the same direction and these reflect:

- Regionalism, upholding regions as critical entities, is taking centre stage as a result of the growing negative impacts of globalization. Regional scientists describe how regions form unique ecosystems that offer opportunities for sustainable social, economic and cultural developments.
- New principles of collaborations, democracy and self-organization offer new perspectives. Local and regional stakeholders join forces as partners actively participating and influencing developments. Stakeholders include citizens, businesses, social and educational institutions and local governments.
- Inclusive perspectives, sensitive to integrity of the environment, climate impacts, social and cultural norms, are increasingly framing business and societal goals, structures and results. This is a contrast to dominant neoliberal notions of money, growth and speed.

The shifting paradigm is discernible in regional collaborations such as clusters and innovation hubs; the emergence of collaborative economies; and the renewed focus on cooperatives. Similarly, new concepts such as innovation and knowledge ecosystems, regional innovation systems and smart regional specialization are also indicators of the shift. The new economic thinking is not only taking place in regions, but also at national, European and global levels as described below.

1. Economic clusters: focus on regions

A first indication of a paradigm shift is to be found in the renewed focus on regional collaborations in economic clusters. Michael Porter was one of the first to question whether global competition and value chains would remove the significance of local and regional economies as a source of competitive advantage. He disclosed that this is not the case, in fact, clusters were on the rise in the developed world. Porter describes clusters as geographical concentrations of interconnected companies, governments, research centres and training institutes that make regions more competitive in a specific area than others (Porter, 1998). Personal ties and commitments to jointly develop knowledge and innovation in these clusters make them more competitive. Porter cites Hollywood and Silicon Valley as examples. His research shows that the success of a company is not only dependent on how things are organised internally, but also on its ability to co-create successful business contexts with others.

The EU report on cluster programmes showed that European policymakers embraced economic clusters as an important driver of better regional, national and international economic cohesion and cooperation (European Observatory for Clusters and Industrial Change, 2019[1]). Clusters are important for innovation, strategic specialisation and offer support to small and medium-sized enterprises, which account for 95% of all business activity. The European cluster policy aims to bring different stakeholders together structurally and so increase SME competitiveness and internationalization capacities. In other parts of the world, cluster developments are also taking on different forms. For example, in Canada and China the focus is on fast-growing and high-tech industries in cluster development; in Israel, R&D knowledge hubs are promoted as are high-tech industries; in Singapore, the social and economic impacts of cluster formation are important; and finally,

1 https://www.clustercollaboration.eu/sites/default/files/eu_initiatives/cluster_programmes_in_europe_and_beyond.pdf

in Mexico, Taiwan, South Korea and Japan, the priority is on more uniform regional development across these countries (European Observatory for Clusters and Industrial Change, 2019). Cluster approaches continue to frame EU political directions as seen in Europe's 2020 strategy, towards smarter, sustainable and inclusive growth (European Commission, 2010) and in its *Green Deal*[2] and the Just Transition Mechanism (European Commission, 2019a).

2. Regional innovation systems

The growing interest in regional innovations is a second development that signals a paradigm shift. The concept of Regional Innovation Systems (RIS) was introduced at approximately the same time as the concept of economic clusters in the 1990s. RIS is defined by Asheim and Gertler (2009) as the institutional infrastructure that stimulates innovation within the production structure of a region. They demonstrated the importance of regions for knowledge development and innovation.

Lundvall (2007) clarified how regions can function as complete systems in which interactions between businesses and universities, supported by regional authorities, result in the generation and application of new knowledge (also, OECD, 2008). Initially, innovation system studies focussed on technology-driven innovations, but after 2000, the links between industry and science were explored to understand how innovation networks emerged (Andersson & Karlsson, 2004) and how they related to the growing interest in clusters as arenas of innovation (Izsák et al., 2013).

The concept of regional innovation systems (RIS) made it clear that business production systems could improve through collaborations with universities for new knowledge and innovation (Asheim & Gertler, 2009; Manickam, 2018). The focus on the transfer and use of knowledge in production processes was a shift from previous primary focus on patents and

2 https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

scientific knowledge development. Furthermore, it became clear that innovation is a social learning process where personal contact, spatial proximity and a common context and language are important; be it producers and users trying to solve problems, or, as is the case in biotech and bioplastics, whereby different scientific and synthetic applications are combined (Asheim & Gertler, 2009).

Philip Cooke (2012) illustrated how universities became important drivers and centres of economic growth poles (Silicon Valley) whereby supportive and stimulating regional government policy is an essential part of this process. This insight is also reflected in EU policy on regional strategies for smart specialisation (S3), as part of the need to improve innovation performance and productivity (EU, 2017) and to develop strategic sectoral and/or technological specialisations (European Observatory for Cluster and Industrial Change, 2019).

3. Smart specialisation

The third development reflecting new economic thinking are policies of the European Union (European Union, 2012) that are about smart, bottom-up specialisation strategies, also known as Regional Innovation Strategy for Smart Specializations (RIS3). These strategies focus on regional economic transformations and are[3]:

- guided by key national/regional priorities in knowledge-based developments, including ICT support measures;
- focussed on developing regional strengths to gain competitive advantage and the potential for excellence;
- focussed on technological and practice-driven innovation and on stimulating private sector investments;
- promoting innovative and experimenting culture that includes stakeholder involvement;
- using evidence-based monitoring and evaluation systems.

3 Adapted from Guide to RIS3 (2012)

In addition, McCann et al. (2014) emphasized the importance of institutional, administrative and economic structures of regions for the implementation of RIS3. On the other hand, Lopes et al. (2018) described that RIS3 represented an abrupt shift in European economic developments as it deliberately handpicks sectors, technologies or areas of knowledge to be nurtured and facilitated.

4. Entrepreneurial ecosystems

The approach of entrepreneurial ecosystems is a fourth development reflecting new economic thinking.

Neoliberal paradigm, in which money, growth and speed are important, created tremendous value and brought about economic growth through principles arising from the industrial revolution era and scientific management methodologies for rational business management. The entrepreneurial ecosystem, however, is based on very different principles. Both approaches, rational management and entrepreneurial ecosystems, are important for improvements and innovation. A comparison of their differences is captured below:

Rational management	**Entrepreneurial ecosystem**
Focus on production and product innovation	Focus on favourable conditions for nurturing growth
Detailed product specification	Unpredictable outcomes
Efficiency first (people, resources, materials)	Seeking synergy (a "good mix" of people, specializations, resources, ideas, motivations, interests)
Process management including monitoring of fixed targets	Emergent processes, adaptive behaviours and experimentation
Zero tolerance for deviation	Space for differences, deviations and 'out-of-the-box'
Blueprints for operations	Spontaneous developments, coincidences and breakthroughs
Predictable outcomes	Surprising and possibly innovative results
Goal: profit = revenues greater than costs	Goal: meaningful evolution

Design principles for economic and ecosystems (Van Berkel & Manickam, n.d.)

Innovation is not about planning or about creative individuals or teams, but about creating an enabling environment for innovation activities (Hwang, 2012). Even as ecosystems can be digital, it is the physical proximity that matters as described earlier in regional innovation systems. In the field of regional economics researchers tried to discover why some clusters are very successful, which led them to study 'entrepreneurial ecosystems', namely, to which environments offer businesses the best opportunities to grow. Isenberg (2011) developed a strategic approach for enabling ecosystems of regional entrepreneurship and they included the following six different elements:

- A culture stimulating entrepreneurship and risk-taking;
- Supportive leadership and policies;
- Availability of financial resources;
- Quality of human capital;
- Market opportunities;
- Quality of support structures: infrastructure, regulatory and legal frameworks, specialists, etc.

Isenberg also suggested that in setting up successful ecosystems (2010), attention must be given to local contexts, involvement of the private sector from the start and giving priority to companies with great potential.

Replicating Silicon Valley is not useful, but the Silicon Valley case is a good illustration of principles for successful ecosystems of entrepreneurship.

Silicon Valley's ecosystem

Silicon Valley is one of the most innovative clusters globally. Businesses in the 'Bay Area' have strong alignments of their innovation and business strategies. Added to this, there is a strong culture of innovation driven by customer needs and expectations. Businesses tend to directly engage with customers to anticipate current and future needs and a drive to fulfil needs and bring innovative products and services to markets. This culture of innovation is fed by a large talent pool, research and investment resources, a willingness to embrace new ideas and networks in their drive to fulfil customer needs. There is pride in their products and

> services coupled with a strong identification with their customers. The strong links to excellent research (Stanford University), networks of other businesses and venture capitalists, and an inherent culture of risk-taking and rewards are also part of the ingredients contributing to the successful and self-sustaining ecosystem of success.
> *(Jaruzelski, Le Merle & Randolph, 2012)*

Every region has its own uniqueness: its history, geography, distinct knowledge-base and economic structures, particular patterns of collaborations amongst stakeholder groups, coincidences and unique events creating new opportunities, etc. These unique elements offer opportunities for regional development and smart specializations.

5. Inclusive economy and social entrepreneurship

The fifth development concerns a shift towards a more 'inclusive economy' with the related notion of social entrepreneurship. Businesses for a long-time were convinced that considerations for safety, health and environment issues incurred costs and consequently reduced profits. That is why working conditions and employee safety were not always a priority. Similarly, businesses do not always feel accountable for discharges and emissions from production processes and other societal impacts. To illustrate: CO_2 emissions; graphite showers from industrial furnaces; the fast fashion industry and its 'ultra-cheap' clothing from sweatshops in Bangladesh; the tobacco industry with its lack of social conscientiousness; the extreme prices of medicines; and the diesel emissions scandal. Long-term health risks and other social and ecological impacts of commercial activity were not considered part of corporate responsibility. Most importantly, many companies failed to realize that economic and social progress also facilitate profitability (Porter & Kramer, 2011).

Commercial activities in an inclusive economy includes considerations that go beyond profits. Making profits can go hand in hand with upholding norms for good health, welfare, job and social security, knowledge development, food and environmental standards, etc. In fact, competitive advantages

can be developed through 'smart solutions' in solving societal challenges like global warming, energy transition, poverty reduction, food security.

Social entrepreneurship goes one step further. Over the years, the definition of social entrepreneurship has broadened. Initially, social entrepreneurs, unlike non-profit organisations, were also focussed on profits.
Perrini & Vurro (2006) explained how it was not only about combining entrepreneurship with social and ecological improvements, but that members and the community were more important than employees or shareholders and investors. Also, social entrepreneurs often used democratic and participatory decision-making processes.
Massetti (2009) explained that many different types of social entrepreneurship exist: profit-oriented companies that offer 'green' or 'fair trade' products have been successful in the market; companies with a social mission such as foundations and museums do not necessarily have to make profits; (ad hoc) companies such as benefit concerts are not focused on profit; companies that are driven by their social mission but also need to make a profit to survive. A good example of the latter is the Triodos Bank (2019) with its mission-driven vision of sustainable agriculture and food productions.

6. The collaborative economy

The sixth indication that the neoliberal paradigm is under attack concerns the emergence of a collaborative economy, also known as the 'sharing economy'. In this economy, consumers share products instead of buying them. Sharing has major advantages: it is cheaper, making collective ownership of quality products more attractive; less resources are used; the impact on the environment is reduced; and more social contact results. Examples of the sharing economy are: the 'Repair Café'; car sharing schemes; borrowing and lending amongst consumers; book exchanging initiatives, etc.

Collaborations and sharing have grown exponentially since the emergence of digital platforms, but the success of their models has also led to large commercial businesses embracing

neoliberal paradigm once again. Airbnb and Uber are examples of such enterprise. The promise of easy, fast and cheap that many corporates in the digital economy profited from has unfortunately brought about major disadvantages that were not taken into account initially. "Every Uber has an Unter" (Scholz, 2016). The fixed jobs and contracts with secure incomes have disappeared. Instead, temporary, freelance work and ad hoc assignments have become the new trend. The trend is also greater income inequality as profits go to shareholders. Furthermore, Internet corporations operate in markets that are not (yet) regulated and regularly sidestep laws: related to the environment, minimum wages, working conditions, rights of employees, etc.

7. The cooperative economy

A seventh indication that the neoliberal paradigm needs to be amended has to do with the growth of the cooperative economy. Cooperatives are also part of the 'collaborative economy'. Cooperatives are about collaboration and sharing. Local Dutch energy cooperatives and the 'Broodfonds' (local networks of freelancers and micro entrepreneurs set up a joint fund as a financial buffer for difficult times). Cooperatives distinguish themselves from other businesses in the sharing economy in that they are driven by values rather than profits only. There is no shareholder ownership. They are managed by members to achieve shared economic, social and cultural aspirations. Membership is voluntary and cooperatives are democratically controlled. The significance and share of cooperatives in the economy should not be underestimated. At least 12% of the world's working population are working in one of the three million cooperatives, which account for 10 percent of all workers (website International Co-operative Alliance, 2020). In Europe, 160,000 companies in a wide range of sectors are operating on a cooperative basis (website Cooperatives Europe, 2020). Cooperatives cover all sectors of the economy: Rabo Bank and Groupe Crédit Agricole from the financial sector; Univé, a Dutch cooperative insurance company; Friesland Campina and Gujarat Milk, from agricultural sector; The Scottish Shellfish, from the fisheries; Co-op and Leclerc are supermarkets; Mid-Wales Housing Association, real estate

sector; Be Caring Together, from the healthcare sector; and Grunneger Power, from the energy sector. Cooperatives are a response to the excesses of neoliberalism and companies that work as profit machines for shareholders.

There are two emerging forms of cooperative undertakings that are included here: platform cooperatives and place-based cooperatives. Platform cooperatives are digital platforms designed to provide products and services using cooperative principles. These platforms are collectively owned and managed by all who create, participate and depend on their activities (Sutton 2016). These platform cooperatives were a response to digital platforms such as Uber, Facebook, Amazon and Airbnb that had grown into profit machines with little regard for the social conditions and rights of those who do the actual work. Scholz (2016) advocates the introduction of transparent principles for 'platform cooperativism'. He proposes that digital platforms should be owned by cooperatives and that workers should have guarantees of income and fair wages. He also encourages transparency in the use of data. Borkin (2019) sees platform cooperatives as a good alternative to platform capitalism with its profit and exploitation practices.

Another unique cooperative model emerging is the place-based cooperative. The best-known example is Mondragon (website Mondragon corporation). In the Netherlands, an example of a place-based cooperation is 'Gebiedscoöperatie Westerkwartier' (website Gebiedscoöperatie Westerkwartier). Place-based cooperatives as the name suggests are not sector-specific but are focussed on a local area or region. Place-based cooperatives are characterised in their approach to economic development that is at odds with that of the neoliberal economy. In place-based cooperatives, various elements of the new economic paradigm, as outlined above, are manifest. Participants own and manage these cooperatives that are focussed on economic, social and ecological developments of their local region.

CONCLUSIONS

The neoliberal paradigm is still dominant: it is manifest in extensive global value chains and rapid and uncontrolled growth of Internet corporates. Many local economies have been ruined, ecological systems degraded, and increased numbers made vulnerable and dependent through their exploitive corporate practices. However, criticisms and critical voices are growing. Alternative perspectives are receiving greater political support at regional, national and European levels. Governments, businesses, individuals and academics are turning increasingly to alternative ideas about economic development and progress. New business perspectives are translated into policy and practice; these included economic clustering and development of regional innovation systems through smart specialisation; creating ecosystems for entrepreneurship; the pursuit of inclusive economies and social entrepreneurship; and, the rise of a social economic paradigms in the renewed bourgeoning of cooperatives.

Key characteristics capturing new social, economic and ecological approaches and practices:

- The importance given to regional economics whereby local history and geography are acknowledged as opportunities for regional growth through: existing knowledge and skills renewed into new knowledge infrastructures; new arrangements of collaboration and smart and competitive specializations for the region; and new clustering and partnerships for business developments and creating new regional value chains.
- The importance of deeper regional collaborations between stakeholders: businesses, governments, research and educational institutions and civil society.
- The importance of supportive regional ecosystems for entrepreneurships is equally important as facilitating support to individual businesses.
- An inclusive economy that assumes societal and ecological challenges are embraced by businesses.
- A circular economy of no waste and a social economy where everyone has a place.

- All forms of social entrepreneurship, socially driven or market driven, profit-driven or non-profit, are desirable.
- To mitigate monopoly of power, knowledge, information and wealth by large corporations or players, bottom-up democratic collaborations and cooperatives emerge.

1.2 REGIONS AND GLOBAL DEVELOPMENTS

Regions, nations and Europe are all subject to global incidences and developments. The COVID-19 pandemic is a reflection of this - all continents, nations and regions have been affected. The effects may have been the same in different places, but they were felt everywhere and affected all aspects of society: work, social and cultural aspects, health systems, economies at all levels, politics, etc. The same applies to many complex societal challenges and captured by the Sustainable Development Goals (2015-2030), (SGDs), of the UN. The wide range of global problems cannot be solved by individual regions or nations, nor can they be ignored by anyone. They affect all regions and nations.

The last goal described in the manifest, "strengthening the global partnership to achieve goals', is about working together based on common interests. This may perhaps be also the biggest and most important challenge of the SGDs. In the COVID-19 crisis, numerous examples of putting personal interests first and a lack of working together were prevalent: the USA's decision to withhold its membership and contributions from the World Health Organisation (WHO); delayed, inadequate or inaccurate information shared on COVID-19 developments in some countries; and, the fight for supplies, be it medical equipment, vaccinations or toilet paper.

End poverty in all its forms everywhere	Reduce inequality within and among countries
End hunger, achieve food security and improved nutrition, and promote sustainable agriculture	Make cities and human settlements inclusive, safe, resilient and sustainable
Ensure healthy lives and promote well-being for all at all ages	Ensure sustainable consumption and production patterns
Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Take urgent action to combat climate change and its impacts
Achieve gender equality and empower all women and girls	Conserve and sustainably use the oceans, seas and marine resources for sustainable development
Ensure availability and sustainable management of water and sanitation for all	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
Ensure access to affordable, reliable, sustainable, and modern energy for all	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels
Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Strengthen the means of implementation and revitalize the global partnership for sustainable development
Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	

United Nations' Sustainable Development Goals

In this book, strengthening regional partnerships to achieve common goals is an important theme. The pursuit of individual goals and interests is also commonplace in regional contexts. Businesses, educational and research institutions, public interest agencies like social services, housing corporations, public transport, local authorities, nature conservation agencies, all focus on their own customers or target groups, interests, growth and continued prosperity/livelihood, etc.

based on their core identity and purpose. Common regional challenges are not at the forefront of their priorities. Coherent and joint efforts to pool resources to overcome such challenges, to increase well-being and welfare for all, is unfortunately not common practice.

> "The pandemic (SDG 3) had serious negative knock-on effects on many of the themes addressed in the SDGs, notably the economy, employment, poverty, inequalities. This impact chain illustrates the logic of the global, universal and comprehensive nature of the SDG framework: the interdependency of peoples and interconnectedness of issues require a collective and integral approach: leave no one or any SDG behind."(SDG Netherlands Chairman, Herman Mulder in Financial Investor 6, 2020, p. 48)

Kate Raworth, in her publication, *Doughnut Economy: Seven Ways to Think Like a 21st Century Economist*, offers insights into the need to tackle major challenges in a world where natural and human systems are interconnected. She juxtaposes basic human needs (energy, water, food, health, work, etc.) with that of ecological thresholds of our planet (climate, acidification of the sea, pollution, biodiversity, etc.). Also, how we need to move towards a more social economy within a finite world. Raworth argues for a new approach on three key fronts:

- Attention to the interconnected social, ecological and economic dimensions of sustainable development.
- A reorientation of the concepts of 'economics' and 'growth'; social and ecological effects should no longer be seen as external factors but need to become integral to economic activities.
- Gross national product is no longer sufficient or appropriate as the only criterion of measuring progress; it can no longer only be about money; it needs to be about social well-being and the planet.

Raworth is not alone in this. Michael Porter is one of the initiators of the 'Social Progress Imperative (SPI). This index ranks countries (163 countries are represented) based on the extent to which social and ecological needs of their citizens are met. For example, The Netherlands stands 10th in the ranking.

There is a growth of indices based on non-economic measures to record progress. Examples are: The Social Progress Index, Gross National Happiness index (Bhutan), The Happy Planet, OECD's Better Life Index, Gender-related Development Index, Where to be Born Index, The Human Capital Index, The Good Country Index, The Human Development Index, The Satisfaction of Life Index, etc.

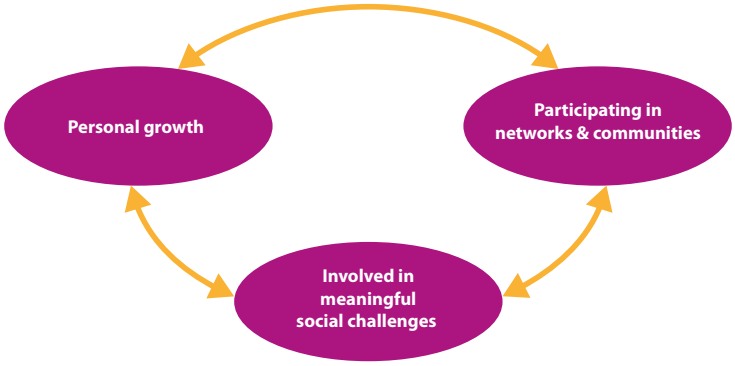
Regional development is no different and needs to acknowledge the need to take social welfare and ecological boundaries into account. In order to achieve this, there needs to be a regional perspective rather than one based on individual interests. In Raworth's 'social' economy, affordable food for everyone could be achieved if everyone to do with food in a specific region, the supermarkets, farmers, food processing industries, consumers, research institutes, local governments, etc., chose this as a common challenge. Collectively, they could ensure food safety, quality, affordability and security of supply locally whilst providing opportunities to develop local economies. Currently, most food production and consumption are focussed on global value chains and maximizing profits.

Another example also related to global developments is the threat of unemployment or shortages of skilled workers (globalization demands higher value-adding and together with digitalization, also new skills; outsourcing and cheaper global productions displaces local jobs, etc). These issues are often tackled locally and too late. In the Dutch context, unemployment is a personal problem for the person themselves and for the local Dutch Employee Insurance Agency, UWV, that encourages the unemployed to find work quickly with some support. At the same time, a shortage of skilled labour, like technicians, health care staff, educators, sees competition between commercial entities and public service institutions. To deal with both challenges, unemployment and shortage of skilled labour, a collective effort by regional stakeholders is needed. Educational and training institutions, businesses, local and regional governments, students, unemployed, start-ups, etc. need to be involved to ensure that recruitment, training and programmes for skills, expertise and knowledge and business

development are aligned to the needs of the labour market. There are many examples in the areas of 'healthy aging' and 'energy transition' in the Northern Netherlands where significant progress has been made through a regional approach.

The 'Purpose Economy' (Aron Hurst, 2014), offers an interesting perspective for regional development in a globalized world. Hurst showed that self-development, personal networks and social engagement go hand in hand, not as separate activities, but as connected and reinforcing developments.

In recent years, many companies have come to realize that employees enjoy doing meaningful work, and also that they are more productive when working with others to generate new ideas that lead to new products and services which have social impact. Businesses have also learnt that consumers are more satisfied when buying products that are certified to come from fair and safe production. The 'purpose economy' goes beyond fair and just trade practices for profit even as there are businesses who have fair trade certification to attract customers (compare 'green washing' practices of companies who go 'green' to gain market share and profits). However, the 'purpose economy' is about a different approach to life: it is about leading meaningful lives and working with others for a better world.



Purpose Economy in a Wicked World (Van Berkel & Manickam, n.d.)

In dealing with societal challenges, in the purpose economy approach, there is a need for collective actions in which regional networks make it possible for players (persons or organisations) to tackle larger issues together.

1.3 EUROPE AS A CONTEXT FOR THE REGION

European regions are shaped by European visions, policies and regulations and its ambitions. It chooses to be a front-runner in creating democratic, sustainable and inclusive societies both within and outside of Europe. Consequently, European policy is also very much focussed on regional policy

Regional policy is EU's most important investment policy

To deal with the economic and social impacts of the COVID pandemic, the European Commission presented a recovery plan for Europe in May 2020: *Next Generation EU*. In the State of the Union speech, Von der Leyen, President of the European Commission, explained how the *Next Generation EU* will design a 'green, digital and more resilient' Europe. A key message was that accelerating innovation and solutions for major societal challenges and a sustainable future required cooperation and cohesion strategies within the internal market.

The European Commission's new strategic agenda for 2019-2024[4] includes:

- **A European *Green Deal*** – climate-neutral and resource-efficient
- **A Europe fit for the digital age** – digital strategies and new technologies that empower people
- **An economy that works for people** – attractive investment environment and growth for quality jobs and supporting small businesses
- **A stronger Europe in the world** – leadership by promoting multilateralism and rule-based governance
- **Promoting a European way of life** – justice and EU core values
- **A new push for European democracy** – giving people a voice and protecting democracy, fighting disinformation and on-line hate

These new priorities extend and reinforce the previous Europe2020 strategy, which aimed to achieve **smart, sustainable and inclusive growth** in the Union.

The new EU priorities provide a framework for the design, implementation and evaluation of all EU policies. Europe has chosen to strengthen its fragmented and diverse innovation and knowledge ecosystems; and to acknowledge that the diverse interests, challenges, approaches, economies and opportunities of member states, regions and populations also offer a rich palette for new, creative solutions. In order to achieve the ambitious *Next Generation EU* plan, the diversity needs to be brought together to gain more synergy and coherence through key policies and policy instruments. Some examples are given below to illustrate.

4 https://ec.europa.eu/info/strategy/priorities-2019-2024_en

European Green Deal

The existential threat of climate change and environmental degradation lies at the core of its *Green Deal* policy. The EU is faced with the challenge of transforming its growth strategy to safeguard a fair and inclusive economy for present and future generations. This shift should lead to more efficient use of resources, a 'clean' and circular economy that aims to restore biodiversity and reduce pollution significantly. Ambitious targets to reduce emissions by 55% by 2030 reflect EU's commitment to lead sustainable developments.

The *Green Deal*[5] is a unifying framework across the Union that demands action from all sectors supported by a European Climate Law and financial and technical support through its Just Transition Mechanism with 100 billion euros for the programming period 2021-2027. The *Green Deal* encompasses a wide domain of policy areas reflecting its comprehensive scope: biodiversity, from farm to fork, sustainable agriculture, clean energy, sustainable industry, construction and renovation, sustainable mobility, elimination of pollution, climate action.

Regional and Cohesion Policy[6]

In the new EU budget 2021-2027, 378.1 billion euros is reserved for the regions in Europe. This is to strengthen regions and their people, embracing diversity and the principle of European solidarity - all regions and people are to share its prosperity and be able to survive deep crises such as those of 2008 and 2020.

5 https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en
6 https://ec.europa.eu/regional_policy/en/2021_2027/

The new Regional Development and Cohesion Policy Framework has 5 priority areas with 65-85% of the budget reserved for priority 1 and 2.

1. **Smarter Europe** – innovation, digitisation, economic transformation and support for SMEs
2. **Greener, carbon-free Europe** – implementing the Paris Agreement, investing in energy transition, renewables and the fight against climate change
3. **More connected Europe** – strategic transport and digital infrastructure
4. **More social Europe** – upholding the European Pillar of Social Rights, support for quality employment, education, skills, social inclusion and access to healthcare
5. **Europe closer to citizens** – supporting locally-led development strategies and sustainable urban development

New interregional and cross-border collaborations are also in new EU funding programmes to encourage joint services and remove cross-border barriers. There is also a renewed and strengthened priority for clusters as a means to stimulate cross-border and interregional developments. Pan-European clusters in strategic areas such as big data, circular economy, advanced industry and cyber security, are also supported through investment funds.

New and re-industrialisation of the EU industrial base

Developing new industrial value chains require new combinations of competences and innovative solutions. Supporting cross-sectoral industrial value chains in emerging industries across European regions is a key pillar of EU strategic policy. Bringing innovation actors together from different sectors, regions and domains is essential to create new, climate-neutral and digitally advanced *industrial ecosystems*. The key goal of the new Industrial Strategy is to achieve industrial transformation.[7] The European industry accounts for 80% of EU's

7 European Union. (2020). A New Industrial Strategy for a globally competitive, green and digital Europe. https://ec.europa.eu/commission/presscorner/detail/en/fs_20_425

exports and accounts for 35 million jobs. To achieve the triple aim of industrial transformations (green, digital and globally competitive), new industrial alliances and ecosystems in Clean Hydrogen, Low Carbon Industries, Industrial Clouds and Platforms and Raw Materials have been identified as being critical.

Industrial ecosystems often consist of academic and research institutions, suppliers, SMEs and larger corporations. SMEs represent 99% of all companies and are responsible for 85% of all new jobs (2015-2020). EU Programmes such as *INNOSUP*[8] focus on supporting SME innovation capacities to increase participation and contribution to new industrial value chains. Adopting advanced technologies, resource-efficient solutions, new business models, service innovation and design are aspects of innovation needed for strengthening new industrial value chain developments. The *INNOSUP* initiative includes cross-border and cross-sector innovation, collaboration and entrepreneurship across value chains aimed to develop emerging industries in Europe.

Cluster organisations and other intermediaries are important agencies that help structure and facilitate new industrial developments. Key emerging industries are: Medical Devices, Digital Industries, Blue Growth Industries, Environmental Industries, Mobility Technologies, Creative Industries, Experiences Industries, Logistical Services, Advanced Packaging and Biopharmaceuticals.[9] Cluster Policy is therefore another important policy instrument, but also to strengthen SMEs. It has been well-established that the productivity of companies in clusters is 25% higher than average, and in high-performing clusters up to 140% higher. In addition, clusters contribute positively to employment growth, firm growth and urbanization as well as regional specializations related to

8 https://www.clustercollaboration.eu/eu-initiative/innosup-calls

9 Ketels, C. & Protsiv, S. (2014). European Cluster Panorama 2014 Report (also in subsequent annual Panorama Reports) https://clustercollaboration.eu/sites/default/files/eu_initiatives/cluster_panorama_2014.pdf

emerging industries.[10] Strengthening SMEs is part of the EU Commission's commitment to prioritize 'An economy that works for the people'.

Mission-Driven Policy Making[11]

This policy tool is a systemic approach to policymaking that brings together new developments in knowledge and innovation to solve societal challenges. It frames direction, opportunity and approach allowing for a broad spectrum of players, disciplines, sectors and domains to be engaged in achieving *missions*.

Key requirements of *missions* are that missions

- must be bold and inspirational to create: new conversations, collaborations, room for (bottom) experimentation and 'wild' ideas;
- need to be defined by including a wide range of stakeholders to frame key questions and approaches to solve problems faced in everyday lives;
- must lead to sustainable systemic changes to solve pressing societal challenges;
- provide direction to innovation-led growth leading to sustainable and more equitable societies.

Important missions identified are: adaptation to climate change; cancer; healthy oceans, seas, coastal and inland waters; climate neutral and smart cities; soil health and nutrition.

10 European Commission. (2020). European Panorama of Clusters and Industrial Change, Performance of strong clusters across 51 sectors and the role of firm size in driving specialisation. https://doi.org/10.2826/867756

11 Mazzucato, M. (2018). Mission-Oriented Research and Innovation in the European Union. https://doi.org/10.2777/36546

Missions

- Bold, inspirational and broad societal relevance
- Clear direction – targeted, measurable and time-bound
- Ambitious but realistic research and innovation initiatives
- Cross- disciplinary, cross-sectoral & cross-actor innovations
- Multiple & bottom-up solutions

For Europe, missions are an actionable way to bring focussed, joint efforts to solve 'grand social challenges' to regain global leadership in these domains. In this way, economic transformations across the EU can be accelerated through experiments with room for autonomy, making use of differences but ensuring coherent change. Missions provide the framework for collective risk-taking efforts focussed on social impacts that matter.

Science meets policy

Responsible Research and Innovation (RRI) connects science with policy by ensuring that outputs of scientific endeavour are ethical, sustainable and have socially relevant impacts. The main aim of RRI is to align science to address 'grand social challenges' by ensuring engagement and co-creation with stakeholders guided by values, needs and expectations of European society.[12]

Recommendations for achieving RRI:[13]

- Encouraging reflection and dialogue: for example, on how science can reflect social impacts in its purpose and value or, how core values of openness, inclusiveness and integrity can be further integrated into research and innovation practice.
- The further development and implementation of RRI-related aspects and competences such as social engagement, open science, science education, valorisation of knowledge, etc. into indicators and assessment criteria for scientists and research groups.

12 https://www.rri-practice.eu/about-rri-practice/what-is-rri/

13 https://www.rri-practice.eu/wp-content/uploads/2018/09/Policy_Brief_Netherlands.pdf

In the new European Research Area (ERA), the EU reaffirms that investments and reforms in Research & Innovation (R&I) in Europe will serve green and digital transitions, recovery of Europe following the Covid-19 pandemic and increasing Europe's resilience to future shocks. The ERA intends to create a single, borderless EU market for research, innovation and technology.

The 'science meets policy' ambitions of the ERA are captured in four strategic objectives:[14]

- Giving priority to investment and reforms in research and innovation – an increase in resources, 3% of GDP and 5% of national public funding on research and innovation, for joint European partnerships and programmes by 2030;
- Improving access to excellent facilities and infrastructure for all researchers (ERA without borders) through collaboration (mobility programs, capacity building) and additional resources to improve knowledge infrastructure and output;
- Improving the transfer of knowledge to the economy to promote business investment and the uptake of research outputs to ensure EU competitiveness and global leadership in advanced technologies (linked to competences and the mobility of researchers).

The new ambitions of the ERA will improve mobility and the flow of knowledge; making research and innovation investments attractive; promoting diversity and gender equality in science; improving collaboration and synergies between universities, researching and innovating actors and companies as part of a systematic transformation of current R&I policies and current research and innovation practices. The ERA is closely linked to education reforms that support digital and green transitions, which in turn, will lead to better responsible research and innovation ecosystems.

14 https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1749

The new ambitions of the ERA will improve mobility and the flow of knowledge; making research and innovation investments attractive; promoting diversity and gender equality in science; improving collaboration and synergies between universities, researching and innovating actors and companies as part of a systematic transformation of current R&I policies and current research and innovation practices. The ERA is closely linked to education reforms that support digital and green transitions, which in turn will lead to better responsible research.

An important instrument facilitating European Research is the new Horizon Europe[15] programme (successor to Horizon 2020) for the next programming period of the Commission. This programme focusses on urgent societal challenges and Europe's industrial competitive capabilities building on Open Science and Open Innovation programmes and infrastructure. The European Innovation Council, Europe and Innovation-Ecosystems and European Institute for Innovation and Technology are important agencies supporting 'science meets policy' serving practice ambitions of the Commission. In addition, 5 mission areas have been identified for the framework programme (2021-2027) to this end:

- Adaptation to climate change, including societal transformation
- Cancer
- Healthy oceans, seas, coastal & inland waters
- Climate neutral & smart cities
- Soil health & food

Towards A European Innovation Area

The proposed European Innovation Area (EIA) is part of the Knowledge for Innovation's 2030 strategy and has been recognized as a necessary follow-up to the EU's 2010 Innovation Union Flagship initiative. The EIA aims to empower its

15 https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe_en

innovators and enterprises throughout the Union to develop a single European Innovation ecosystem. A Manifesto supporting EIA developments was presented in June 2021, which proposed a call for actionable ideas in the following focus areas:

- Tech Sovereignty
- Green Transition
- From Education to Entrepreneurship
- Fostering Innovation Cohesion
- Europe's Deep Tech Opportunity
- Women-led VCs and Startups
- Regulating Emerging Technologies
- Financing Innovation and New Technologies

The Knowledge for Innovation (K4I) platform and the K4I Forum in the European Parliament are key drivers of this initiative. The EIA will support the transition towards a green and digital economy through a cohesive innovation ecosystem.

This chapter explores how decision-making processes and collaborations need to be revisited: next governance is about new ways of organizing decision-making processes in organizations. The first section briefly describes the development of 'the cooperative' in the Netherlands as a form of business, with its roots in *boermarke*, Dutch 'farmers market' of about 800 years ago, but also, the first cooperatives in mid-18th century England, the cooperative shops in the first half of the 19th century and the cooperative credit unions of the same era. After a period of waning interest some hundred years later, there is renewed interest accompanied by a renewal of the cooperative idea. With the revival, renewed notions of a cooperative emerged, with new goals, members, governance and business models.

The second section focusses on understanding complexity, complex problems and possible ways to address such problems, including a place-based approach. The concept of an ecosystem is also explored as part of a regional approach and the Cluster Emergence Model. This model captures system dynamics, including influences from outside to inside and inside to outside in place-based developments. The model highlights innovation potential of creating unique combinations of people, resources and capabilities, and therefore the potential for system innovations.

The final section specifically addresses lessons from commons, clusters and cooperatives for creating regional ecosystems. It describes how a weakening of local structures and communities resulted in new decentralized initiatives, which in turn required regional embedding for long term sustainability. The development of regional innovative ecosystems is also addressed based on the insights of commons, economic clusters and gebiedscoöperaties (place-based cooperatives). To conclude, the most important conditions and principles for innovative entrepreneurship and governance are described.

Transitions in regional collaborations - towards next governance

2.1 COOPERATIVES - THEN AND NOW

All current transitions correspond to one essential point: they require a new interpretation of collaboration and to also collaborate in different ways: learning together, investing together, benefiting together and managing together.

Cooperatives as a form of business have never completely disappeared; they have been present in many different forms throughout the years. Additionally, a striking revival of cooperative entrepreneurship is seen at all levels: local, regional, national and global. Yet this is not the only evident aspect. Traditionally, the cooperative model was adopted in agriculture, horticulture and the financial sector, however new sectors in which transitions are seen as urgent are emerging such as energy, healthcare, the medical sector and local quality of life. The cooperative is also popular with citizens and self-employed workers. However, the cooperatives always adapt to a new business model that is driven by different motives than the "regular" business models of the "regular" companies.

More than 250 years of tradition with ancient roots

The cooperative movement is essentially rooted in 800 years of experience with themes such as communal management and development. An example is the local Drentse Boermarken cooperative, which administered the vast heathlands and still exists with 87 local Boermarken. The Drentse Boermarken are included in the National Inventory of Intangible Cultural Heritage Netherlands (Foorthuis, 2017, Heringa, 1996). The commons (see further in this book) are also based on these principles.

The first cooperatives were established in England, where cooperative flour factories could be found as early as 1760. Although the factory was owned by the workers, they could also purchase basic products such as bread, butter, tea and sugar from the factory. In the first half of the 19th century, this basic idea was further developed into cooperative shops (Otten, 1924). In France, the productive cooperative movement became popular after 1830. In Germany, it was H. Schulze-Delitzsch who, in addition to purchasing cooperatives, also established very successful credit cooperatives from 1850 onwards. More famous was F. Raiffeisen, who, as a mayor, wanted to combat poverty among farmers and protect them from profiteers. Initially, a charity was formed, but was then changed into a credit union, following Schulze's example: the farmer's loan bank, which worked according to the principles known today as the credit union. In the Netherlands, these later became the cooperatives Raiffeisen loan bank and Farmer's lending bank (from 1972 onwards known as Rabobank).

The cooperative association also has roots within the Dutch social housing. Although the 'Vereenigde Maatschappij tot verkrijging van een Eigen Woning' (Association supporting home ownership) was founded by workers in Amsterdam around 1865. Cooperative housing associations flourished only afterwards as a result of the 1901 Housing Act. In 1903, 40 workers in Amsterdam founded the Coöperatieve Bouwvereeniging Rochdale (Construction cooperative Rochdale) as the Housing Act stipulated that initiatives for better housing could also be undertaken by citizens themselves.

In the provinces of Groningen, Drenthe and Friesland, cooperatives have been particularly successful in the 'sand' areas and peat colonies (Foorthuis 1991, 1994). It was mainly cooperatives that organized the purchase and production of agricultural and milk products and in 1920 a cooperative milk factory was found in almost every village in Drenthe. In addition, the North accounted for hundreds of local cooperatives for meat marketing, potato flour processing, purchasing of animal feed and fertilizer, bull breeding or agricultural credit (Bieleman, 2008).

The rapid expansion of these agrarian cooperatives was partly supported by the Ministry of Agriculture, Industry and Trade, founded in 1905 and which, by building a knowledge system, created a high-quality network in the countryside by appointing state agricultural teachers who, in turn, were connected to agronomic laboratories and knowledge institutions. They collected their knowledge questions at the kitchen table and then presented substantive and organizational advice (Sneller 1951, Foorthuis 1991 and 1994). This shaped the famous Dutch agronomic knowledge system Education, Information, Research, called *OVO-drieluik*, (the OVO-Triangle, see 3.1), and was an organized collaboration between government, information and entrepreneurs, aimed at increasing the innovative power of the entrepreneurs to ensure food supply. This concept was at the root of the enormous success of Dutch agricultural exports that continues to this day.

Less known and successful were the cooperatives that were founded by workers in the north to buy cheaply or to produce themselves. The first production cooperative of furniture makers in Groningen was founded in 1868 (Becker & Frieswijk, 1976).

Waning interest

From the 1960s onwards, not only did many cooperatives disappear, but it seemed that there was also less interest for and knowledge of cooperative entrepreneurship in the Netherlands. Elements that contributed to this change of interest were: radical change in supply, growing mobility, better individual training, scaling-up, and the growing global market. In part, the upscaling of some cooperatives such as AVEBE, Rabobank or Friesland Campina resulted in a greater distance between the members and the board, possibly causing the members to feel alienated from their cooperative objectives (Sogaard, 1993).

The cooperative enterprise, in the area of consumer cooperatives related to selling food supplies and other daily necessities, almost completely disappeared after the war (Oosterhuis,

2000). An example is 'Coop' that was acquired by EDAH in 1973, which in turn disappeared in 2006. The remarkable thing is that some Coop stores remained independent and were able to redevelop into a supermarket chain.

Definitions

Van Diepenbeek is one of the few who dedicated a dissertation to the cooperative, where he defines it as an organization that focusses mainly and usually exclusively on economic-commercial activities for the members, who are managers and owners (Van Diepenbeek, 1990). It is in line with the most common views of cooperatives, which are solely focussed on profit-making.

The National Cooperative Council (NCR) puts this into perspective in an interpretation of the legal text (Civil Code, 2: 534) and states that the cooperative is an association with a business model where activities of that company provide for "certain material needs" of its members. These needs are documented in the cooperative's statutes. According to the NRC, cooperatives have a collective goal with a business model where the members, for example, entrepreneurs, consumers and governments, join forces to achieve their individual goals. The ultimate goal of a cooperative is value creation for its members (NCR, 2020).

Revival and renewal

The term "new cooperative" has been gaining traction in the last years. It is not entirely clear what this means yet, but the tendency is that it refers to the shift from focussing on one link in a value chain to bringing the value chain partners together (GreenWish, 2012). This shift meant that goals are broadened from one goal (economic gain) to multiple goals (promotion of social cohesion, quality of living and sustainability). The first example is multi-stakeholder cooperative whilst the second is multi-purpose cooperative. The homogeneity of the 'old' cooperatives needed renewing as their cooperative nature was increasingly disappearing. illustrative cases are Friesland

Campina, the Rabobank or the Coop supermarket, and yet, a revival of the cooperative identity is taking place in the last few years.

Recent research: reflection on contemporary regional and local values

Recent, and still unpublished, research by the Professorship Sustainable Cooperative Entrepreneurship at Hanze UAS Groningen shows that the new focus on cooperatives is accompanied by reconsideration of regional and local values, value creation and the formation of short chains. In the spring of 2020, the Professorship mapped out the active cooperatives in the Northern Netherlands region and made an inventory of the sectors in which they worked, their goals, members, main activities and workforce.

Most of the cooperatives are engaged in local energy, trade and services, health care and welfare, agriculture, nature and landscape. Providing a service and lobbying and representation are viewed as the most important activities for their members, regardless of the sector in which they operate. The cooperatives are concerned with creating and sharing knowledge and awareness, whilst facilitating interactions amongst each other but also with government or education institutions. Furthermore, support is an important incentive for members to participate: they support each other to improve and help each other and offer practical support. One example is support to citizens (members) to continue to live independently in their own homes or area for a longer period of time. The scale at which they work is usually that of the village or municipality. It is striking that many of the cooperatives work without permanent staff and therefore the number of volunteers is high; on average, there are 13 volunteers committed to supporting the functioning of a cooperative. These new cooperatives always pursue a social goal in addition to their economic goal. The extraordinary number of volunteers committed to the survival of their cooperative enterprise, makes the economic goal, at least in the short term, not dominant.

However, research by Ubels shows that such initiatives are in danger of saturation if they do not have an effective business model. If an economic basis and active support from the community are missing, too much responsibility falls onto a limited group of volunteers, and there is a good chance that, once they leave, they will not be replaced. This also applies to the cooperatives that have an economic motive, but also a pronounced social element of mutual solidarity. Also, Bijman (2016) discusses the tradition of neighbourly help and the collective organizations, in the context of transcending individual interests, precisely, the elements that can be jeopardized by the lack of an effective business model.

Cooperatives: why now?

The growing number of new cooperatives being established at this moment is surprising. A possible explanation for the increase of cooperatives is partly attributed to the economic crisis, which brought the market failure to the fore and at the same time led to the government's withdrawal. In neoliberalism, market parties limit themselves to profitable business models and governments to their core tasks, while citizens fill the gap created and take ownership.

But is there more to the story? What prompts people to perform tasks that were previously assigned to governments or markets? Is this only a response to the crisis from 2008? It cannot be, because the striking increase in the number of cooperatives already started before the crisis. What is visible is that the emergence or increase of cooperatives is directly related to major societal changes taking place, as seen during the agricultural and industrial revolution around the end of the 18th century: population growth, urbanization and industrialization around the 'fin de siècle'. This has parallels to the digital revolution that started towards the end of the 20th century. The impact of global access to information, the use of smart devices and big data, and the development of new products and services made possible are unique and has accelerated the speed with which the changes have been taking place.

This is accompanied by another change, one that has been more gradual, that has also led to a revival of the cooperative model. From the 1970s, there has been a slow movement that shirks notions of the 'makeable world', with its belief in planning and the role of central government in the Netherlands. Rooted in the Dutch polder model, this has evolved into decentralization, shifting tasks, self-management and a broad social trend towards new negotiation and collaboration models and therefore the cooperative is a business model that fits like no other. With the combination of social and economic goals, and as an initiative from civil society, cooperatives are paving a "third way" in which government, market and society meet. This requires well-organized collabortive arrangements in order to generate profit and value for the members.

Wijffels (2014) explains how greater knowledge with emancipatory effects and the consequent autonomy of the individual has benefitted many but that a new phase of individualism has emerged. This new form of individualism connects in networks that allow greater use of talent and creativity. "We are at a historic crossroad and together we have to shape the next way of living and working. This is not about a small mutation, but about radical new ways of organizing society".

This brings us back to the central message of the book. The section began with a claim that the concept of collaboration needed revisiting and that a new definition was needed which meant that self-organization, forming new alliances amongst partners in the quadruple helix would also require taking new responsibilities and new tasks and learning to do them in the new context.

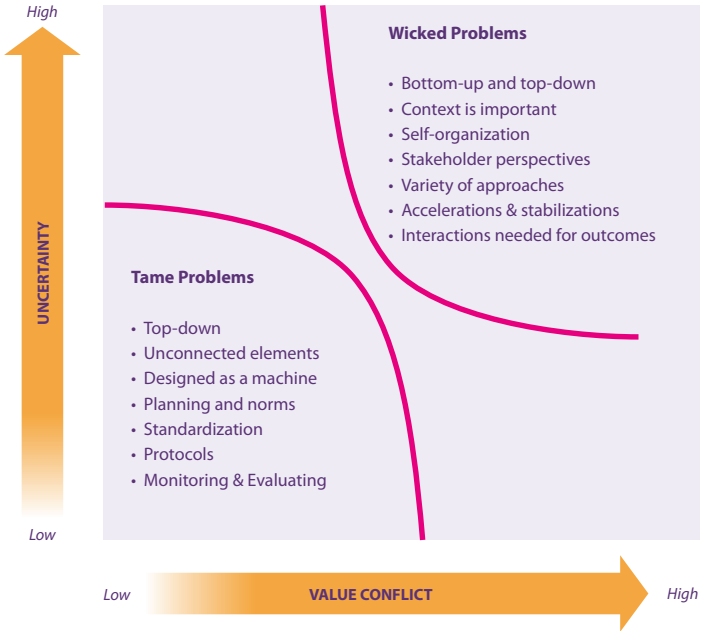
2.2 REGIONAL DEVELOPMENT: A COMPLEXITY APPROACH

Uncertainty and complexity

Regional development is a process in which many different changes are taking place at the same time: demographics change; new businesses emerge and others stop; new knowledge is acquired and others lose their relevance; interest groups try to influence issues; etc. Also, external impulses have an impact on what is happening in the region: new technologies can disrupt existing knowledge and practices in one stroke; globalization is in many ways eroding regional economies; climate change demands new investments and competes with current priorities; urban migration is resulting in some regions becoming underpopulated and others overcrowded; populism is threatening democratic values; and the list goes on. Regional governments, responsible for the prosperity and well-being of their regions, are having to rethink their policies due to complex, dynamic changes taking place. There is no certainty in regional development, but there are new opportunities as well. Collaborations at the regional level between key stakeholders (governments, knowledge institutions, entrepreneurs and citizens) offer better chances of solving urgent challenges to the benefit of everyone. Collective actions offer better results as well. Collective and inclusive strategies for regional prosperity and well-being, mean a wider range of issues can be tackled. Increased creativity, knowledge and resources in these processes result in innovation in in vary different areas: social, education, energy, transport, demography, etc. Regions, through collaborations, facilitate regional innovative ecosystems in which entrepreneurship, social innovation and smart specialization can thrive.

Tame and Wicked problems

According to Rittel & Webber (1973), a distinction can be made between "tame" and "wicked" problems. "Tame problems" are manageable problems that are easy to define and can be divided into manageable parts and solved. These are problems that be solved by experts if the problems are complicated. "Wicked" problems" are complex problems in which several problems at micro and macro levels are interrelated and therefore, regional collaboration is important in addressing them (Van Berkel and Manickam, 2019). Also, not everyone agrees whether a issue is a problem and what exactly the problem is. Examples of "wicked problems" forming a complex web of problems": combination of poverty, juvenile delinquency, unemployment, resources poor municipalities and low education levels of residents. Experts are limited to a specific area of expertise and no one has the knowledge to solve all the connected problems. Moreover, different stakeholders have their own interests and different views on what the problem is and how to solve it.

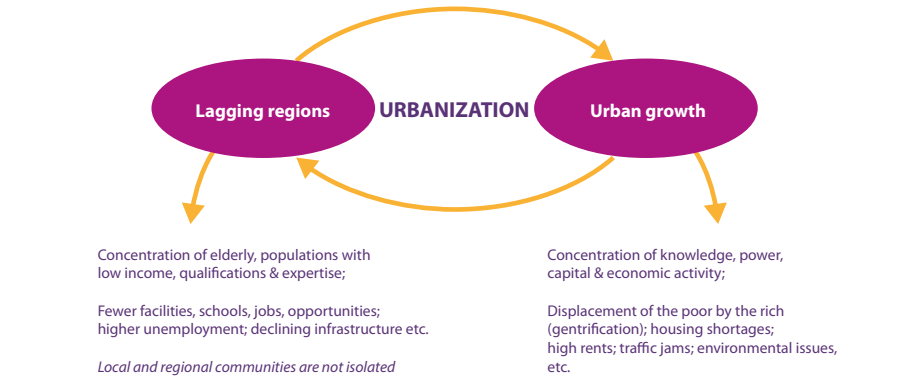


Tame and Wicked Problems (Van Berkel & Manickam, 2019)

Wicked or complex problems have uncertain outcomes and stakeholders have very different value orientations. This is not the case with "tame problems", there is more unanimity on the problem and its resolution. "Tame" and "wicked problems" require very different approaches:

Complex challenges cannot be disentangled to be solved as separate, simple problems. The problems evolve in a specific context with a history and in a specific geography, with stakeholders with different ideas about what is happening and how to deal with it. Each context is unique. Migration flows are not the same: migrants to successful clusters like 'Brainport Eindhoven' are highly educated compared to migrants in deprived neighbourhoods of big cities in The Netherlands. The same goes for living in a village in Eastern Groningen with population decline, high unemployment and the disappearance of amenities. This cannot be compared to living in a city in the wealthy metropolis areas in Western Netherlands (CBS, 2018). Of course, city living is not the same everywhere. Neighbourhoods where gentrification is taking place – displacement of people with lower incomes by those with higher incomes – are in contrast with deprived neighbourhoods where people have few perspectives, crime and grievances are widespread and many do not feel safe (Leidelmeijer et al., 2020). Differences in conditions and dynamics are not only visible between regions, cities and rural areas in The Netherlands, but also on the European scale. A report by the World Bank shows that differences between regions in Europe are growing, also at local and household levels. The growing disparity is caused by urbanisation and specialization on top of demographic developments and migration patterns intensifying population decline of lagging regions, worsened by technology impacts on the labour market (Worldbank, 2018).

Local and regional differences are therefore important considerations in understanding local developments. However, even as each geographical area is unique, in order to understand causes of problems and how to solve them, it may be crucial to look outside of the area. This phenomenon of urbanisation described earlier illustrates this:



Urbanization (adapted, Van Berkel & Manickam, 2019)

Local and regional communities are therefore not isolated clusters and issues are connected from elsewhere. Everyone is affected by the issues related to food and agriculture, transport, energy transition, robotization, environmental problems, demographic changes, digital revolution, globalization, new geopolitical shifts, health issues, etc. A new approach is therefore needed.

Complexity theories provide guidelines for a different approach. Below are some recommendations (Van Berkel & Manickam 2019):

1. Mapping the complexity of a problem: exploring how problems are related to other local problems; understanding that different viewpoints exist, not everyone sees the problem in the same way and not everyone has the same solution in mind.
2. Not only replicating solutions from elsewhere: understanding that each area is historically and geographically unique and choosing unique and customized solutions.
3. Being inclusive: all parties regardless of differences in interests, visions, disciplines, specializations and roles need to be involved in seeking a common strategy.
4. Working together, discussing extensively and listening carefully: focussing on understanding others and the

different individual standpoints, while searching for common values and interests.

5. Focussing on finding smart interventions: small steps with big impacts; experimenting but alert for negative impacts of chosen solutions.

Ecosystems and regional development

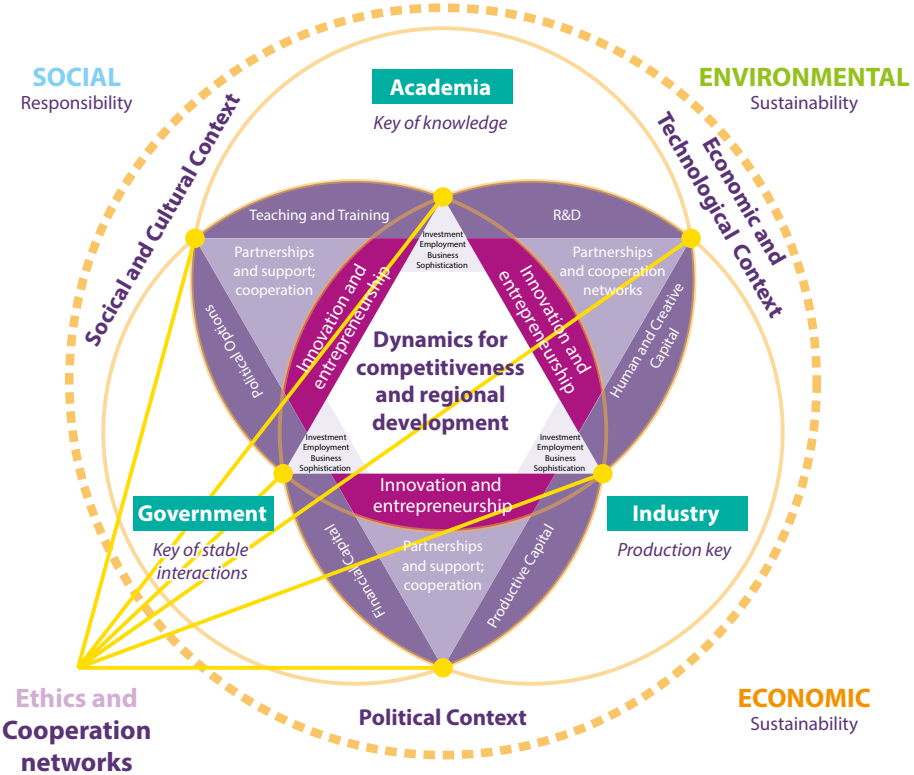
An ecosystem is a community (physically or conceptually bounded) in which different stakeholders, interacting with each other and with other systems together, form an environment in which problems can flourish and solutions can be devised (Van Berkel & Manickam, 2019). Ecosystems are always evolving. There is always change, be it growth or decline; and there are always opportunities for innovation or transitions. It is therefore of really important to pay constant attention to how the ecosystem is developing.

Starting innovative collaborations between companies, governments, universities and educational institutions in a region is just a beginning. In the Northern Netherlands, setting up Innovation Workplaces, where new types of collaborations could take place to foster innovation, was a start of change. Designing a regional ecosystem goes beyond the physical, financial and technical design of such innovation spaces. The definition below describes the scope of such a system:

> "A regional innovative ecosystem is a human social network that behaves like a sociobiological system, wherein people have developed patterns of behaviour that minimize transaction costs caused by social barriers resulting from geography, lack of trust, differences in language and culture, and inefficient social networks."
> *(Hwang & Horowitt, 2012)*

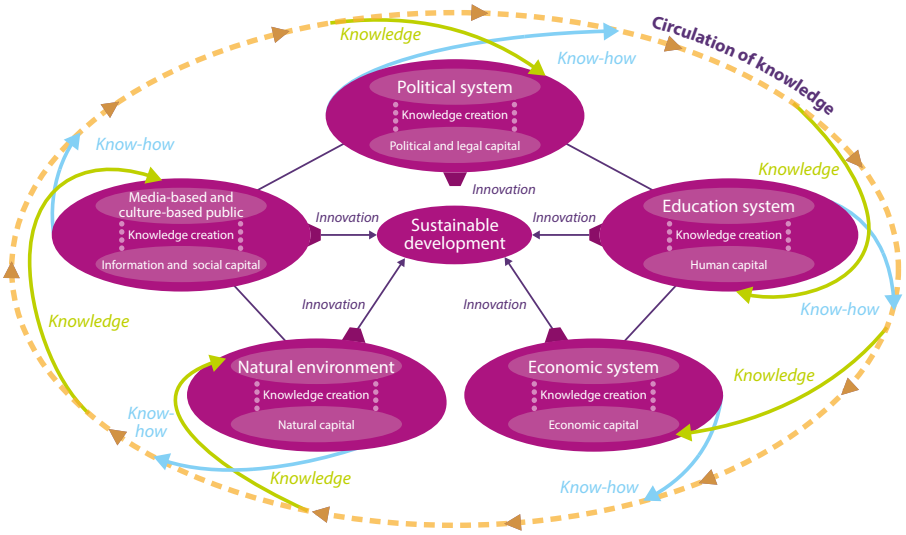
Triple, quadruple and quintuple helix

Regions have different stakeholders such as governments, companies and knowledge institutions with different purposes and goals, but they have overlapping interests or themes they want to work on. It is their differences, in approach, specific expertise and networks, that make the collaborations fruitful. In this, stakeholders need to support long-term regional developments that result in an economically, socially, ecologically and culturally flourishing region. The illustration depicts how the collaboration could support sustained regional development (Farinha & Ferreira, 2013).



Triangulating the Triple-Helix (Farinha & Ferreira, 2013)

The diagram illustrates a triple helix in which governments collaborate with knowledge institutions and the business community. However, there is advocacy for quadruple and quintuple helices. A quadruple helix extends the triple helix to include civil society (citizens, civil society organizations, NGOs, media and culture) (Carayannis & Campbell, 2009) while a quintuple helix also includes (the consequences for) the natural environments (Carayannis, et al., 2012). The quintuple helix model is captured in the next illustration:



The Quintuple Helix model and its function (functions) (Carayannis, Barth & Campbell, 2012, modified from Etzkowitz and Leydesdorff (2000), Carayannis and Campbell (2006, 2009, 2010), & Barth (2011a))

Markku Markkula, an expert within the EU in the field of regional innovation systems, describes how the dynamic between various stakeholders can lead to success (Markkula, 2015). Suggestions include:

- Choose a few promising developments in a few political and industrial themes.

- A successful regional ecosystem is based on strengthening the human capital. Curiosity, creativity, entrepreneurship and knowledge sharing are essential for this, lifelong learning must be at its core.
- Choose to cross borders, develop partnerships using new digital open innovation platforms.

The Cluster Emergence Model: an approach based on complexity

Knowledge developments on economic clusters (see chapter 1.1 for definition) can help develop regional ecosystems in which collaborations are focus on solving challenges and creating new opportunities. One such study to uncover regional dynamics uses the Cluster Emergence Model (CEM) model that describes the relationship between cluster condition, dynamics and transformations (Manickam, 2018). In economic clusters, different stakeholders work together to develop innovative ideas and bring about improvements in social, economic, cultural and ecological fields. Clusters develop in a unique way due to their specific context and how they respond to events or other factors within and outside the cluster. These factors could be trends, opportunities, stakeholders, trust, collaboration, etc.

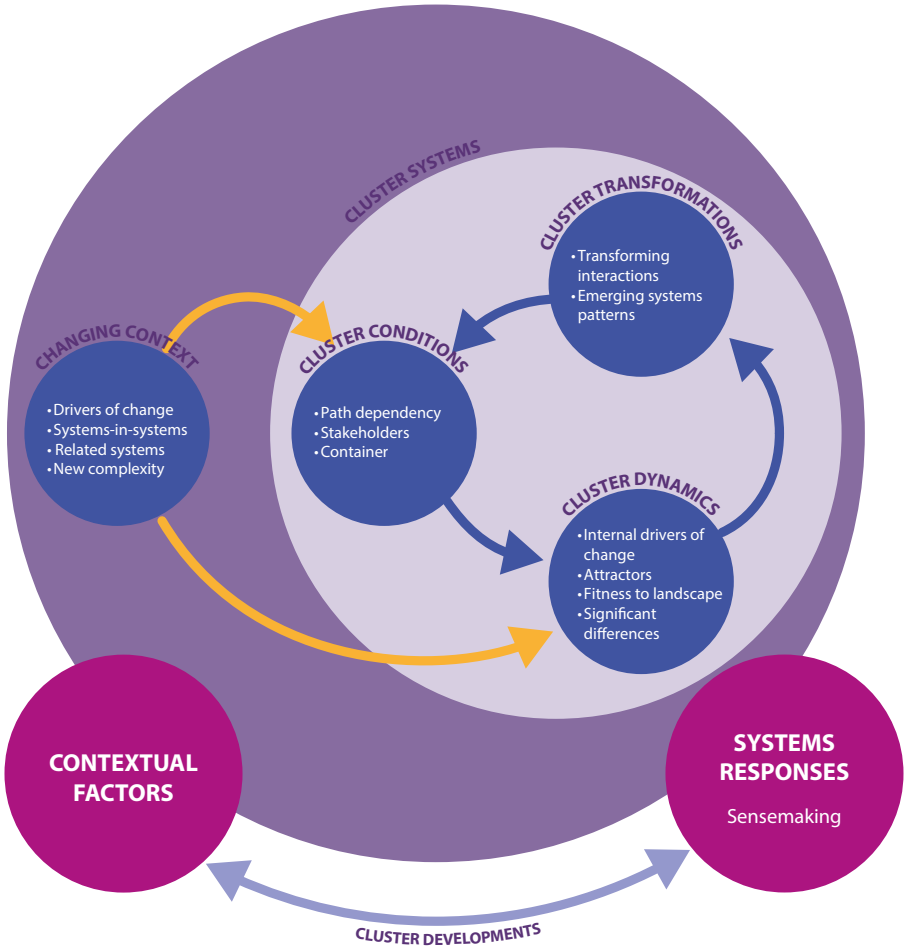
The CEM shows that a system always responds to developments in the context of that system and that the system's reaction in turn, influences the context. Actors in an economic cluster need to consider challenges that are outside the cluster that influence their developments, such as climate mitigation measures or rise of global production chains. When threats or risks are identified early, these could provide opportunities to develop innovative products and services. Clusters, but also regions, that collectively respond to external changes by creating new value for themselves, in turn influence their context. The model provides insights into the interconnected nature of cluster/regional dynamics and its part in it.

It is important to reflect on the different aspects of the cluster (or region). The first aspect is the cluster system's *condition*: to what extent is the cluster, due to its history, demography, accumulated knowledge, expertise and innovation capacity, available infrastructure, state of the technology, relationships between relevant stakeholders and chosen future strategies, able to respond adequately in response to developments in the context. One of the priorities of a cluster or region, is to discover its collective resources and strength and develop strategies to improve how it responds to contextual changes as part of its agenda.

The second aspect of the Cluster Emergence Model is *systems dynamics*, which describes the potential of a cluster to develop in such a way that it keeps up with and connects to developments elsewhere. It is about its resilience and ability to plug into current developments: trends like regionalization as a response to globalization or bottom-up movements. An important aspect of *systems dynamics* is the ability of stakeholders to forge inherent differences into unique combinations of people, resources and ideas that could lead to socio-economic innovations.

The last aspect of the CEM model is *systems transformation*. Everything changes when working in a cluster to seek innovative solutions. Transforming interactions result in new patterns which in turn, lead to systems innovation. In regional systems, it is important to ensure that differences are leveraged: interdisciplinary and cross-sectoral collaborations are important to bring about transforming interactions. Local collaborations (bottom-up initiatives) can also connect to regional, national and international networks, thus also crossing boundaries. Even as initiatives in clusters and regions may focus on a variety of issues, redesigning traffic systems, building regional food chains or a regional circular economy, etc., the building blocks *systems transformations* have to do with self-organization, building trust, collaboration and shared benefits.

Manickam shows how different aspects interact to create an ecosystem of cluster and regional development:



Cluster Emergence Model (Manickam, 2018)

CEM model - explanations and recommendations:

1. **Pay attention to the broader context** to support cluster development.
    - Strategic choices related to the ecosystem need to take *Drivers of Change* into consideration Examples of drivers of change are the digitized society, globalization, the pursuit of sustainability and energy transitions, etc.
    - A second element of context is that clusters are connected, never isolated. In the model, this is called *System-in-Systems*. The region has to deal with municipalities, the province, the national government and the European Union. The context could pose obstacles but also opportunities; clusters or regions should take them into account and maximize any potential advantages.
    - A third element of the context is *Related Systems*. These are prevailing economic, legal, political and technological systems that a region cannot ignore and can make use of. Bordering regions are important to bear in mind.
    - The fourth element of context is the increasing frequency of *New Complexity*. This refers to problems that are related to other problems which extend beyond the region. For example, poverty, youth criminality, unemployment, impoverished municipalities and low educational levels combined in an almost inextricable web of problems which have their origins outside the region. In combating wicked problems of *new complexity*, regional collaboration is of great importance (van Berkel and Manickam, 2019).

2. **Delve into the Cluster Condition**. What is the current cluster or regional condition? There are three interrelated elements that capture the condition.
    - The first aspect is *Path dependency*. This concept includes history, geography and culture of the area. What is the history of the region and what does it mean for the current state of affairs? How does the economic, social and demographic developments look like? To what extent does this have to do with the geographical location? What opportunities do the history and location offer for new, innovative strategic directions (Path

creation)? It is important to focus on opportunities to prevent the region from remaining trapped in what was: the risk of 'lock-in' in which historical developments of consolidated infrastructure and knowledge become an obstacle for embarking on a new course.

- The second aspect is key *Stakeholders*. Who are key stakeholders at present? Are they holding onto the existing order (status quo) or do they want to participate in strategic innovation? It is important to engage new and willing stakeholders when a new direction is set.
- The last aspect of the condition is the *Container*. Who and what belongs to it? Where is the boundary of the area or region? What is the playing field and what are the rules of the game? What shared visions exist and where do the differences lie? How are developments managed (governance)?

3. **Paying attention to the Cluster Dynamics**. What sets the system in motion? This is perhaps the most important part of the model. The underlying question is how can a cluster (or region) grow? Again, a number of related aspects can be developed.
   - The first aspect is *Attractors*. These are autonomous movements in and around the system that are moving in a certain direction despite opposing factors. These are developments that cannot be stopped and must be taken into account. Examples include regionalization, emancipation and individualization. These attractors can be leveraged when developing the region or cluster.
   - The second aspect is *Internal Drivers of Change*: factors within an area that influence its development, such as the arrival of a large innovative entrepreneur or the shift away from fossil fuels for a region built on fuel extraction.
   - The third aspect is *Fitness to Landscape*: This is about co-evolving and changing the system so that it stays connected to the changing context. As the world changes, new competencies, structures and collaboration models will also need to be built in the region to

keep up with and create opportunities in that changing environment.

- The last aspect is *Significant Differences*. How can individual differences contribute to an ecosystem? What unique combination of people resources and ideas can make the innovation ecosystem grow and thrive?

4. **Making System Transformations visible**. Are new developments visible? Describing how the system is evolving is important because everyone wants to see results from efforts. For a good description of the actual transformations, the model uses two concepts.
   - The first is *Transforming Interactions*. This is about interactions and linkages that can transform the cluster or region. Setting up a regional digital platform where stakeholders can connect with each other and with the rest of the world changes the regional system. Interdisciplinary, international and cross-industry forms of collaboration also offer opportunities.
   - The second is *Emerging System Patterns* - it is important to nurture system patterns in which trust and collaborations are inherent to it. If stakeholders continue to interact in the same manner as before, nothing will ever change. If people continue to see each other as competitors, they will compete rather than collaborate because the mutual distrust is dominant. A developing ecosystem needs patterns of cooperation based on trust, willingness to share information and open to innovative ideas.

The diagram below compares traditional system patterns with new system patterns needed for thriving regional ecosystems.

Traditional system patterns	New system patterns
The problems are simple or complicated - they are solvable by technicians, politicians and economists within their own frames	**These are complex interrelated problems** - in dialogue we may be able to understand and design smart interventions ('sense-making' in dialogue)
Trust is latent - in authorities and experts	**Trust is a prerequisite** - openness, honesty, commitment
Gradual change - 'extrapolated' future scenarios	**Uncertainty and change** - unpredictable futures
Exclusive and internally organized knowledge development - specialists, experts	**'Learning' and 'openness' as norm** - inclusive, room to experiment
Fragmentation and segmentation **Silos** - scientific disciplines, mono sector **Competition** - between companies **Authority/power** - government, large corporations	**Need for collaboration** - sharing, seeking connections, also across boundaries
Policy and decision-making - national, centralized, top-down, planned, large-scale	**'Multi' governance** - on multiple levels simultaneously, at different scales, top-down and bottom-up, planned and self-organized, focus on centre and periphery
Problem and solution - linear thinking No focus on context, only focussed on cause-and-effect analysis to solve problems	**System and context** - ecosystem approach Patterns, feedback loops and interventions using leverage points

Traditional and new system patterns (adapted, Van Berkel & Manickam, 2019; Manickam, 2018)

Conclusion

Regions benefit from collaboration through several key stakeholders such as governments, businesses knowledge institutions, citizens and social and cultural institutions. Such cooperation is most easily established around themes that play a role in the region. Each party, steered by their own interests, can contribute to find innovative solutions together. In our segmented society, such collaborations are not inherent.

This section therefore focussed on building ecosystems in which collaborations can thrive and regional development can flourish. The development of such ecosystems requires continuous learning: to understand contexts in which collaborations take place, the conditions that shape such collaborations, the dynamics during the collaboration process and of the actual transformations of the ecosystem

2.3 STRENGTHENING THE REGION: LESSONS FROM COMMONS, CLUSTERS AND COOPERATIONS

The previous sections showed how neo-liberal thinking and developments such as digitization, globalization and urbanization have had their impact on regions: the gap between successful and declining regions has widened, whilst social cohesion and resilience have diminished. This section deals with the possibilities of new forms of regional cohesion and collaboration.

Current developments have also led to all kinds of decentralized, local and regional initiatives in which cohesion and solidarity were pursued (De Moor, 2013). These developments are often isolated events that are dependent on individuals who pursue them and therefore can disappear when the founders stop or, when expectations are not adequately and on time met. This is due to a lack of structural embedding in the region.

To solve this problem, the regional cooperative as a permanent structure to support regional and local collaborative initiatives as part of an innovative ecosystem has been introduced. Lessons from three concepts supporting regional cohesion and cooperation serve as a source of inspiration for the realization of *Gebiedscoöperaties*. These are "the Commons" (Ostrom, 1990), "Economic clusters" (Manickam, 2018) and "Cooperatives" (International Co-operative Alliance website).

In this section, key conditions, rules of the game, organizational principles, directions for innovative entrepreneurship and governance are described and relevant points for consideration are for the development of a regional cooperative are raised.

The region, the importance of proximity and a joint strategy

The rise of the Internet and the emergence of digital international networks raised doubts on whether physical proximity is still necessary for growth, innovation and cohesion. Everyone can access knowledge and contacts everywhere and engage in global trading. The current coronavirus crisis has proven the value of digital channels. However, there is a lot of research that shows the importance of physical proximity and local interaction (McCauley, 2016), for example, for team cohesion and for mutual trust. Not everything can be shared through the Internet. Physical proximity also helps to build up regional knowledge and creative ideas regularly arise in corridors and at the coffee corner.

Proximity is also important to facilitate transitions (green, energy, digital, etc.) and build resilience. The transitions are faced by people everywhere and strategies will have to be devised by all regions to cope with them. Not dealing with transitions risk negative impacts. Often, joint strategies are needed to support industrial change be it in agro-food, mobility, health, creative and cultural industries, construction, etc. This also includes changes to task, jobs and the knowledge and skills needed. If the industrial ecosystem changes, knowledge and innovation ecosystems must also change.

A more inclusive society is emerging

The neoliberal economic vision, globalization and digitization have brought about economic growth and made life more amiable for many as described earlier in the book. However, there is also less connectedness.

Production takes place worldwide while consumption is local. Food comes from all over the world and self-sufficiency has become a fiction. The gap between rich and successful, and poor and hopeless is widening. Young people move to promising regions and the elderly are left behind. Companies come and go, and with it, the prospect of work. Futures become uncertain. Powerful undercurrents of dissatisfied people are emerging, and the polarization between

continents, countries, population groups and age groups is increasing.

At the same time, local and regional initiatives are emerging in many places that strive for new cohesion, certainty and future (De Moor, 2013). These are, for example, energy collectives aimed at renewable energy, cooperative supermarkets to maintain a shop locally, communities of elderly people who arrange their housing and care needs among themselves, 'broodfunds' (self-organized funds) for freelancers, a 'tourism cooperative' of entrepreneurs wanting to bring tourists to the region, village cooperatives to guarantee local amenities, and so on. These are bottom-up initiatives that bring different parties with different interests and goals together around themes that are important to everyone. Especially because each party has its own approach and brings specific expertise and networks, cooperation, coming together can yield many extras. Collaboration can lead to permanent regional developments, allowing the region to flourish economically, socially, ecologically and culturally.

The *Gebiedscoöperatie* as an ecosystem

A specific area (*gebied*) is seen here as part of a region. In an area, residents have the notion of belonging together from a historical, social and cultural perspective. A region is broader and consists of areas that are interdependent in an economic and infrastructural sense.

Ecosystems (see also section 3.2) can be very different, in terms of size, composition, focus, structure, etc. A *Gebiedscoöperatie* can be a powerful ecosystem for local stakeholders. By working together in a cooperative, they are able to cope with complex challenges more easily and to develop knowledge and added value for the area in a creative way. In other words, a *Gebiedscoöperatie* offers a permanent structure in a resilient and innovative way to companies, governments, cultural, social and educational institutions, together with residents of the area, to ensure quality of life and prosperity for all both in the present and the future. A *Gebiedscoöperatie* also offers

the possibility of setting up a joint strategy and coordinating the process for the area. There is plenty of experimentation in the Netherlands with this form of regional development. One of the best-known examples of this is the Gebiedscoöperatie Westerkwartier (see website), which was established in 2013. Similar forms abroad also exist, such as the Italian industrial districts (Schilirò, 2017), the British Preston model (CLES & Preston City Council, 2019) and the Spanish Mondragon (Mondragon Annual Report, 2018). These practical examples have a number of aspects in common:

- Focus on local and regional economy
- Connected with the local community
- Shared values: working together to achieve economies of scale, openness, trust, sustainability and resilience
- Network with a variety of stakeholders such as governments, companies and knowledge institutions
- Local needs and collective procurements
- Bottom-up
- Open membership, democratic: the members are in-charge.

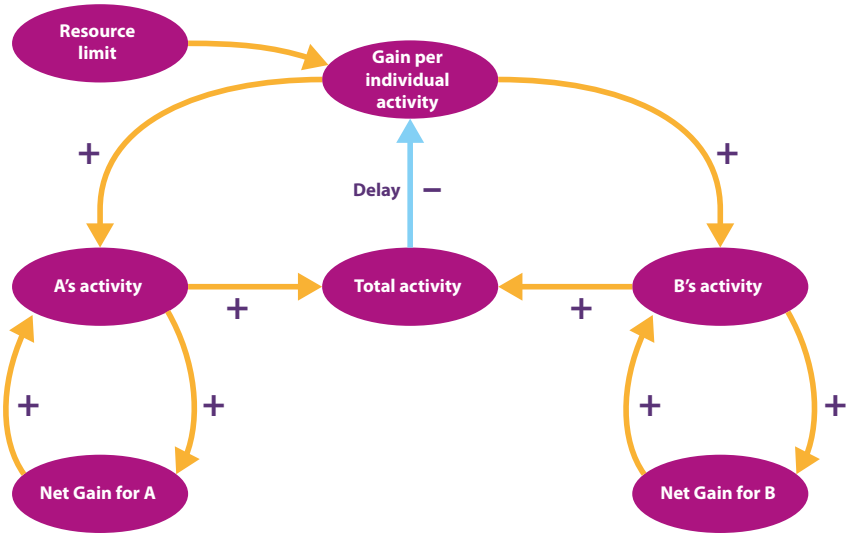
The Commons

The Commons are an example for *gebiedscoöperaties* because it is about communities that thrive and survive for a long time under some circumstances, but have, under other circumstances, completely failed leading to major power differences, mutual competition and disputes. In the Middle Ages, the Commons (*Meent* in the Netherlands) were communal pastures around a village where farmers grazed their cows. Today the term is also used for all kinds of resources that everyone within a group or community is entitled to use. The Commons are about right of use and not necessarily about right of ownership. For example, Wikimedia Commons has nearly 60 million media files available to everyone under three categories: Creative Commons Licenses, Public domain and Free Documentation License.

Organizing a Commons appears to entail risks if the design principles are not properly thought through. One potential danger is described in "The Tragedy of the Commons"

(Hardin, 1966). Hardin describes a situation in which people share common resources but where individual users put their own benefit or convenience first and disregard the other's needs. They compete for communal resources and in the process destroy the community. Hardin saw it as a metaphor for overpopulation, but communal fishing grounds, a communal fund or a collective training budget can also serve as examples.

The Tragedy of the Commons is captured below in a system drawing:



Tragedy of the Commons (adapted, Kim & Anderson, 1998)

However, it has since become clear that the "Tragedy of the Commons" is not inevitable (Ostrom, 2010). Ostrom described many Commons practices around the world in which community self-organization set up rules about who can use the resources and ways to identify and punish those who would break the rules.

Ostrom (1990) identified eight design principles for a stable ecosystem for managing shared resources:

1. Define clear group boundaries.
2. Match rules governing use of common goods to local needs and conditions.
3. Ensure that those affected by the rules can participate in modifying the rules.
4. Make sure the rule-making rights of community members are respected by outside authorities.
5. Develop a system, carried out by community members, for monitoring members' behavior.
6. Use graduated sanctions for rule violators.
7. Provide accessible, low-cost means for dispute resolution.
8. Build responsibility for governing the common resource in nested tiers from the lowest level up to the entire interconnected system.

In a later study (Poteete, Janssen & Ostrom, 2009) "trust" is mentioned as the most important aspect. Trust in the other participants, in reciprocity, in more advantages than disadvantages and trust that non-participants will not benefit from the partnership. Mutual trust also helps to jointly set standards and rules for collaboration. In addition, laboratory experiments demonstrated that isolated, anonymous individuals tend to care for themselves at the expense of the community. Informal face-to-face communication was found to reduce egoistic behaviour (Ostrom, 2010). It can be concluded that "The tragedy of the Commons" can pose an internal risk in the joint management of resources, but that an effective design can prevent that risk.

Yet there are also examples where the strategy may not work. Parties that have access to money, contacts and up-to-date technology can become so dominant that they determine how the community develops further. The worldwide web (WWW) was initially an online platform of belonging to no one and everyone in terms of content. Every idea, opinion and document were freely available. The Internet was a Creative and Innovative Commons. That has since changed completely (Lessig, 2001). Google, Apple, Facebook and Amazon collect unimaginable amounts of data about everything and everyone. They often know what we are interested in and what we

might want to buy than we do. They exert a major influence on our society as a whole and they are still growing (Moore, 2016). This development seems to be a modern example of "The tragedy of the Commons" but has consequences for our entire society that we cannot yet fully oversee, let alone manage. At the European level, attempts are now being made to regain control of the tech giants, and of data collection and data use (European Commission, 2020).

The most important conclusion to be drawn from the above is that the Commons are an example for the development of *gebiedscoöperaties* because they are about the power of the community to get things done together. This requires mutual trust in the first place. In order to utilize the power of the Commons, the design must pay attention to democratic control mechanisms, so that one or more parties do not become dominant, thereby jeopardizing the common interest. Limitation of shares, rights, powers and the granting of voting rights provide options for this.

Clusters

Economic regional clusters (see also section 2.1) are a second example of decentralized, local and regional cooperation. In this case, it is about achieving social and economic prosperity. Here, a number of aspects of the economic cluster phenomenon are described that are relevant to the development of *gebiedscoöperaties*. The following topics are dealt with in succession: the definition of the term cluster, the advantages of strategic cooperation in a cluster, the structure of a cluster and a systematic approach to describe cluster developments.

Cluster Definition

As described in section 1.1, Michael Porter (1998) defined clusters as 'geographically proximate group of interconnected companies, suppliers, service providers and associated institutions in a particular field, linked by externalities of various types' (2003, p. 562). Delgado, Porter and Stern also emphasized that it is not about clustering companies within a sector, but about collaboration between related industries

that together form a regional ecosystem with many interfaces (Delgado et al., 2014). It is about making smart use of regional circumstances and the complementary strength of cooperating partners. These partners are not only industrial companies: "clusters" are seen as vehicles for regional economic growth in which companies, governments, research centres, universities and citizens work together. (Manickam, 2018).

Clusters as an advantageous strategy

Working in clusters has advantages. For example, the effect on wages is an average growth of 13.5% and there are many more innovative companies growing strongly than elsewhere. Employment rates are also growing faster within clusters as opposed to not working in clusters (European Commission, 2019, Emerging Industries, p. 5).

Clusters, if well organized, make innovation easier. Firstly, because working together means a broadening of perspective for everyone involved. Also, everyone is linked to knowledge, skills and insights of other parties. The broadening of perspective means other ways of looking at problems and new perspectives on solutions also emerge. A cluster of regional collaborating parties can also respond more easily to new trends, new technology and new demands from the market. They can form new value chains and create new businesses. Clusters are a good breeding ground for innovation.

European cluster strategy

Europe stimulates thinking and working in economic clusters. This is done by investing in modernizing industries, helping small and medium-sized businesses to have access to clusters; by promoting regional and interregional cooperation and by investing in regional smart specialization (European Commission, 2013). The latter strategy is aimed at regions discovering their own competitive strength through a bottom-up approach, taking into account their own history and local context. The emphasis is on the R&D and innovation capacity of collaborating parties: companies from different

sectors, governments, universities and research centres, and residents of the area.

In developing regional strategies, data and guidelines from Europe are important. For example, the "Trends Report" (European Union, 2019, p. 14) mentions global megatrends that regions should take into account.

- *Environmental and smart economy megatrends:* Green and circular economy, Urbanisation and smart city, Smart mobility.
- *Socio-political megatrends:* Globalisation and geopolitics, Demographic shifts.
- *Technological megatrends:* Automation, Mass customisation and servitisation, Integration of subjects and objects, Data-driven world, Cybersecurity and blockchain.

The same Trends Report describes developments in promising new or renewed industrial branches that each region could look to for its own mix of 'smart specialization'. These are: Advanced Packaging, Biopharmaceuticals, Blue Growth industries, Creative industries, Digital industries, Environmental industries, Experience industries, Logistical Services, Medical Devices, Mobility Technologies, Smart construction industries. Europe's *'Green Deal'* strategy (2019a), steered by aiming to become the first climate-neutral continent by 2050, also offers new opportunities to connect sectors more closely.

Furthermore, in the new European program (2021-2027), clusters will be assigned a new role to facilitate green, digital and technological transitions. In doing so, they are given the task of developing the necessary competencies and business models and support interregional and cross-sectoral collaborations in order to realize new services (internationally) and new value chains.

The design of a cluster

Setting up a cluster organization is necessary for the continued existence of a cluster in the long run. As partners, regions, opportunities and obstacles and themes are not the

same everywhere, customization is needed in setting up and organizing the networks. For example, the role of the regional government is sometimes only providing subsidies and in other places it may be actively participating. In some regions, it could be a large company that is dominant, while in other regions SMEs may be most active. In addition, regions differ in whether innovation, research and educational institutions are present. Nevertheless, there are a number of characteristics for the design of a cluster organization. These are found on the 'Smart Specialization Platform' of the European Commission[14]:

- Members come from the private sector, the public sector and academia (triple helix).
- The cluster organizations know the networks of the various members and are able to bridge cultural differences and the way in which they work.
- The organizations take the initiative to cooperate to achieve the needs of various parties and sometimes also for activities that offer long-term prospects and to facilitate innovative changes.
- They take initiative in projects and ensure that the various parties are involved.
- They lobby and try to influence legal frameworks and standards in such a way that they are in line with the needs of the members of the cluster.
- They organize matchmaking and networking events.
- They are active in the acquisition and distribution of company information.
- They stimulate internationalization and thus create new opportunities, also for research and innovative projects.

Cooperatives

"Cooperatives are people-centred enterprises owned, controlled and run by and for their members to realize their common economic, social, and cultural needs and aspirations". (International Co-operative Alliance website, 2020).

Cooperatives come in all shapes and sizes. Internationally operating companies can form a cooperative, but also a local supermarket. The top 100 cooperative companies together have a turnover of more than € 107 billion and employ more than 140,000 fulltime staff (NRC website, cooperative knowledge centre, platform and advocate).

Cooperatives are on average larger than ordinary companies and invest at least as much. The risk of job loss is probably smaller. Cooperatives survive better and are at least as productive as ordinary companies (Perotin, 2016). Cooperatives keep people in service longer, people are less absent and wages are less unequal than in ordinary companies (Mayo, 2015).

To clarify what distinguishes a cooperative from a company that aims to make a profit for shareholders and to create a framework, the NRC knowledge centre has published a 'Code for Cooperatives' with a number of principles and regulations in which those principles are explained and enumerated (Cooperative Code 2019 for cooperative enterprises):

Cooperatives are about cooperative entrepreneurship with the following principles:

- A cooperative is an association with a company doing business with and for the members.
- The cooperative is based on the recognition of a common need.
- The cooperative focusses on long-term value creation.

Cooperatives are about collectivism and reciprocity with the following principles:

- The relationship between the members is one of cooperation and solidarity.
- The cooperative is based on the strength of the collective.
- The relationships between cooperative and members and between members among themselves are based on mutual rights and obligations.

In addition, cooperatives focus on the involvement of members with the following principles:

- The cooperative is a membership organization on a democratic basis.
- The degree of control is determined by several factors (such as the degree of use by a member).
- Financing of the cooperative by the members is a form of reciprocity and/or strong member involvement.

A new development: Digital platform cooperatives

A new cooperative form is the digital platform cooperatives (Borkin, 2019). Sutton (2016) defines them as follows: "A platform co-op is a digital platform that is designed to provide a service or sell a product, and that is collectively owned and governed by the people who depend on and participate in it." Such platforms are an alternative to digital platforms such as Facebook, Amazon, Google, Uber, Airbnb and Deliveroo, which mainly gather capital and information and destroy existing local and regional infrastructures. A digital regional platform can offer gebiedscoöperaties an opportunity to connect to digital developments to support self-sufficiency and more independence from global players.

Governance

The term "governance" is used differently in different domains. Usually, it refers to the way an organization is governed (financially, economically, strategically), including an implicit or explicit code of conduct and the supervision of governance and behaviour. Sometimes it only refers to the governance model, the relationship between directors, supervisors and employees. Here, the definition used focusses on the how decisions are made and conflicts resolved. Governance is not about who is in charge and who controls and sanctions, but about horizontal and informal processes that take place between stakeholders from very different disciplines and industries. Governance concerns 'the processes of interaction and decision-making among the actors involved in a collective problem that lead to the creation,

reinforcement, or reproduction of social norms and institutions' (Hufty, 2011).

Based on the above definition, whilst applying the cooperative principles, there are several aspects of governance that need to be addressed:

- Firstly, a governance that leads to shared paradigms, values and norms. The awareness of shared problems, challenges, goals and interests rather than "every man for himself" which is common in the existing neoliberal economic world. This kind of governance is about arriving at a common awareness and perspective on what the cooperative can mean for all parties involved and how that shared perspective can be realized. It is also about the (control of the) maintenance of the common paradigm and goals of the cooperative.
- Secondly, the cooperative is a business which does not function in isolation. This means that it to consider market developments, macroeconomic trends, costs and benefits, quality and customer satisfaction, and speed and adequacy of delivery, in order to be competitive with other parties such as limited liability companies and public limited companies. The cooperative must formulate a strategy for the future and a strategy to build a fertile ecosystem for it.
- Thirdly, given the above, good internal organization of a business is indispensable. This requires the attention to business processes and procedures, planning and control, and thus, of hierarchical relationships between management and employees.
- The fourth type of governance concerns the management of power relations. The members are in-charge. For this purpose, NCR has posted a number of cooperative governance models (The cooperative governance models in a nutshell) on its website. This deals with the relationships between general meeting/members' council, the board (and/or management), the supervisory board and the company.

Cooperatives are associations with members who work together in a company to create value. Mutual involvement, mutual trust and the will to work together are important

principles. The legal form of a cooperative varies from country to country. Governance is not only about the relationship between board and members, but also about arriving at a common paradigm and standards, as well as managing the cooperative in a business-like manner.

Lessons for the Gebiedscoöperatie

For the growth, flourishing and maintenance of the *Gebiedscoöperatie*, a series of recommendations were listed in the previous paragraphs and are summarized here. At the beginning of this section, the important information to be remembered about a *Gebiedscoöperatie* was mentioned. A *Gebiedscoöperatie* (place-based or area cooperative) is a cooperative form of cooperation in a particular area with the aim of strengthening it economically, socially, ecologically and culturally while making it future-proof. Cooperative collaborations take place between the business community, education, research and innovation centres, social institutions, citizens and the government.

Members of an *Gebiedscoöperatie* can be all kinds of stakeholders operating in the area: businesses, institutions, consumer organizations, residents' organizations, amongst many others. A *Gebiedscoöperatie* offers a permanent structure and promotes cooperation between members and non-members in a number of areas:

- Consolidating a development agenda for the area
- Innovation and knowledge needs that improve regional capabilities
- Improved business operations and/or value adding, including creating new (regional) value chains based on cooperative principles
- Sustainable business activities and professionalization of existing businesses
- Solving societal issues (energy transition, health care, elderly-mobility issues, employment, social cohesion, quality of life in rural areas, new economy of rural areas, etc.)
- Start-ups & up-scaling of businesses.

To strengthen the innovation capability of an area or region, specific platforms for innovation can be established. *Gebiedscoöperaties* have the advantages of a cooperative approach, such as greater productivity, increased employee loyalty and greater investment capacity. The conception of a *Gebiedscoöperatie* must have fertile grounds. There must be incentives for different parties to work together. These reasons have been discussed extensively in the previous sections. For regions that are performing well, a *Gebiedscoöperatie* could help them become better; more innovative and more competitive whilst increasing sustainability.

Given that each area has unique characteristics such as a different history, a different geography, different population base in terms of age, educational level and cultural background, types of commercial activities, presence of schools and research centres, population density and existing infrastructure, one of the first and necessary step is to map the urgent challenges and opportunities for such an area. This can be done using the Cluster Emergence Model, CEM, (Manickam, 2018) described in the previous section. This model helps to capture the contextual changes of an area, the actual condition of the area, the dynamics that take place by working as a *gebiedscoöperaties* and what actual transformations could take place.

A precondition for working together in an area is mutual trust between stakeholders. To be successful on the longer term too, visible results, tangible and/or intangible, for each individual stakeholder and for the community must be achieved. The eight design principles for the Commons, as formulated by Ostrom to create a stable ecosystem, can also be used to design a *gebiedscoöperatie*.

A top-down blueprint approach is unsuitable for a *gebiedscoöperaties* to be effective. The approach needs to be bottom-up and top-down, where the involvement and cooperation of key stakeholders is indispensable to enact innovative developments due to the variety of perspectives. In a ***gebiedscoöperatie***, independent roles must be created, to bring

different interests and also competing parties together. In describing a *Gebiedscoöperatie* as a cluster, the concept of systems-in-systems was used to clarify top-down and bottom-up influences on an area. In order to make *Gebiedscoöperatie* truly effective in solving societal challenges, it is often necessary for *gebiedscoöperaties* to cooperate in a regional platform, so that cooperation between stakeholders is also greatly improved at the regional level. For a regional platform, setting up a digital platform cooperative could be an interesting option. A *Gebiedscoöperatie* can also shape the forms of cooperation within that area, such as local supermarkets, village associations, care and energy cooperatives. A *Gebiedscoöperatie* can provide a guarantee for the long-term survival of local initiatives, because professional support, a permanent structure that is not dependent on random people, and a revenue model for activities at a slightly higher level can be better guaranteed.

For *gebiedscoöperaties*, as well as for other cooperatives, entrepreneurship, reciprocity and member involvement form the basis for cooperation. Governance is, therefore, not only about management models, but also about creating and maintaining that joint entrepreneurship in which reciprocity and involvement are essential. Governance is also necessary for the realization of successful area and regional development, and finally, governance must lead to an efficient and effective business approach for all activities.

The third chapter is about innovations in the field of education and research in the Northern Netherlands in particular. This requires changes, not only in the knowledge institutions themselves, but also in other regional organizations.

The first section describes a knowledge network from the early 20th century, the OVO-Triangle. OVO is the Dutch acronym for education, information provision and research. It was an approach initiated by the Dutch Ministry of Agriculture of the time. This approach resulted in an infrastructure that increased the level of knowledge, innovativeness and collaboration amongst agricultural entrepreneurs to become world class.

The second section zooms in on Innovation Workplaces, a concept created by Hanze UAS to provide flexible, regionally anchored and internationally positioned education and research. Hanze UAS developed Innovation Workplaces as a response to developments in the Northern Netherlands through which they facilitate learning communities made up of partners from the regional quadruple helix. It also provides insights into how such innovation arenas are embedded in curriculum and furthermore anticipates how Hanze UAS could function in the future as an engaged university.

The final section outlines the vision of collaboration between the region and Hanze UAS in the next five years, in particular, the Centre of Expertise Entrepreneurship in order to create an entrepreneurial ecosystem. This could provide insights and inspiration for other HEIs to embark on a similar development to engage and support the region and to take concrete steps to operationalize it even as Hanze's development is emerging as it interacts with its region.

Transitions in regional knowledge development - towards next education

3.1 THE 'OVO' TRIANGLE – LIFELONG LEARNING *AVANT LA LETTRE*

Immminent, multiple and radical changes ahead of us have been described in several parts of this book. Given this, it can be useful to take a look to the past: are there known methods or approaches from the past that can be used to learn from? Of course, there are many, but let us have a look at the so-called OVO triangle. The Dutch acronym 'OVO' stands for education, information provision and research. The OVO approach shows how in the early 20th century, a knowledge infrastructure was built that manifested itself from national to regional and local scale to the capillaries of Dutch agriculture. This chapter zooms in on the Dutch Province of Drenthe, where the agriculture teacher Jakob Elema successfully created a knowledge infrastructure that was unparalleled, in particular in a province where the quality of agricultural business and its relationship to market and landscape was deplorable.

Agricultural crisis

The seed for the OVO triangle was sown in the state commission for agriculture of 1886. The serious financial problems in agriculture, as a result of the great agricultural crisis in the last quarter of the 19th century, called for increasing government involvement. The government did not want to pursue a protective trade policy, but it was willing to set up the "State Agriculture Commission". The main task of this committee was to investigate how Dutch agriculture "can be raised up from its depressed condition". In 1890, the committee reported its findings. According to the committee, the malaise was not only due to external circumstances (import of cheap agricultural products from the US and Canada), but also due to price falls of domestic products, need for more efficient production, purchase of machines, loss of employment and the

rural exodus (it all sounds surprisingly familiar). In particular, the committee noted a clear lack of knowledge, progressiveness, innovation and cooperation among farmers.

The government intervened. Their aim was to provide the peasants with freedom, knowledge and insight so that they understood which path would lead them to economic benefit. The State Agricultural School in Wageningen, which was founded in 1876, had already been a step forward. This institution needed to be strengthened. It now also came down to stimulating changes at the grassroots level. The government became actively involved in agricultural education, research and provision of information. Agricultural consultants and teachers were appointed, and, in some provinces, experimental stations were established, where experiments in the field of agriculture and horticulture could be carried out.

Need for new trainers

The task of the consultants and teachers consisted of providing information, research and education. They had to be versatile. Thus, information provision through oral and written advice for individuals, writing articles in newspapers and trade journals, publishing brochures and books, group information in the form of lectures, excursions, demonstrations etc. Naturally, it was also expected of them to maintain close ties with the boards of the various agricultural organizations and the municipal and provincial authorities.

A big problem was of course: how can suitable people for this job be found? There were only a handful of civil servants with some degree of practical training, experienced in the new principles of modern, German-style, rural economics. One of them was Jakob Elema, born in 1872 on his parents' farm in Toornwerd, North Groningen. His parents belonged to the wealthy, educated peasantry, where study and agricultural experiments were appreciated. Jakob studied at the University of Halle, at the time a highly modernist centre of completely new agricultural insights. He then completed his studies at the National Agricultural School in Wageningen and obtained

diplomas as an agronomist and teacher. A short time later he was appointed as a state agricultural teacher. At that time, in 1894, there were only five such civil servants in the Netherlands and there was a need for more representatives of the new batch.

Room for innovation

Drenthe can be taken as an example. That's where Jakob Elema started his work as an agricultural teacher in 1895. At that time, people were not waiting for changes. Novelties, such as the appointment of the young agricultural teacher, were greeted with great scepticism. However, Elema was not deterred. Owing to his expertise, motivation and inexhaustible effort and energy, he eventually gained the widespread trust of the province of Drenthe. The reviving economic climate after 1895 was an important support for him.

In the period 1890 - 1915, agriculture was experiencing a strong development. Soil cultivation was vigorously introduced. And, the implementation of commercial and scientific principles in livestock and arable farming had profound consequences. Cooperatives arose for dairy processing, meat marketing, potato starch processing, cattle feed, artificial fattening products, agricultural credit and genetic breeding of livestock. These organizations proved to be of lasting importance. As the general economic and agro-economic situation (agricultural prices, outlets for dairy products, meat and potato flour) begins to recover again in the period 1890-1895, Dutch agriculture is ready to take advantage. Many, with the recollection of the previous crisis in mind, were ready to experiment. In Drenthe, too, some now dared to experiment, and the growing economic opportunities made room for innovation, rationalization and emancipation. The valuable role that Elema has managed to fulfil in that process just then could be called coincidental, but that is probably not entirely accurate. The organization of a sustainable infrastructure down to the villages was key for what he was aiming at: creating a knowledge network through which research and business levels were in direct and permanent contact. The famous *kitchen table* became the iconic of this movement.

How did he manage this?

To be able to learn from this, Elema's key steps must be followed.

Information

First, he wanted to establish good information. An important first step to success were the lectures. If others did not ask him, he took the initiative himself if he thought it was required. In coordination with the president of a local agricultural association, the school headmaster or the pastor, he convened a meeting. The first few times, visitors were interested, but attendance was limited. He himself critically analyzed how it went and continuously improved the approach. That is how the lectures were attended more and more. After approximately a year, an agricultural association was founded for the first time, as a result of a lecture. In the winter season of 1895/96, he gave a total of 32 lectures to 1,542 visitors. Although the topics of his discourses varied, no fewer than 26 were devoted to the fertilization of the sandy soils. This was the theme in those early years. In second place came feed, to which a quarter of all lectures were devoted. Two other popular topics were dairy production and the creation of peasant lending banks.

Collaboration with the school teacher

In addition to his lectures, Elema set up small test beds everywhere. That way he could see exactly which measures led to which results and he could advise the farmers properly. He often worked with the village teachers. Often these are the individuals who enjoyed the trust of the local population, who advised and assisted them, understood the importance of improvements in agriculture and animal breeding and participated in their implementation. The new ideas came from others, but the local teacher helped convey them to the local population.

Formation of a knowledge network

This kind of collaboration allowed Elema to strengthen his network and awarded him with extra eyes, ears and hands. In addition, more and more agricultural associations were founded over time, often as a result of Elema's lectures. These

associations were, for him, an important tool for innovation, acceleration and dissemination. It was not only farmers as members who attended the meetings, but also the mayor, town clerk, doctor and headmaster. The members urged each other to ask questions and provide more information. This was a model for Lifelong Learning *avant la lettre* as well as a source of knowledge for the average small farm holdings that were the norm in Drenthe at that time.

Teach the teacher

Education, research and information were closely related. Providing proper information to farmers was only possible if the farmer was experienced enough to understand the background of the advice. Good information thus had to be, based on good education. This was often done during winter evening courses. The number of these types of courses steadily increased. They often resulted from the initiative of local educators with an agricultural certificate.

The teacher course that Elema initiated around 1900 in Assen was essential for the entire Drenthe agricultural education, but also for the functioning of the government information service in Drenthe. Once a week, on Saturdays for two to three hours, teachers came to attend the basic certificate for agricultural vocational training. On average, Elema taught about 50 hours a year at the "winter schools". Through these courses, Elema created a network of co-workers throughout the province. Using the teachers, who were people close to the farmers, he was able to introduce ideas at a local level and set them in motion. The number of "propagandists" grew. Everywhere in Drenthe, more and more headmasters could be seen in the field, where they took soil samples, inspected the grain or conducted tests on the *madegronden* (Dutch term refering to *common grounds*). This created a permanent innovative environment.

Publication channels

Elema felt that an agricultural magazine could help Drenthe reach more farmers. This is why he initiated a committee to edit a weekly agriculture magazine. The magazine was a

weekly publication of 13,000 copies with news and information publication. Elema also contributed to the magazine, often in the form of a question-and-answer game, adhering to sound didactical principles.

Pioneer and change agent

In 1937 Elema gave his last lecture. Throughout his forty-three years of service, he had given 744 lectures in Drenthe. In front of more than 45,000 people, he had tried to introduce new methods and techniques among the Drenthe farmers in cafes, church halls and inns. For decades, he had been the information officer, the guide and supporter, and in the initial phase, above all, the "development worker" for the Drenthe farmers. Elema strove, entirely in keeping with the ideas of agricultural education at the time, to change the economic behavior of the farmers of Drenthe. He wanted to provide them with knowledge and insight into modern business operations, in order to improve their material conditions. That is why he was the basis of the foundation of many agricultural associations, farmers' loan banks and bull breeding associations. By designing agricultural education, he spread knowledge and created a network of "assistants" in the villages. The students, teachers with an agricultural certificate and young farmers further propagated the ideas among the local population. They ensured the actual realization of the ideas.

He had the wind in his sails from an economic-technological point of view. But most of all, he was the right man at the right place. He combined a few of the personal qualities needed as a change agent. He had a clear and thoughtful vision on many agronomic matters. He was able to translate new ideas into the needs of the Drenthe countryside. He chose the suitable people around him to build a solid network in order to pass on his knowledge. Besides, he was careful, not quick in judging and only made recommendations when he himself was fully convinced of the positive effect. That inspired confidence. His judgment was law to many. When Elema had said something, it was no longer a doubt. Today, any college would hire him directly as a lecturer.

3.2 LEARNING IN INNOVATION WORKPLACES

The corona crisis is bringing forward many insights with greater clarity than before. One such insight is that higher education needs to serve society at large and not exclusively young people. Current practice is not reflecting this yet. Looking at Universities of Applied Sciences (UAS) in the Northern Netherlands, about 95 percent of the students are under 25 years old. This is only about 5 percent of the total working population in the Northern Netherlands[15]. Increasingly, the consequences of the corona crisis are becoming clearer and it is worrisome that the majority of workers and job seekers are not making use of publicly funded higher education. Lifelong Learning (LLL), or continuous education as it is called in some countries, needs to become the norm where we are continuously re-training, gaining new knowledge and competences for changing workplaces and new careers or businesses.

Strategic agenda: accessible, flexible and regionally anchored colleges

To improve this, educational arrangements need to be adapted - not marginally, but fundamentally. This is not the exclusive responsibility of knowledge institutions. The business community, governments and civil society also have a role to play in this. In the new strategic agenda of the Dutch Minister of Education, Van Engelshoven, a major role is given to flexible, regionally anchored and internationally positioned universities of applied sciences. These key points are the result of social developments that the Minister has identified and are also in line with the agenda that the Association of Universities of Applied Sciences presented to the Minister earlier this year. Universities of applied sciences (UAS) have highlighted their responsibility to prepare students, both at Bachelor and

post-Bachelor/Masters levels, for a dynamic labour market. Where once university education was a follow-up for secondary school with a relatively homogeneous group of students, things have changed and UAS are admitting many different categories of students for all levels of programmes.

UAS in the Netherlands tailor their programmes to meet the needs of the labour market. Where there used to be a relatively fixed set of well-defined professions, in five to ten years' time, the diversity and nature of many professions are expected to vary dramatically making current curricula no longer able to match future labour market needs. Similarly, until recently companies had relatively well-defined business models and somewhat clear market forecasts, but this too has been changing. Current and future entrepreneurs and employees have to take into account strong fluctuations and therefore a need for faster adaptations and innovations. Businesses need to be increasingly more agile rather than rely on routine responses.

Anticipating changes in society is not new for UAS as they have been preparing for these changes for quite some time. Each UAS has developed specific plans to meet changes. For example, choosing growth sectors like water and technology, security in public-private collaborations (NHL Stenden) or creating Smart Solutions Semesters (Saxion) are examples of how UAS are adapting to meet Lifelong Learning (LLL) needs. And yet, the question remains why is there a gap in meeting needs for LLL pathways that are adequate, timely and without too much bureaucracy?

This question runs like a thread through this book and it brings us to the notion of "ENGAGED". Becoming ENGAGED requires close, structural, trustful collaborations between regional partners. Such arrangements can only be successful if each partner is able to be flexible and collaborate jointly with well-articulated self-interests. The rest of the section illustrates Hanze UAS' approach to ENGAGED. The next part provides insights into the context of the region as a peripheral region. Being different from the rest of the country, Hanze UAS was prompted to initiate development of Innovation

Workplaces (IWPs), which would host learning communities of partners from the regional quadruple helix (business, government, academia and civil society). The next part describes IWPs, their connection to the curriculum, guiding principles and how it maintains these principles. Finally, a brief glimpse on how Hanze intends to realize its ambitions to become an ENGAGED university is provided that includes cooperative innovation.

Higher education in the northern periphery

Compared to the national average, SMEs in the north of the Netherlands are lagging behind in valorising innovations and, consequently, in sustainable growth. Also, there are relatively few 'innovation leaders' and relatively many 'innovation followers' and not innovative entrepreneurs. The region has been labelled a 'follower' when it comes to innovation and development due to its peripheral location, damages caused by gas extraction and the relatively large number of inactive people in some sub-regions. Even if entrepreneurs want to innovate, the support infrastructure is fragmented and often unknown to many entrepreneurs, particularly those at the bottom of the innovation pyramid.

These issues of inadequacy prompted Hanze UAS to initiate IWPs. This initiative was a seamless fit with the ambitious educational vision drawn up by Hanze UAS in 2014, and was at the core of the Strategic Plan 2016-2020. The focus of the vision and the Strategic Plan was further development of Hanze UAS into a learning community, where education, research and regional professional practice are closely linked. A learning community that encompasses inquisitive and motivated students, inspiring lecturers and researchers and regional partners who meet, strengthen each other's talents and knowledge and learn collectively, and from each other. The IWPs are organized to facilitate learning communities: students, lecturers, researchers and regional stakeholders working together and co-creating solutions to urgent practical challenges faced by regional entrepreneurs, governments and civil society. In the process, IWPs strengthen linkages between

education and research to the region, and vice versa. Education and research programmes become more relevant with increased impact on societal and regional innovations. As of 2020, the new Strategic Plan has indicated that every student will participate in IWPs which will boost the innovation capacity of the region. Currently, approximately 100 IWPs involving hundreds of students are already active.

Ambitious mix of parties and knowledge domains

Ideally, interdisciplinary collaboration and co-creation takes place in every IWP with participants from education, research and practice (enterprise, governments and civic organizations) solving complex challenges. IWPs promote knowledge development, sharing and adaptation that reinforces a new approach to Lifelong Learning (LLL) where actionable innovation is part of LLL. Hence, learning (knowledge inputs from education), researching and working on practical problems become blended. IWPs tackle complex challenges that require co-creation, commitment and resources, often for a period of six months. A collaboration agreement with specified commitments related to participation, resources and results is put in place to ensure sustained efforts and knowledge development.

An example in Westerkwartier:

In Westerkwartier (an area located in the Northern Netherlands), a large number of agricultural small and medium sized businesses are dairy farmers and they are members of the Gebiedscoöperatie Westerkwartier (a place-based cooperative). The cooperative is committed to improve regional resilience and responsiveness. The entrepreneurs in this area are under great pressure: due to market conditions; they are caught in a globally organized food production system; at both the farm and regional level, they are affected by regulations designed to limit livestock and production and they have to cope with strongly fluctuating milk prices, rising fixed and other costs, new sustainability regulations and social demands.

The dairy farmers have clearly indicated that growth is no longer a solution. A group of forward-thinking farmers set up an IWP where they worked with students and researchers to explore different solutions. One such exploration led to students interviewing buyers in the region. The result showed that there was a growing demand for regional products. Meat retailer and butchers indicated that was a market for regional meat, specifically beef, and especially in the business-to-business market. The students proposed setting-up a regional beef production chain.

The next step was development of a business case for the proposed solutions. A new group of students started working in consultation with the farmers. They saw that in the current situation, dairy farmers only keep a part of their calves - just as much as is necessary to maintain their herds. The rest of the animals are sold to livestock dealers. The price for these calves (often bulls) is low, as they are considered a 'residual product' from dairy farming. The working group came up with the idea to breed a new herd for beef with these previously sold calves. They also suggested that these cattle could graze on nature conservation grounds managed by semi-public authorities who were also members of the Gebiedscoöperatie. What resulted was a plan to build a new regional chain that involved (dairy) livestock farmers, nature conservation associations, meat processing facilities, wholesalers and large (institutional) buyers.

In the process, farmers, students, lecturers, the Professorship Sustainable Cooperative Entrepreneurship and other members of the cooperative formed a learning community. They were faced with many challenges: What does the value proposition look like? Is there a market for it? Who invests, and how much? Is it financially viable? When and under what conditions do entrepreneurs break even? Wat type of business entity is needed?

The forward-thinking farmers founded their beef cooperative in February, 2019. A year later, the first cattle were slaughtered, processed and sold. Fifteen farmers from Westerkwartier are currently participating in the new cooperative. In the course of 2020, the livestock farmers had 40 cattle, the year after, 80. Once their production capacity is increased, they can have contracts with major

buyers in the region. For of those participating in the new regional beef production chain, the collaboration has added additional value. Dairy farmers will also produce and sell meat in addition to their original milk business. The nature conservation organization has the benefit of less mowing, in line with its nature conservation objectives. Meat wholesalers and butchers in the region are processing the meat that is sold and consumed regionally. Finally, new employment is created, including jobs for people with disabilities within the cooperative that includes appropriate guidance and training.

The creation of new value from what used to be a 'residual product' is at the heart of the success of this example. The success also included new collaborations, new knowledge and a new form of LLL, that entailed learning-on-the-job that combined knowledge and resources from different participants. Students, entrepreneurs and lecturers alike acquired a whole range of new knowledge – actionable innovation with visible impact for the region and farming/conservation practice.

Flexibility as a key concept

Higher educational institutions need to become flexible – both within and outside their organizations. This is quite demanding for HEIs. HEIs need to design programmes within their organizations that match the heterogeneity of participants with diverse personal and professional characteristics and learning needs. The changing dynamics of professional practice and the labour market also demand that educational programmes must respond quickly and anticipate new demands. Therefore, flexibility concerns *flexibility in learning* allowing participants to acquire competences that suits their needs, *flexibility in the curriculum* means it is up-to-date and not restricted to a place (or time) and finally, *flexibility of participating organizations* that allows modular or changing units and swift responses to changing circumstances.

How to guarantee this in practice?

The changing role of HEI posed the dual question for Hanze as a UAS and the schools [faculty]: what exactly is the position and role within the triangle of education, research and the professional field and how do they shape a coherent process for students, from their first year of study to their graduation project – and then not from the HEI perspective, but from the regional perspective? The Hanze approach is: what does the region need and how can we as a HEI contribute to this? "We want to help answer the questions that exist in the region with our students, lecturers and professors. Our researchers will take a different position and role in this: they are inspiring co-creators with the region and the students" says Jacqueline Gomashie, Dean of the Institute for Legal Studies. "Not on an ad hoc basis, but structurally." This led to the conclusion that regional engagement and collaboration should be given a permanent place in the curriculum. To this end, a system had to be developed. At Hanze UAS, the IWPs and their embedding in the curriculum was the solution. At the Institute for Legal Studies and the Institute for Financial Economic Management, every student in the second year spends part of their programme in an IWP. This is called "flexible projects". It means that students work half a day per week in an IWP on assignments with and for partners from practice. Every week, a lecturer as a coach for the students is present on-site with them at the IWP; observes what is going on, contributes his/her inputs/knowledge but also acquires new knowledge in the process.

Students document their learning process and outcomes according to specific requirements, which they describe in their development portfolio. They discuss their professional development and entrepreneurial attitudes based on specific skills and knowledge. They also show how they worked together effectively in a group to deliver a quality professional 'product'. In addition, they are accountable for their critical attitude and research capacity as a professional in relation to the practical challenge. Other generic learning outcomes are also assessed. The onus is on students to show what they had set-out to learn, how this is linked to the challenge, how they

addressed the research and what they learnt during the process. Involvement of peer and professional review and collaborations are an important aspect of their process. They also self-evaluate their interventions and innovations during the process and conclude the semester with a presentation of their professional product, their portfolio and an assessment. The results are used in follow-up questions for a new round of students who take the outcomes further.

From the outside in

Since the collaboration between institutions and the professional field is organized in the IWPs, educational programmes can ensure that the learning projects fit their professional and educational profiles and that questions or challenges from professional practice contribute to the learning process and its quality. "The orientation is always from the outside to the inside. Classical knowledge transfer is not the key focus here. In the first place, we look at how together, we can achieve results that helps the entrepreneur move ahead", says Jacqueline Gomashie, Dean of Institute for Legal Studies.

Research from professorships is playing an important role in this. The question is how can you run two parallel processes each demanding the necessary quality: on the one hand equipping students with the necessary knowledge and on the other hand training regional partners and helping them to address their questions. This can be done, on the one hand, by formulating generic learning outcomes and testing the students accordingly, and on the other hand, by linking the IWPs and designated students assignments to professorships. Professorships can supervise assignments, thus increasing their quality and added value for the region. Moreover, the professorships can build on the individual student products and outcomes for more integrated investigations that contribute towards regional innovations.

Commitment from all parts of the HEI organization

In order to develop this system and put it into practice, within institutes or faculty, full support of Management, team managers and lecturers is required. The entire educational process must be set up in such a way that it facilitates collaboration with the practice. This is a major change compared to normal education contexts. At Hanze UAS, this started with the Strategic Plan and a vision for Innovation Workplaces. The flexible assignments in the second year of study are continued in the minors of the third year, and finally in the graduation assignment of the final year, in which each student works on a graduation research project for six months on the basis of a practical research question. This can of course be an assignment from a single company, but increasingly it is common for graduation assignments to be carried out in an IWP, which reinforces the interdisciplinary aspect required during this final study phase.

Through this link between education, research and the professional field, professors and their research groups can work closely with practice. Of course, not every practical question can be transferred into a research question. But the smaller practical questions might be a first step towards a research process in which research questions are articulated at various levels. This process can be visualized as a funnel, that ultimately leads to relevant and important questions for practice and research. This step-by-step approach starts with simple questions for student teams, and moves to complex questions for advanced teams of students and lecturers. Jacqueline Gomashie puts it as follows: "Our ideal scenario is for all our students to spend part of their education as possible in a multidisciplinary work environment, from which all kinds of research questions arise that we can then take up with our professorships and advanced (supervised) students, for the region and with the region."

Threefold added value can be achieved with this approach:

- For education (and thus for institutes/faculty and education programmes): through IWP, firmly embedded in curricula and learning pathways, students are well prepared

for their future multidisciplinary professional practice and the research capacity required in their professional field;
- For research (and therefore for professorships, knowledge centres and Centres of Expertise): the HEI has a direct link to knowledge requirements of the region and through linkage of education and research, realizes capacity, differentiation and impact of knowledge for the region;
- For professional practice: more research products and new insights are produced and regional partners can collaborate with more students and lecturers in relevant projects in a framework that guarantees continuity.

What is more important, is the realized synthesis: the added value of an IWP for education, applied research and professional practice supporting integration and cohesion of resources and capacities. IWPs steer towards integral added value: for quality of learning outcomes, quality of research, engagement and added value for professional practice. This integral approach distinguishes an IWP from traditional education, project bureaus and research groups or knowledge centres.

Further development

The flexible projects were introduced and tested at two Institutes. There are also programmes at Hanze UAS that include IWPs for placements, graduation projects, minors or part of a semester. Has Hanze achieved its ultimate goal? No, it is work in progress.

What does Hanze UAS want to achieve on the longer term? First of all, that all students spend as much of their education as possible in multidisciplinary work environments. This then generates all kinds of research investigations that can be addressed by professorships and advanced students but always in co-creative collaborations with partners from the region. And this in turn allows faculty to better aligned to the needs of the region and develop their research strategies accordingly. This change would mark an 'outside in' orientation which is not the case at Hanze or in most HEIs for that matter.

Not all IWPs are the same

We can distinguish four types of IWPs at Hanze UAS to date. There are IWPs that can be compared to a project: with one central question, a few sub-questions, with a starting point and a clear end point. There are IWPs that are directly linked to one specific theme and one specific research group. Also, there are IWPs that are linked to a location, such as a city district with specific themes. And finally, there are IWPs that are place-based such as that of Gebiedscoöperaties Westerkwartier, South and East Groningen, the Eemsdelta and Hogeland. These IWPs are broader in their focus and include all themes on the agendas of the respective areas. They are not only connected to professorships to resolve research questions, but they also support their areas, set out their own agenda and develop programmes.

In a relatively short time, many IWPs have been created at Hanze UAS, which fall into one of the above-mentioned categories. On the one hand this is a positive observation as it shows the enthusiasm with which the concept has been received. But the large number of IWPs that have arisen also pose risks for it can be confusing to regional stakeholders to know which IWP they need, where to find them and understand their specific processes. The risk of fragmentation of resources and sub-optimal results lurks in the numbers. The complex regional issues that need to be solved require more coherent and optimal working structures and Hanze UAS will therefore need to streamline and connect its internal structures, including IWPs, to better respond to their regional partners and regional ambitions.

3.3 DEVELOPING AN ENTREPRENEURIAL ECOSYSTEM

This section describes Hanze UAS' ambitions to further its commitment to the region and in particular of that the Centre of Expertise Entrepreneurship. The Centre's mission and details of how this could be realized are explained based on a working document that was recently compiled through its main Professors in April 2020. This remains a *work in progress document* that will be updated, concretized and operationalized after further inputs and interactions with stakeholders in the region and within Hanze. The section offers what changes are needed for all parties involved.

Towards a new balance

The Coronavirus crisis has brought us a number of lessons, one of which is a need for a new spirit of trust and cooperation amongst government, academics, entrepreneurs and citizens. Together, they are in search of a new 'balance'. The pandemic, but also transitions related to climate, energy, digitization, etc., provide opportunities but also uncertainties. Part of the new 'balance' is the collective search for new ways of collaborations in which the entrepreneurial capacity of regions, organizations and individuals is enhanced. This paves the way for a new role for Hanze UAS and its applied research centres and Centres of Expertise (CoE).

In recent years, a regional partnership has been developed as a result of an initiative of the Professorship Sustainable Cooperative Entrepreneurship. This has led to structural investments by many stakeholders. The professorship has also received regional and European recognition in the form of prestigious prizes and positive publicity for its initiative,

practice-based research and impacts in the field of cooperative entrepreneurship. In the past year, the professorship has substantially broadened its research scope. Its broadened focus is on improving the innovation ecosystem in the northern region. Cooperative entrepreneurship is an important medium for this. Within this context, the Professors at the CoE Entrepreneurship, and where possible with other CoEs at Hanze, will contribute to developing an innovative entrepreneurial ecosystem in the Northern Netherlands. This means that stakeholders from the quadruple helix will have new and more intensive linkages and collaborate on regional innovations. These processes will be actively supported by the newly formed Taskforce Strategic Lobby, which will operate on behalf of the Executive Board of Hanze. The Taskforce is committed to make the "Engaged University" vision a reality. To this end, they will identify strategic themes that have social impact and translate them into powerful integrated research and education programmes. This supports Hanze UAS's ambition to play a new and greater role in the regional innovation ecosystem.

As an *Engaged University*, Hanze UAS is committed to the development and innovation of the region together with its regional partners. This is in keeping with new developments in European policy and strategy – the role of HEIs in supporting regional and societal developments. The commitment of the Professorships to improve the regional innovation ecosystem with regional partners for the next four years is recorded in the aforesaid memorandum.

Aligned to strategic focus of Hanze UAS

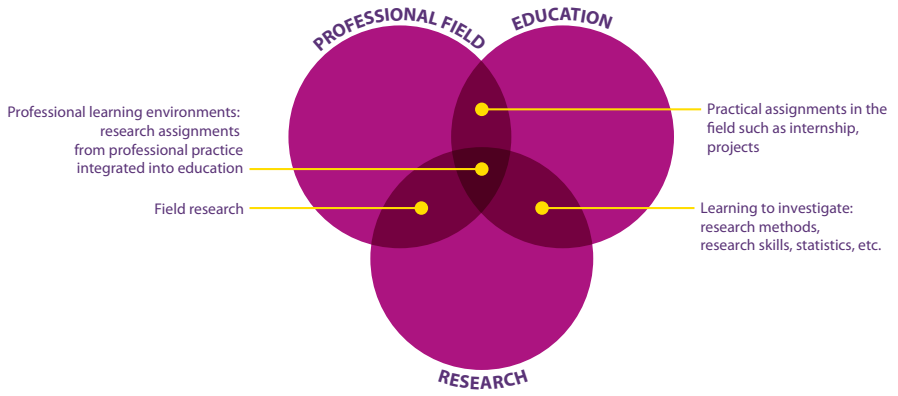
The CoE Entrepreneurship will align its mission to Hanze's strategic focus. Their mission is "to contribute to the responsiveness of the economy by contributing to an innovative ecosystem for entrepreneurship in the Northern Netherlands", and also through its two vertical themes of 'Powerful SMEs' and 'Renewal of the innovation ecosystem. These vertical themes furthermore coincide with the region's Northern Innovation Agenda (NIA). Last but not least, it contributes to

Hanze UAS' ambition to develop further as a learning community, in which education, research and professional practice become more tightly intertwined, which in turn supports further developments of Hanze UAS as an 'Engaged University'

IWPs as an important driver for regional collaboration and impact

Hanze UAS, with it the CoE Entrepreneurship, want to develop into a learning community that involves the region, namely, an "Engaged University". are closely linked. The close connections through collaborations of the quadruple helix, whereby research, education and the region (professional practice and society). IWPs are the place where education, research and innovation come together (see section 3.2).

Learning communities of professors, students, lecturers, researchers, entrepreneurs, employees, citizens and governments working together on regional challenges. This learning/working environment is designed to *learn and innovate in co-creation through research*. This model applies to the entire Hanze UAS.



Connection between education, research and the field (Van der Sijde et al. n.d.)

Through this setup, and particularly in cooperation with Gebiedscoöperaties in the region, regional clusters have been formed consisting of governments, NGOs and SMEs in the rural-urban field of Groningen. There is also growing interest from large cooperatives like Univé. In fact, formal ties with the Professorship Sustainable Cooperative Entrepreneurship and deeper collaborations through programmes are being developed with Univé to strengthen cooperative principles together with regional partners.

The essence of this ecosystem is to be in direct and daily contact with SMEs that have (latent) innovation and new knowledge needs. These needs are collected from individual SMEs and bundled into research questions through a process that distils and articulates their needs. In addition, linkages with the University of Groningen and entrepreneurial education in VET are logical. Connecting to the business community and other actors have become extensive and there was a need to find scalable models to serve their innovation and knowledge needs. This in turn, also provide a framework for carrying out research. Aspects of governance in particular would be an important part of such research focus.

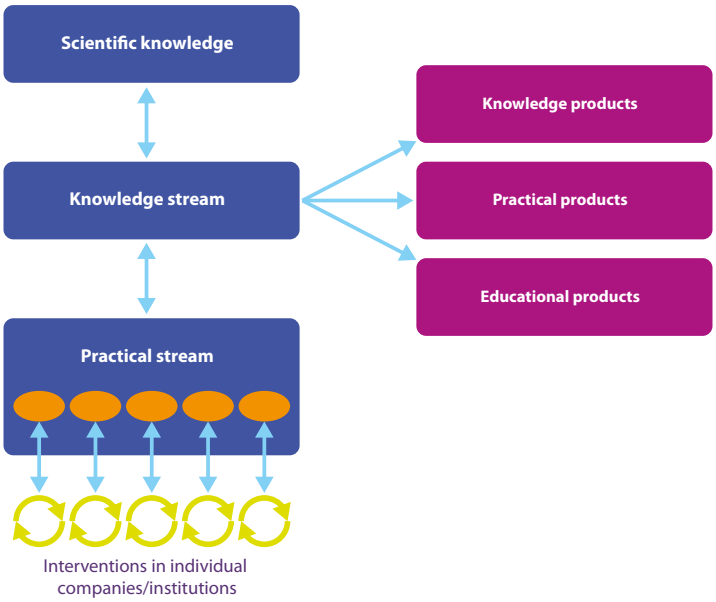
Impact in the region through collaborative efforts with regional actors is desired, ideally through IWPs. In the current research vision, IWPs are already described as "*large and growing regional collaborative networks, where lecturers, schools, SMEs and other stakeholders (such as employers' organizations and governments) work together on innovation, and where cross-fertilization and connections are stimulated by education (bachelors and masters), research, professional practice and government*". IWPs are seen as the ideal place for collaboration between professorships, students, lecturers, the professional field, citizens and governments to find solutions to societal challenges. IWPs offer hybrid learning and working environments, in which several learning and innovation processes take place simultaneously. Students work on assignments in the IWP, learn new aspects such as financial management, for example, but also conduct research as part of an assignment for the professorship. Similarly, lecturers super-

vising students come into contact with the professorship and its research topics and therefore also are learning. The business that commissioned the assignment offers insights into the practical challenges they are facing when formulating the assignment. The business may not only have new information from the student's end product but the participation in the IWP and the research project of a professorship but also experiences the learning process. This is why the business involved is not regarded as a client but as a partner in the integral process of innovation and research. IWPs are, thus, a place where the lifelong development of several generations and parties takes place simultaneously.

Within the CoE Entrepreneurship, IWPs are an important form of collaboration between external partners and research especially because this new form of learning promises to become the foundation for how the region can work together in the future in the innovation ecosystem.

Practice, knowledge and scientific flow

The simultaneous processes taking place within IWPs need to be distinguished as different layers - practice, knowledge, scientific flows - each with distinctive end products types (as is reflected in the well-known model by Andriessen and van Aken below).



Different streams in practice-based research (adapted, model of Andriessen, 2011)[16]

Professorships gather these individual products and knowledge to a higher level. In doing so, they use the knowledge gained from the practice flow to arrive at knowledge products, which could serve to strengthen the region. For example, an overview study (metanalysis) based on various practical cases, or a compilation of broader success factors and principles based on individual practical cases and benchmarking this to international practice, etc. Linking significant numbers of students to (simple) questions from entrepreneurs, and processing such insights and solutions into deeper and transferable research could have large-scale impacts for the region. Live cases with microdata and insights add up to more and what is needed is a way to organize this both in the region (IWPs) and at Hanze (Professorships).

16 In Van Aken, J. & Andriessen, D. (2011) Handboek Ontwerpgericht Wetenschappelijk Onderzoek: Wetenschap Met Effect. Boom Lemma: Den Haag

Moreover, it is important that an IWP is always about innovation. Students, lecturers and researchers are not intended as an extra pair of hands to carry out practical and purely operational assignments. The emphasis is on gaining new knowledge and/or developing interventions with impact (designing – implementing - redesigning). For example, companies, organizations and governments can be offered individual help with the next step in for example digitization (design of a tool), human capital (improved HR policy) or internationalization (an export plan), but they can also be supported in creation and reinforcement of regional value chains and circular business models.

At the same time, due in part to the number of students and the quality of supervision by lecturers, quality interactions with businesses and their staff are created. The processes in place, the method, allows more complex projects to be realized, and this broadens the research scope and those involved: in addition to students, lecturers and researchers also work with professionals on the interventions. In addition, students, lecturers, researchers and professors are involved in several phases of the intervention cycle, design and innovations, but also evaluation, implementation and possibly redesign. Most practice-oriented research stops at designing innovative solutions or recommendations for further action. At IWPs, work is done together with their partners, on evaluation, implementation and redesign of solutions. It is the cumulative impact of these micro projects aimed at innovation and the garnering of more complex projects that make regional innovation a continuous process with increasing impact.

Different types of IWPs

All IWPs are characterized by the blending of education, research, professional practice and possibly, civil society. The IWPs are multidisciplinary in nature and in some cases also crossing sectors, faculties/institutions and research group. But not all IWPs are the same and there are at least the following types of IWPs present in the region.

a. The CoE Entrepreneurship collectively has three IWPs: Powerful SMEs (possibly under the new name Powerful Region), Digital Society Hub and Startup City. The three IWPs revolve around collaborative projects of several professorships and faculties/institutes with the region.
b. IWPs related to a specific education programme focus on integrating various disciplines within the programme through student assignments with an impact on professional practice, often for a client.
c. IWPs as off-campus workplaces in a region or area and as close as possible to local residents, entrepreneurs and governments to collectively address local societal challenges.
d. IWPs aimed at deeper knowledge development as an engine for regional cooperation and innovation.

In order to properly manage expectations of internal and external stakeholders, further development is needed to bring about more cohesion and cross linkages as a first step.

Ambitions for IWPs

For the period 2020 - 2025, the following goals have been defined:

a. Well-coordinated collaborations between the various types of IWPs, so that each IWP makes an optimal contribution to solving societal challenges in the region based on its purpose and resources. Collaborative clustering for **impact**, **innovation** and **implementation** are paramount.
b. "Talent in the region" will be enhanced by a digital matchmaking tool and by monitoring regional stakeholder labor market behaviors.
c. A shift in one of Hanze UAS' KPI from "all students contribute to an IWP once during their studies" to "all students of our schools contribute to solutions for social issues through our IWPs" by 2025.
d. In 2025, IWPs will become **the** place for **Lifelong Learning** for the working population. To this end, tailor-made courses will be organized at IWPs; and more importantly, **'learning on the job'** at IWPs will see students, lecturers, researchers and professionals innovate **and learn** together.

By 2025, **certification and guidance** of the informal 'learning on the job' and a business model will be defined.

e. **Innovation** and **implementation** are the priority. Through collaborative research with and for the benefit of the region, new solutions and interventions are created, implemented, evaluated and improved collectively.

Structural and substantial financial contributions from partners are an essential precondition for this.

Further development of Hanze UAS into an 'Engaged University'

Hanze UAS aspires to make progress towards 'Engaged University'. This is also a new role for universities that the EU is increasingly demanding. The EU wants universities to devote themselves, much more than currently, to the region's development and innovation.

Implications for Hanze UAS:
Primary educational processes must be anchored in substantial contributions to the innovation ecosystem of the northern region, and thus be contributing to society – having impact on the region's socio-economic developments.

Characteristics of an *engaged university*

The table below captures the key characteristics of an engaged university as well as those of other models.

Model	Knowledge factory	Relational university	Entrepreneurial university	Systematic university	Engaged university
Main role	Production of knowledge	Exchange of knowledge	Active commercialization of knowledge	Boundary spanning role	Development role
Main unit of analysis	Innovation outputs	Linkages	Intermediaries	Systems/ networks	Spaces of governance
Main partners	High- tech firms located in proximity	Large manufacturing firms	Large manufacturing firms and spin-off firms	Regional clusters and Regional SMEs	Regional stakeholders
Directionality of engagement	Unidirectional (implicit)	Bidirectional (implicit)	Bidirectional (explicit)	Quadruple-helix	Responsive
Dominant methodology	Industrial surveys	Industrial surveys	Surveys of university managers	National and regional innovation surveys, case studies	Case studies
Key factors influencing impact	Research intensity/ inputs	Structural factors	Organizational structures	Regional system configuration	Number and synergies between universities
	Geographical proximity	Innovation strategy	Managerial practices, faculty behaviour/ incentives	Regional policy, institutional capacity of universities	University leadership, joined up policies/ incentives
Policy implications	Co- location of firms and universities. Increased funding for research	Some links should be promoted vis-à-vis others	Intermediaries and organiztional arrangements/incentives are needed to ensure links	Institutional arrangements are important to ensure linkages	Joining up universities missions and other policies at different levels

Potential roles of universities of applied sciences and universities (Uyarra, 2010)

Uyarra's table[17] describes various roles that HEIs can take, including one in the formation of a regional knowledge and innovation ecosystem. The various columns are not an ascending scale but offer a guide to where an HEI stands and what it chooses to be in the future: which current and future roles does the HEI have in the region?

Hanze UAS, in its engagement with entrepreneurs, could ask itself if the focus of innovation should primarily be commercial, profits for businesses, or, should the focus be shaping the 'next economy' in which sustainable, purposeful and value adding for the region is achieved through innovations with entrepreneurs, local authorities and civil society? Also, Hanze needs to ask itself if becoming an "Engaged University" is the goal, rather an "Entrepreneurial University" or a "Systematic University", or a combination of these three models. This still needs to be considered. The most important conclusion of Uyarra is that HEIs can play a significant role in a regional ecosystem, as co-developers (regional transformation) and as next generation co-governors (regional transition). Uyarra provides insights and guidelines for this, but not a blueprint.

Similarly, a recent publication of the European University Association (EUA)[18] also offers insights but not the way forward. They speak of a new key role for universities owing to the importance of knowledge creation in post-industrial economies and societies, emphasizing the regional scale: "In the regional quest for increased connectivity to fuel innovation dynamics, the university's new centrality becomes inextricably intertwined with its role of orchestrating multi-actor innovation networks", and "the key functions of the university of conducting research and educating future academics and professionals, leaders and innovators, are increasingly enacted in dense networked processes of knowledge creation". This requires a "multi-actor view of innovation and of the university's role in it". The study identifies seven necessary paradigm shifts that should result in universities' emphasis on open innovation, co-creation with regional partners from the quadruple helix and interdisciplinary or even cross-sectoral innovation. All of this is in line with Hanze UAS' ambition to develop

further as a learning community in which research, education and professional practice are linked: a learning community as intended in IWPs.

However, even this is not enough for a "pivotal role", as outlined by the EUA, nor the increasing linkages with the region as outlined by Uyarra. For a truly responsive "directionality of engagement" (see Uyarra) and an effective "multi-actor view of innovation", there needs to be more collaborations amongst cooperatives, IWPs and hubs, etc. in the region. This means that Hanze UAS' IWPs also need to be more closely connected with each other and with "hubs" and cooperatives in the region, and that primary processes need to be connected to regional innovation and co-creative processes.

Next stage of development: expanding the perspective and up-scaling

The CoE Entrepreneurship has a key role in supporting entrepreneurship, but on top of this is the (lifelong) personal learning strategy. Entrepreneurship consists of two aspects in this context:

- Entrepreneurship for the (prospective) entrepreneur: recognizing opportunities, taking advantage of opportunities and thereby creating value for oneself and others. Value creation is not limited to financial profit. It means adding something that is in demand, which solves a problem. At the core of entrepreneurship is recognizing what the problem is, what is the question and how can best answer it.
- Intrapreneurship: entrepreneurs in the sense above, but focussed on entrepreneurial ability within an organization.

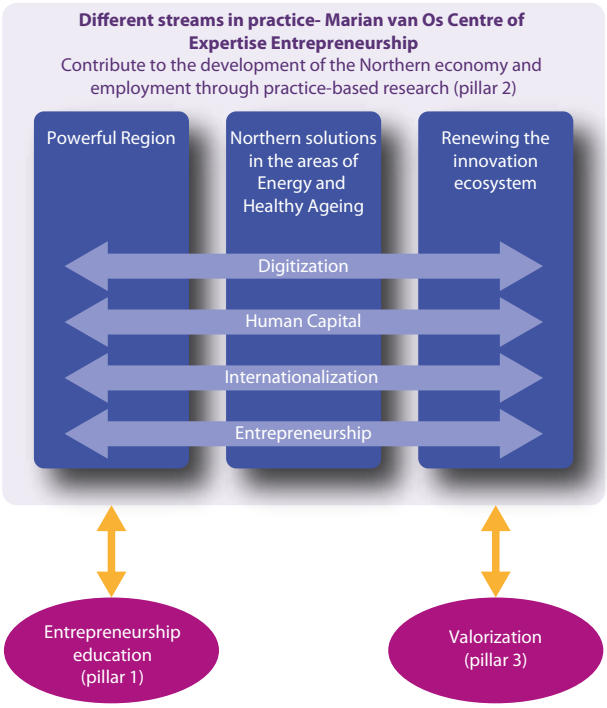
Both aspects are present in higher education and Lifelong Learning programmes. Connecting to learning and education is therefore a qualitative shift for the CoE.

Perspective on research

Looking at an optimal contribution to the innovation ecosystem and the position as an engaged university, the substantive focus in the research profile of the CoE Entrepreneurship has been updated:

- The aim to broaden the vertical theme "Powerful SMEs" to "Powerful Region". The shift is to go beyond individual SMEs, it is about strengthening the entire region, with a continued focus on SMEs as a major source of jobs in the North. Within the vertical research theme, interactions between company level and that of the entire region is investigated. How can the region set up and improve its innovation ecosystem in order to strengthen SMEs in the region? How can SMEs, for their part, strengthen the region?
- The previous theme is strongly linked to "Renewing the innovation ecosystem". In fact, strengthening the region (including SMEs) and strengthening the regional innovation ecosystem go hand in hand, and TOGETHER they form the vertical side panels. "Renewal of the innovation ecosystem" is realized by optimizing the collaborations amongst quadruple helix partners and by researching the success factors of ecosystems and cooperative collaborations.
- Knowledge development of interactions between Powerful Region and the Renewal of the Innovation Ecosystem is facilitated by the horizontal themes: Digitization & ICT, Human Capital, Internationalization and Entrepreneurship (the latter is a new horizontal theme). Likewise, mutual interactions are becoming increasingly important and is central to this research. For example, technological developments lead to a redesign of labour organizations, a change in individual learning needs of entrepreneurs and employees makes it easier to set up larger production chains.

The following illustration captures the research framework:



New research profile of the Centre of Expertise Entrepreneurship (Van der Sijde et al., n.d.)

The next sections elaborate on the research perspectives, themes and related notions.

The next steps

To reiterate, the key 2025 goal of CoE Entrepreneurship is:

> "Helping to build and co-organize a sustainable regional innovation ecosystem, in which the CoE Entrepreneurship, as part of the quadruple helix, works in a sustainable, programmatic and pragmatic way with its regional partners on the design and implementation of solutions that have an impact on the major social challenges".

The mission statement following the goal is, "The Marian van Os Centre of Expertise Entrepreneurship contributes to the responsiveness of the economy by helping to build an innovative ecosystem for entrepreneurship in the Northern Netherlands." The goal is also in line with the research vision. In particular, "Renewing the regional innovation ecosystem" together with "Powerful SME" is an important vertical theme towards which all professorships and schools contribute via the horizontal themes. And along those lines, innovation is also realized on societal challenges: for example, Healthy Ageing, Energy, Circular Economy & Circular Agriculture and Biobased Economy. In addition, research will head towards strengthening cooperation at the crossroads of the various challenges, in order to boost and to innovate entrepreneurial capacity.

However, this central goal also encompasses some significant next steps to increase the individual and collective impact on social challenges considerably. Central mottos are focus, upscaling and joining forces. This is intended to be achieved as follows:

- Together with partners (companies & governments), a sustainable regional development and innovation agenda for the period 2020-2025 is compiled, consisting of large-scale, interdisciplinary and long-term programmes aimed at societal challenges in the region.
- In these regional innovation programmes, all professorships and schools of the CoE Entrepreneurship will work together in an even closer and interdisciplinary manner in the period 2020-2025: with each other and with the stakeholders from the region. Cross-overs between the CoE Entrepreneurship themes are a rule rather than an exception.
- Strengthening the entrepreneurial capacity: entrepreneurship of the (prospective) entrepreneurs, intrapreneurship/ lifelong learning of the working population in their work and in their life as part of the ecosystem.

- All professorships and schools of the CoE Entrepreneurship prioritize, for the period 2020-2025 these programmes and the associated collaborative projects. As a result, collaboration with each other and with the region becomes the core of the school and professorships activities.
- In the period of 2020-25, the region will make an active contribution to compiling and implementing this agenda, while substantially contributing through manpower and funds. Structural and substantial financial contributions from partners (SMEs, municipalities, provinces, possibly also SNN) will become the main source of external resources in 2025. "Acquisition of subsidies" only takes place additionally, and is an action of the collective.
- In 2025, a tightly intertwined structure will therefore be set up, consisting of intensively collaborating professorships, schools and other regional partners of CoE Entrepreneurship.

What are the consequences of this?

The steps outlined above result in two clear changes:

- To a greater extent than it is now, the region will be co-owner and decision-maker for creating and implementing an integrated, long-term research and innovation agenda and for monitoring and evaluating the results.
- As a result, management and coordination of the total programme will have a more hybrid character, because the region is also taking lead. For example, such a hybrid steering committee would have to work more intensively with a Strategic Advisory Council.

What does this require of the regional stakeholders, professorships and schools?

The regional stakeholders

- Act as a vested partner (owner) by compiling and implementing the integrated and long-term research and innovation agenda and by monitoring and evaluating the results.
- Structurally and substantially invest in the research and innovation agenda, in kind and through funding. This agenda needs to have structural (long-term) funding from the region, and not as is the current situation, the need to constantly seek funding from individual professorships and schools. Additional subsidies will add to the solid structural regional basis.

The professorships

The professorships will look beyond their research boundaries and focus more on cooperation, inside and outside the HEI. By 2025, or earlier, the professorships will be more capable to do so as structural funding alleviates the need to search for subsidies individually. Also, professorships may also be merged into larger thematic clusters with the aim of consolidating but with a larger capacity that will have various professors and researcher with different expertise in them. In addition, it is essential that there is cross-fertilization between the research areas and ideally, each professorship would contribute to several or all themes.

The agreement is that by 2025 at the latest:

- Each professorship cooperates for 80% of its work with at least two other professorships.
- Each professorship makes an active and substantial contribution to a vertical theme.
- Each professorship makes an active and substantial contribution to at least two of the horizontal themes.

The schools

The schools (institutes) are requested to prioritize their curriculum choices to optimize assignments from IWPs and Gebiedscoöperaties and that this is documented in student and exam regulations and handbooks. This implies that students, supervisors and researchers have to be adequately prepared with the necessary competences and knowledge to contribute to regional innovation programmes and projects. In addition, this new approach also brings with it operational and logistical issues for curricula: the scope of the student participation changes to a few dozen students to hundreds at any one time, and, it needs to be demand-driven.

To summarize, adjustments to curricula will include 1) more flexible space for supervised student projects and 2) extra attention for competencies that are necessary for students to be able to function properly in IWPs. It is important to stress that research driven interventions and innovations need to actionable interventions. Design research and action research may be favoured for their impacts. IWPs are focussed on evidence-based practical interventions.

Finally, there needs to be closer **collaborations between professorships and schools**. Schools need to embrace and take ownership of regional-driven innovation projects and programmes in leading curriculum development and delivery. This would mean facilitating high quality inputs form students, lecturers and researchers with the flexibility and responsiveness necessary to ensure well-executed innovative projects in collaboration with regional partners. Students need to be given more autonomy to carry out these assignments across semesters and modules when necessary. Clear guidelines need to be developed to provide flexibility whilst meeting quality assurances of curricula and regional assignments.

ENGAGED ACCORDING TO...

Drs. Dick Pouwels

Chair of the Executive Board

Hanze University of Applied Sciences, Groningen

ENGAGED ACCORDING TO... DRS. DICK POUWELS

MY CONNECTION TO HIGHER EDUCATION, RESEARCH AND THE REGION

The focus of my career for more than 25 years has been Higher Education and Research. My drive has always been to increase the impact of Higher Education and Research – be it policy development and evaluations, innovation in companies, or villages and communities and how they live together. It has always been about impacts on developments. This is reflected in my work at the National Institute for Public Health and Environment, Wageningen University and HAS University of Applied Sciences.

As Chair of Hanze's Executive Board since January 2021, I joined the Hanze community with its mission-driven commitment to support developments in the Northern Netherlands region. We do this with our students, research and development projects and often in collaboration with other research and education institutions.

HANZE'S POTENTIAL TO IMPROVE ITS IMPACT

Hanze is a powerful university that could enormously strengthen its multidisciplinary research and education capacities by bringing together technology, business and societal disciplines. We are faced with major societal challenges and transitions in which technology alone is not sufficient. We need new business models - businesses need to adopt such models and bring innovations to the market. We also need to inspire communities and citizens to adapt their behaviours. Only by combining developments in technology, business and citizenry will we be able to accelerate the dynamics of transitions. In addition, research should lead to innovation and this needs to be at the forefront of Hanze's agenda. We need to learn from other universities, from other regions in Europe and elsewhere: *How can we increase our impact on the region? How can we be more professional as an 'impact university'?*

HANZE AND THE REGION

- Changing the Playing Field

Our focus on the region is not about embracing *the region as a third mission* (next to education and research) but about shifting the focus to the region. In doing so, we create a different playing field for education and research. What changes is that we no longer develop education and research based on our own needs, vision and view of the world but that we develop, organize and execute education and research based on real needs of businesses and society. This is a big change for universities, Hanze included. We are already doing this but putting the 'it' (needs of society) first, is an important difference.

This shift in the playing field will mean that our students' learning environment will shift from *yesterday & today* to *tomorrow & the day after*. They will learn in a context of *tomorrow* and *the development of tomorrow*. This is why education needs to move its focus to the region.

- Organizing Strong Alliances

We need to organize strong collaborations with stakeholders in the region (the triple, quadruple or quintuple helix). This will increase the (potential) capacity of our students, our knowledge and our university as a whole. *Governments* can speed up and stimulate innovation and align and develop legal issues for transitions; *businesses* can make innovations happen and bring them to market; *citizens* have an important demand-driven capacity to bring about change; *NGOs* offer a collective voice to individuals and act as a spokesperson for civil society and nature - *'the voice of the many';* and finally, *financial entities* could accelerate start-ups and business investments in support of transitions.

HANZE AND EUROPE

Connecting to other European regions is important for Hanze. To be connected to developments in other regions and particularly to new developments with front-runners of society and businesses. When young people are connected to such developments and learn how to support such developments, they will be in a position to continue to contribute to similar developments in regions and society in the future.

REGION TO REGION

Regional development needs peers of similar regions which is not found in the case of the Northern Netherlands. We can however learn from other Dutch regions from their differences and their developments even though this is different to learning from peers. We need to learn from other regions that are similar in their make-up and context to our own. We have pursued collaborations with other regions with similar circumstances and development challenges. This is a key motivation to initiate the European Engaged Universities (EEU) Alliance. In the initial phase of this alliance, we are already seeing initial contours of a methodology to speed up developments in our regions emerging.

SHIFTING ALIGNMENT OF REGIONAL DEVELOPMENT

European and university collaborations have until recently focussed on national developments, which served as benchmarks for their own development. An increasing shift to focus on and benchmark against other regions through collaborative activities and alliances is a new step in regional development. This broadens the scope and perspective of regions, businesses and students. They can connect to and learn from multi-regional and multi-cultural settings through such collaborations. Similarly, inviting students and businesses from these universities and their regions (and elsewhere) offer new opportunities for our Dutch students and businesses, also in the long-term.

MOVING FORWARD

Supporting regional development has been part of Hanze's vision and mission for some time already. What we need to do is to find a way to make our mission-driven approach more effective. We need to make this an integral part of Hanze's way of working in its ability to upscale experiments related to transitions. We can draw parallels to the *Gebiedscoöperatie Westerkwartier* in how it has organized and developed itself to fulfil its mission to support regional development.

Hanze has incorporated *Impact in the Region* as part of its new strategic plan. To support key transitions in the region, *Region to Region* collaborations have been accelerated to help Hanze make its transition to become an Engaged University.

HANZE IN ENGAGED PRACTICE

Hanze UAS has moved from its roots of being a regional university, founded by local shipping industrialists to meet their need for skilled professionals, to become a 'respected European university' in its previous strategic period. In the meantime, Hanze has expanded its horizons and scope of activities. Students and staff have been participating in international exchange (Erasmus) and mobility programmes, joint educational and research programmes and increasingly, in EU funded projects. Not surprisingly, EU projects overlap with Hanze's continued commitment to contribute to the regional and societal developments as well as to prepare its youth for such challenges as future professionals. Northern Netherland's regional transition agenda, the EU's strategic agenda of *Green Deal*, Digital Future, Economy for Everyone and European Democracy, and the UN's Sustainable Development Goals shape strategic choices within education, applied research and the nature of European and global projects. At Hanze, energy transition, healthy ageing and entrepreneurship, and recently, digitalization and biobased transitions, are key strategic priorities. Building sustainable relationships and strengthening the innovation ecosystems are important shifts in its developments. As part of a new strategic pathway, Hanze UAS initiated the ENGAGED European University to strengthen the innovation ecosystems of European collaborations through structured programmes. A selection of these is described in this section.

The information (including photos and illustrations) presented in the sections HANZE IN ENGAGED PRACTICE, EUROPEAN NETWORKS and EUROPEAN PROJECTS have been compiled with inputs from the respective projects, programmes, centres, etc. and their websites.

Knowledge & Innovation of Next Practices

- Biobased Economy
- Digital Society Hub
- EnTranCe – People in Power
- The Marian van Os Centre of Expertise Entrepreneurship
- Neighborhood Cooperative Fruit Café
- GROENINGEN
- Health Hub Roden
- Predicting to prevent - Human capital in a constantly changing labour market
- Social Impacts of a cooperative: Univé
- Art & Society
- NOORDERRUIMTE
- Regional food chain
- Start-up City
- WIJS

Biobased Economy

In the Biobased Economy Knowledge Centre (KC) concrete new biobased products, processes and activities are organized together with SMEs and large companies, that meet the demands of the market and society. These questions are urgent. After all, a shift is needed towards an economy that is based on green raw materials that are extracted from crops and residual streams instead of fossil raw materials. And this is a different way of product development, one that contributes to a circular economy and that can be managed with less energy and produces less waste and pollution.

The research in the knowledge centre (KC) is conducted within four Professorships: Biobased Ingredients, Circular Industry, Smart Industry and Biorefinery. The research in the KC Biobased Economy is illustrated through two examples.

Examples

Roadside grass, more than required

One of the high-profile projects of the Biorefinery chair is the research into the valorization of roadside grass. Due to climate change, the amount of grass that needs to be cut is increasing significantly. Not only does the growing season of grass start earlier and end later, but rising temperatures also cause grass to grow faster. As a result, it needs to be cut more often than before. Because grass is quite difficult to compost, this biomass stream is pure waste. Municipalities have to pay for its disposal. The demand for new processing and application possibilities is therefore becoming increasingly urgent.

In June 2018, a national Grassymposium (Grass Symposium) took place in Groningen. The focus here was on the various knowledge questions that had been concluded by the Biobased Economy Knowledge Centre together with the Gebiedscoöperatie Westerkwartier. Scientists, policy makers, students and teachers, grass suppliers and processors from the Netherlands and abroad met and discussed the possibilities for future cooperation.

Obstacles

An inventory was then taken of what the parties were up against. A number of companies are already working on a small scale to extract protein, phosphate and other products from grass, to apply grass fiber in packaging materials and to convert biomass into biogas through microbial processes. Many of these developments are 'technology driven' and do not always fit in well with the demands from the market. But the awareness of governments and organizations such as Staatsbosbeheer, Natuurmonumenten and water boards about the size of this residual flow is growing. The conclusive remark is always that the organization has too little grass clippings to process them efficiently and find useful applications for them. There is growing interest among market parties in processing grass clippings, for example, within the paper industry, packaging industry, in furniture, etc. There are wonderful small-scale initiatives, but again fragmented, too small-scaled and often incidental. If all organizations would work together, more seems possible. There is a need for upscaling and professionalization.

Straws

In addition to lecturers and teacher-researchers from the Biobased Economy Knowledge Center, students have also been working on the valorization of grass. For example, some of them conducted a small demonstration project. Their topic was the straw, a small simple plastic object used daily. They seem harmless, but have a gigantic impact when they end up in nature. Consider the shocking video in which researchers at Texas A&M University removed a plastic straw from the nose of a sea turtle. The students were so impressed by the suffering a small straw can cause that they decided to look for an alternative. They wanted to develop a functional straw that is biodegradable and made from grass.

They researched different replacements for the current plastic and finally arrived at the simplest option: *paper*. The process of making paper from grass was already known. In addition, paper also meets the material requirements for a straw that is only used once. With multiple layers, paper becomes sturdier and waterproof, making it a possible alternative to plastic straws. Paper is also biodegradable within two to five months.

The students conducted several partial experiments. They identified and extracted the components in the grass that could be used to produce a grass reed. Finally, they went on to produce fiber pulp and shape and waterproof the straw. Afterwards, the prototype was tested with different drinks. This showed that the straws absorb liquid but retain their shape. This could possibly be solved with a coating. A final test showed that, depending on the weather conditions, the straws biodegrade within 10 days and up to three months.

Following this, the students recommended the research into the use of finer ground grass, of glue on a non-water basis, of a water-repellent coating and of processes that increase the flexibility of the final product. In addition, the requirements for food contact materials should be studied. All in all, this experiment showed that the students together with the field of work in this experiment tackled a problem that, on several fronts, has a high social urgency, impact and added value, making it all the more worthwhile to continue the research.

A natural alternative to plastic

Plastic has been around since the beginning of the 20th century. It was seen as a cheap material that was easy to apply and long-lasting. Soon, all kinds of products were being made from it. But in the 1990s, the downside became clear. The plastic soup and more and more dead animals with an apparent prognosis: plastic ingestion The once revolutionary plastic is turning into a symbol of environmental pollution. It is high time for research for alternatives: natural plastics.

Research

Natural plastics, also known as bioplastics, are made partly from cellulose resulting from waste streams: materials left over from processes in agriculture, the food industry and landscape maintenance, for example. Examples are mowed grass, beet leaves or remnants from bulb cultivation. There are also many residues from the paper industry and water purification, such as toilet paper residues that are removed from water.

These cellulose raw materials can be combined with other materials, including PolyHydroxyAlkanoates, or PHAs for short. These are bioplastics made from bacteria. These PHAs are currently on demand worldwide and are already being produced. Unfortunately, the quality is not yet consistent and their production is also costly. The research project Circular Biopolymers Value Chains therefore investigates how PHA can be improved, how it can best be combined with other substances and how long the material takes to break down.

Results

Results

One project partner, the company KNN Cellulose, has developed a material mixture from cellulose called Recell®. Recell® is a sustainable and circular raw material. Adding cellulose to bioplastics improves the properties of bioplastics. The researchers have in fact succeeded in forming compositions that are stronger than the original plastics. Moreover, these natural plastics can be 100% compostable. And the costs are lower, too. The mixtures have now been converted into granules (semi-finished products in pellet form) and are used in the production of plastic products.

Together into the digital transformation

In the Digital Society Hub (DSH), students and teacher-researchers work together with regional partners on new digital opportunities.

Digital Society Hub

Transformations

Digitalization is having a huge impact on the economy and jobs, and on the way in which people live and work. A number of the world's premium companies (such as Microsoft, Amazon, Apple, Alphabet, Alibaba, Facebook and Tencent) are only a few decades old and came into being owing to digital technology. Products and services from these companies can be found in almost every household and business. This is not necessarily a positive effect for most, e.g., when teenagers seem to be preoccupied only with their cell phones. Digital products and services have also fundamentally changed entire industries with results such as collapsing retail chain stores, vanished travel agencies and photo dealers, meal delivery companies driving around, cab drivers being unhappy with Uber and hotel owners feeling threatened by Airbnb and to some extent by Booking.

So, digitalization has an economic, but also a social and ethical impact,. It simultaneously depletes jobs and creates new ones. For probably every industry, it is both an opportunity and a threat. Ignoring the impact is not an option. The DSH offers a learning system to find out how to seize opportunities and reduce threats, how to maximize the benefits and minimize the drawbacks.

Examples of projects

The Selfdrive Challenge: At the request of the Dutch Vehicle Authority RDW and software developer Quintor, student teams develop improved versions of an autonomous go-kart to race with each other annually. For RDW and Quintor, this project is important as it offers insights into current and future autonomous car performance. For RDW, it could help them with decisions on admission of new types of vehicles to Dutch and European roads. The technology in modern cars such as a Tesla is digital rather than analogue, and therefore more ICT than mechanical engineering.

The Pieperkieker: The Pieperkieker is a self-propelled cart that is able to drive independently over a potato field and uses image recognition to identify a number of different potato diseases. Affected plants are automatically removed and taken away by the Pieperkieker. This saves a lot of work; also, it is often difficult to find personnel for such tasks. Moreover, a reduced risk of spreading diseases is achieved through the timely intervention. The Pieperkieker was developed for Crop Recognition BV.

DSH as an umbrella hub for many initiatives

The DSH hosts a multitude of different programmes and activities around numerous digital transformation themes in a multitude of application areas: care & welfare, energy transition, agriculture, transport & transportation, Industry4.0 and security, to name a few. These are always socially relevant developments (hence the name Digital Society Hub). The issues are initiated by companies and institutions in the region. In cooperation with the direct stakeholders, students (last year more than 700, under the guidance of lecturers and researchers) from many different courses (last year, 18), thus not only technical ones, work on solutions for those issues.

Hanzehogeschool Groningen
University of Applied Sciences
digital society hub

The DSH in a network

Whilst DSH has a physical building, not all activities take place on its premises. Collaborative projects are also established elsewhere when there is a need for other knowledge domains. This could be in the region or at other Innovation Hubs - EnTranCe, BuildinG or Hive.Mobility. In which case, projects may take place at their premises. Additionally, there are collaborations with other Digital Innovation Hubs at the RUG and Noorderpoort, and in the three Northern provinces.

Large and small together

Small and large businesses often need each other in order to innovate. When it comes to speed of developing new ideas, small companies are often more agile than larger ones. On the other hand, large companies have the infrastructure that small companies need to realize their new ideas. Examples: thanks to large, internationally operating partners in the 5Groningen programme such as Vodafone, KPN, Huawei and Ericsson, a state-of-the-art 5G network (next generation mobile communications) and associated equipment are available in the DSH, with which over 30 innovative ideas from mainly SMEs from the region have now been developed and tested. In the programme 'Online Entrepreneurship', the DSH is working with tech giant Google to teach SMEs how to get more out of the opportunities that the Internet offers businesses to achieve innovation and growth.

EnTranCe
–
People in Power

Some 17 years ago, the world started to understand the dramatic impact of energy transition. Shortly thereafter, in 2005, the Energy Knowledge Center (EKC) was established at Hanze UAS. and not much later energy became one of Hanze's strategic spearheads.

People in Power

Energy is in everything and everything is in energy: mobility, living, food, economics, landscape and built environment, technology, legislation, economics and of course sociology and behavior. We need to replace fossil sources with renewable ones. But that's not all. The whole system is tilting. Where energy used to be centrally produced and transported to the user, today anyone can make energy and bring it "to the neighbors." Groups of citizens are starting their own energy companies, solar parks, wind farms

and heat grids. The energy industry itself is developing new large-scale renewable energy production facilities and innovating in its transport and storage infrastructure. The systems for electricity, gas and heat are becoming more interlinked. This makes it more sustainable and cheaper, and ICT is supporting in keeping this transparent and manageable.

To be able to collaborate on energy transition, multi-utility lab is needed. Eventually, a full-fledged living lab was built in 2015 for this purpose at Zernike Campus, with five hectares of space, installations, workshops and buildings where working together on energy is facilitated. At EnTranCe you can find everything about new energy facilities. The real foundation is the people: young and old, entrepreneurs, civil servants, administrators, students, researchers, teachers, supporters; everyone who is inspired, motivated and involved. We do not yet know exactly what the future holds, but, by exploring this together, more and more order is brought to the chaos. That's what EnTranCe offers: the inspiration, the opportunity to meet each other, to inspire people to join in this endeavour, to help find the pieces of the puzzle of a sustainable energy supply.

EnTranCe is a symbol for "People in Power". It's about entrepreneurship, change and collaboration: Share your talent, move the world.

It happens in practice

EnTranCe contributes from various disciplines to a robust and resilient energy supply in a sustainable society. This is accomplished through applied research and education on energy transition and the stimulation of sustainable innovations. This transition is complex, challenging, requires enormous effort and demands technological and social innovations. How can energy supply be more sustainable? How can the system be kept reliable, safe, resilient and affordable? How is the collaboration between all the parties involved organized, technically and administratively, economically, legally, spatially and socially?

How is this accomplished in the concrete international context that exists? The energy playing field is changing. Social support for these changes is crucial; how can we organize a stable and fair basis, contributing to "Our common future", (Bruntland, 1987)?

EnTranCe can develop the knowledge and skills needed for, together with companies, civil society organizations, students, governments and citizens. Our key role is developing practical knowledge to innovate professional practice. The search for opportunities for new solutions, approaches, products and services and research, together with testing the solutions, is a collaborative process. From this collaboration newly applicable knowledge and opportunities for the society are developed and shared.

EnTranCe has a unique position because we combine practice-based research with:

- The experimental setting. There, physical experiments in the energy system can be conducted safely and responsibly once they have passed the lab stage. EnTranCe also works in a targeted way in social communities such as islands, urban neighborhoods, different villages and living labs, where all practical aspects come together.

- Education of students and professionals on energy transition issues in concrete practical situations where all aspects are addressed in conjunction.
- Business development: the process of promoting economic development by helping new and existing companies (with knowledge, guidance and cooperation) and contributing to the transition by developing sustainable new business.

An example

How will regional companies and households work together on the energy transition? This question is central to the European cooperation project SHREC: **SH**ifting towards **R**enewable **E**nergy for Transition to Low **C**arbon Energy.

It is clear that there is an urgent need for joint strategies and actions for the transition to a cleaner, more sustainable and less carbon-intensive energy future. SHREC will look at regional and national policies. How can they be improved so that we can all actually invest in a greater share of energy from renewable sources. How can we use policy to encourage and facilitate the production and use of renewable energy by businesses, communities and households?

SHREC is supported by the European Interreg Europe programme. The Professorship Sustainable Cooperative Entrepreneurship and EnTranCe are working together with eight European partners from France, Italy, Latvia, Romania, Slovakia, Spain and Sweden. Together they are looking at what the different regions can learn from each other and what actions need to be taken for a future of renewable energy. Among other things, they draw up a concrete action plan for each region and showcase good practices that can also inspire and stimulate other regions.

The Marian van Os Centre of Expertise Entrepreneurship

The CoE Entrepreneurship cooperates regionally and (inter)nationally with businesses, knowledge institutions, social organizations and the government. They are a partner of Enterprise Europe Network North Netherlands owing to their experience in advising and guiding (starting) entrepreneurs in the field of innovation, business, financing and internationalization.

The CoE Entrepreneurship focusses on the entrepreneurial climate in education and offers entrepreneurship programmes while facilitating students in starting their own business. They have excellent knowledge of European economic policy, programmes and regulations, as well as fast and direct access to EU networks.

CoE Entrepreneurship links education, research and business to ensure that academic knowledge is transformed into innovation for business and professional practice. Innovation Workplaces (see also chapter 3) have been specially created to facilitate the unique collaborations in which researchers, educators, students and professionals come together to solve pressing challenges that are dominant in the region and elsewhere. An Innovation Workplace is a space for open innovation and co-creation.

The strategic themes of the CoE Entrepreneurship are

- Digitization
- Internationalization
- Human Capital
- Robust SMEs
- Entrepreneurship

Within these themes, regional and interregional collaborations amongst business, education/research, government and civil society (the quadruple helix partners) are facilitated.

The centre supports SMEs, start-ups and scale-ups, on matters related to business management, financing, product development, marketing, innovation and internationalization in the form of personal consultations, coaching, workshops, network meetings or events.

At the Centre of Expertise Entrepreneurship Hanze UAS is cooperating in several European projects. ***TraCS3***, ***InnoHEIS***, ***SHREC***, ***ClusterFY***, ***RIGHT***, ***E-Cool***, ***GrowIn***, or ***European ENGAGED University*** – it looks strange at first sight. These are all innovation projects focussed on the role of a HEI in the region. Participation in these European projects, often in consultation with the Northern Netherlands Alliance SNN, has had a great influence on developments both within and outside Hanze UAS.

European Projects as innovators

The variety of projects, regional and European partners, themes and research have resulted in a rich array of networks and knowledge. This has also highlighted how necessary it is to coordinate, bundle and share management, processes and results with both the partners in the Northern Netherlands region and with partners from other regions in Europe. The goal is to scale up the individual projects to research programming, which will enable regional valorisation and can serve as a basis for new project development. By linking European regions, the approach, knowledge, resources, innovations, etc. are strengthened and it becomes possible to set out new parallel courses together.

An example of this is TraCS3. Here, the knowledge infrastructure in the Northern Netherlands region and the challenges of various partner regions are mapped out in order to arrive at powerful recommendations for regional policy and practice. ClusterFY is about cluster and innovation policy, RIGHT about training and innovation potential of SMEs and the region and InnoHeis about the role of higher education in the region with respect to innovation, amongst many others.

The European projects focus on themes that are important to our region. Themes include entrepreneurship, human capital, energy transition, healthy ageing, robust SME, knowledge ecosystem and resilient region. Cross border contacts with Northern Germany and the North Sea area are strengthened as well as interregional cooperation with other European regions facing similar challenges.

Other European projects such like Erasmus+ Knowledge Alliances focus on education and curriculum development. An example of this is EMBRACE which focusses on new education and training schemes to support businesses towards socially responsible business models and strategies. This project aligns with the 'engaged' strategy - strengthening transitions for a better society.

From project to programme: The Engaged Universities initiative shows the step from single projects to programming. Six European universities are going to collaborate intensively. This initiative accelerates digital and flexible education; stimulates mobility of labour, talent and knowledge; ensures upscaling of social issues and application in multiple regions. This will enable the valorisation of innovation and knowledge. Education is offered in multiple languages and quality standards are standardized and enriched. Existing networks will be expanded, strengthened and made more visible. This is beneficial for the college, as well as for the region. The ideal is that students and researchers, but also entrepreneurs from the regions and universities all over Europe, work together on projects and tasks in our region.

The aim for the coming period is to even more share the experiences, networks and profits with regional partners and to collaborate towards attracting more European resources to the region. This is referred to as the development of the European Strategic Platform & Engaged European Accelerator. It is our ambition to build through this platform European programmes with regional authorities, companies and networks, aimed at strengthening our region.

Neighborhood Cooperative Fruit Café

Neighborhood collaboration in De Wijert

In 2014, a community alliance De Wijert residential area of Groningen city was started. This was an initiative of the Professorship Sustainable Cooperative Entrepreneurship, the Gebiedscoöperatie Westerkwartier, the Terra VET college and the municipality of Groningen. Later on, the Hanze UAS also joined this alliance. They started an Innovation Workplace, where a shared agenda for the neighborhood was drawn up in a quadruple helix with students, entrepreneurs and neighborhood residents. On the agenda they listed programmes and projects that focus on social participation, (green) living environment, poverty alleviation, sports, social cohesion and of improved economic prospects have been developed.

A new cooperative store

As part of this agenda, the community developed a plan for a vacant property in the neighbourhood. Residents were troubled by the boarded-up windows of the property that formerly housed a pub. They wanted to prevent further dilapidation and worked hard to create a unique neighbourhood cooperative in this building, which was opened about three years ago.

The Gebiedscoöperatie Westerkwartier rented the building so it could be used by and for the community for their neighbourhood-friendly business. This eventually became the "Fruit Café The Helping Hand": a cooperative store where fruits and vegetables from the region are sold at an affordable price.

In the store several jobseekers have started working as a participation job. They provide extra service to the customers, for example by cutting and peeling fresh vegetables and fruit free of charge. In addition, volunteers are welcome to help out in the convenience store. Of course, people are also welcome to just have a chat. They have a *Stammtisch* for local residents and students to meet and catch up, with a cup of coffee and apple pie or a healthy smoothie. This is also where residents can leave their requests for help or knowledge, and where students from HEI and VET colleges can lend a helping hand. The requests range from help with operating a new smartphone or advice on planting the garden. The Stammtisch is staffed by students who also make the connection with the Innovation Workplace in De Wijert. In this way, larger projects and themes can be linked to the Innovation Workplace and potentially solved there. A supermarket in the Lenneplaan neighborhood supports the cooperative in a practical sense, for example, by supplying additional products, the flow of interns and possibly participation staff, etc.

New entrepreneurship

Finally, the Fruit Café also provides space and facilities for start-ups. The most recent business is a meal service that a community resident established in 2019. Students supported the Burundian chef with working out the business model, marketing, putting together the menu and other issues so that the service can now be running smoothly with a daily changing menu. The serving and collection of meals was later expanded to include a delivery service.

GROENINGEN

On the way to a climate smart approach

Climate, sustainability, energy, agriculture, water and biodiversity are the grand societal challenges of our time. These are wicked problems where many different aspects are involved and that cannot be solved in isolation. Nature can play a connecting and perhaps even a key role in this. But how? We need natural ecosystems, but also completely new paradigms that support the transition to a sustainable economy for a sustainable society. In a metaphoric perspective, these new networks are referred to as 'innovation ecosystems'.

A good example of such an innovation ecosystem is GROENINGEN, a collaborative programme started by the Professorship Sustainable Cooperative Entrepreneurship in the Groningen wetlands belt. This is an area that embraces the city of Groningen from east to west. In addition to beautiful nature and culture, this area also offers new economic opportunities, for example in responsible and sustainable entrepreneurship, focussing on high-quality products and processes in the biobased and circular economy.

The problem here is massive, but so are the opportunities. On the one hand, the peatlands are a ticking time bomb due to soil subsidence and the threat of emitting large quantities of CO2. At the same time, it can also offer solutions. Just like an enormous sponge, the wetlands can absorb excess water and release it during droughts. Exactly the kind of large-scale buffer needed to prepare the region for more erratic weather. In addition, peatlands can purify water and provide an excellent habitat for many rare species. By this, it can help restore biodiversity and - ultimately - the health and well-being of the population.

However, urgent action is needed. But how to start when the problems are *wicked*? Climate approaches, new technologies and methods for water and nature management, new strategies for short food chains, as well as the development of new functions, products and services in connection with the landscape - all these require a shared vision, well thought-out coherent strategies at scale and a common approach.

This creates difficulties. Nothing was happening, until professor Foorthuis started forming a working group in early 2018: The Professorship Sustainable Cooperative Entrepreneurship, the Gebiedscoöperatie Westerkwartier and the Dutch Landscape and Forestry Authority. It became evident that students can break a deadlock. Within the space of one year, no less than 400 students and supervising teachers and professors dived into the area. They were able to mobilize 40 entrepreneurs, social organizations, as well as the municipalities and provinces involved.

They organized brainstorming sessions around the focal themes of water storage, food chains, biodiversity, tourism & recreation and accessibility, drew up an initial list of possible collaborative projects, worked on solutions to knowledge questions from the network partners, developed the basis for a sustainable business model and introduced content and organizational structure by means of programme lines and monitoring criteria.

The participants in this process understood that the essence lies in the connection between water and nature management on the one hand and the development of new economic carriers on the other. Only if both aspects are brought together in new earning models can this valuable area be managed and developed in a balanced way. For example, by means of sustainable commercial wet farming with flood-tolerant plant and animal species that bring balance to the nutrient cycle. In addition, GROENINGEN is also a fantastically beautiful area. This can be capitalized on by looking at new concepts for the leisure industry, combined with health and sports. In this way, a second solid economic branch with healthy cultural, recreational and sporting activities can help restore and preserve the peatland.

A lot of preparatory work for GROENINGEN has been done in the two past years. But the real work has yet to begin. Real collaboration, changing own perspectives, renewing processes, developing new governance, management and revenue models, realizing circular structures - this is still a long learning and development process. It will certainly not be easy. But the beginning is there.

Health Hub Roden is at the heart of the world of health tech and literally forms a hub: a connecting link between entrepreneurs, knowledge institutions and the government. The Health Hub offers an inspiring environment where companies are located and engaged education is designed.

Health Hub Roden

Students, teachers, researchers, entrepreneurs, (healthcare) professionals, administrators and government representatives work together intensively to contribute to the quality of life of all people through technological innovations. The ecosystem of Health Hub Roden is an environment where issues from the field are quickly converted into concepts and products. These are developed together with all stakeholders, tested and assessed for desirability and (technical and business) feasibility.

Health Hub Roden was launched in 2016. The reason was to maintain and stimulate activity around medical technology in Roden after the departure of a large company from the village. In addition to the province of Drenthe and the municipality of Noordenveld, the Hanze UAS in Groningen was one of the main initiators - and also the coordinator during the first four-year project period. On October 1, 2020, the project was continued and transferred to a foundation. Hanze UAS Groningen will remain involved in the Health Hub Roden Foundation as a partner and member of the Supervisory Board.

Health Hub Roden

From its inception, the Health Hub has grown steadily. A large network of relevant organizations working together on (innovations in) medical technology quickly emerged. It generated new jobs and several start-ups. Entrepreneurs, students and people from the field utilized the Health Hub daily which soon became too small. In May 2019, the Health Hub moved to a (2.5 times) larger building. This is now home to 10 companies and other activities.

Since the start of the Health Hub, the focus has slowly expanded from medical technology to health technology, as a result of developments and issues in the social, medical and healthcare domains that call for greater use of this technology. Adaptation of structures, adoption of technology (by professionals and users) and sufficient innovation capacity within an organization are preconditions for the successful implementation of technological solutions to (health) problems.

Some examples:

Exoskeleton: Hanze UAS (Mechanical Engineering), Foundation Walk On, Gerben Posthumus Fine Mechanical Engineering, Noorderpoort and Health Hub Roden are working together on the development and production of (parts of) affordable exoskeletons. Thanks to this external 'skeleton' with electric motors, people with, for example, a transverse aphasia can stand upright again and sometimes even walk. In addition, it can support care professionals with heavy physical work. An exoskeleton is very expensive; therefore, the goal is to make it accessible to more people.

Ambulance Team Groningen: Technological developments are of great importance to ambulance care due to an increasing demand for care and the importance of short response times. Ambulance Team Groningen and Health Hub Roden are working together in the form of an R&D partnership. Students from various universities of applied sciences and vocational schools are working on projects such as the AR glasses that allow the ambulance nurse to directly observe the injuries. Other examples include the development of a stretcher roller and a system for better communication in the ambulance.

Future in motion

The world of work, training and learning is changing. What will the individual personal and work lives, as well as the lives of children look like in the future? Nobody knows exactly. Yet foreseeing is needed. If a bachelor's programme is developed or renovated, the first graduates will only enter the labour market after five years. They need to be ready for the jobs and careers of the future, not those of today. What personnel will be needed in the future? What training must be offered and developed, what qualifications must people have and how many people can work where?

Predicting to prevent

Human capital in a constantly changing labour market

by Harm van Lieshout

Information deficit

Smaller companies sometimes find it difficult to look ahead. But they do form a large part of the Groningen economy. In 2008, for example, there seemed to be a substantial replacement and expansion demand in the Eems Delta. No less than 80% of those vacancies were of technical nature.

Employers seriously feared increasing personnel shortages, particularly for technical positions. There was a considerable sense of urgency. And yet the parties did not take action. Why not? They simply did not have enough detailed information about future demand.

Job Vacancy Monitor

For the Human Capital department, this became the reason to design a method that helps employers - especially in the SME sector - to collect this detailed information precisely. In the project "Job Vacancy Monitor", more than 100 companies were given a glimpse into their personnel development. Through this, trends in the labour market in the Northern Netherlands come into view earlier and in greater detail. Labour market parties, such as employers' organizations, companies and educational institutions, can use this information to assess the performance of their workforce. Companies and educational institutions can take timely action based on these trends. They gain insight into possible bottlenecks, such as personnel becoming redundant or vacancies they are unable to fill. Once a company has completed the survey once, it can continue to use the format as a personnel planning tool.

Socially relevant practice-based research

This approach has since been further developed by the *Professorship* Human Capital with teacher-researchers and companies, for internationally related research applications and in industry-specific projects. With his research, Professor van Lieshout wants to contribute to a good connection between education and the labour market in the region, so that citizens, companies and the society can have an optimal return from lifelong development. With better information, better regional labour market policy can be developed and staff shortages prevented by taking the right measures on time. For example, by training more people when there is an imminent shortage in the labour market and, where there is a surplus, by retraining people in a different direction.

Forecasting to prevent

After all, labour market forecasts are made precisely to ensure that they do *not* materialize! Where there is a threat of surpluses (unemployment) or scarcity (undersized or unfilled vacancies), action is needed to prevent that expectation from becoming reality. In that sense, labour market forecasts are very successful if they turn out to have been a self-denying prophecy: a forecast that does not come true precisely because you made it first. Because an impending shortage was detected in a certain profession at the right time, retraining and providing extra training accordingly was initiated, thus the shortage that was once predicted never occurred.

An example

A good example is a possible trend among process operators. Some companies expect to need operators with a higher level of education in the future. For those companies, a programme can be set up to train operators to that demanded higher level. For employees for whom that is not feasible, the alternative of looking at which companies will have job openings at their current level in the near future is offered, so that they can continue their careers there.

Talent in the Region

In the past two years, the Professorship, together with the RUG and other partners, has developed the Talent in the Region programme. In this programme, municipalities, knowledge institutions, employers' and employees' organizations work together for a better regional labour market for now and for the future, with a focus on lifelong learning for all Groningen people. "Talent" refers to everyone who is active and available for the regional labour market with their own personal set of competencies and skills. The project consists of three sub- programmes:

- **Sub programme 1. Career and matching tool.**
  This involves an app developed for the region that can connect talent and Groningen companies to each other and at the same time collects unique information about both companies and the job or internship seekers.
- **Sub programme 2. Talent and Intervention Monitor.**
  This is a collection of key figures that provides insight into the recruiting, training, binding, and developing talent in the region and to set up an evaluation framework to be able to investigate other interventions within the thematic area and to learn from them.
- **Sub programme 3. Knowledge Development and Circulation.**
  This is a programme in which knowledge is developed on relevant themes in the field of working and learning for professionals from municipalities, educational and knowledge institutions, companies, sector organizations and where social partners can exchange knowledge and experience.

Working on Development

'Talent in the Region' is one of the projects that form part of the implementation agenda for the programme proposal 'Working Development', which van Lieshout co-authors. There, municipalities, social partners and educational institutions have included measures for a learning labour market of the Groningen region, where lifelong development is central for the labour market and where innovation (within companies, education and elsewhere) is a natural part of the regional culture. Information, collaboration, and learning are the keywords here. All parties are striving for a region in which more people with good jobs participate, a region that is socially and economically stronger, in which lifelong development is a matter of course, in which the barriers within and between education, government and businesses have disappeared and in which talent is developed, retained and attracted.

Social Impacts of a cooperative: Univé

Social impact measurement for Univé

Univé is a major insurance player in the Netherlands. It was set-up as a cooperative and has been actively innovating its services as an insurer through the years. Their core business is to provide insurance for risks which is the traditional role of insurers. In recent years, a shift has taken place in its focus from being the traditional insurer of risks to that of support for preventing and dealing with risks. With their new strategy programme "Back to the Power of Univé", they are developing solutions for the risks and uncertainties of our times together with their members. They are revisiting their cooperative roots as the foundation for their future direction. Univé has joined forces with the Professorship Sustainable Cooperative Entrepreneurship (DCO) to explore how they can enact the new vision and to increase their impact on local and regional communities of Northern Netherlands.

Univé Noord-Nederland generates positive social impacts through its numerous social initiatives in the North. One of their questions was how they can monitor the social impacts of these initiatives and how to improve them. They sought a system for measuring

social impacts –the social impact measurement (SIM). Together with DCO and Hanze's International Business School, a student was assigned to explore and offer recommendations. Outcome of the research was that Univé's social activities and engagement with local communities had important social impacts as intended in their social mission. Recommendations included development of a metric based on accepted measurement standards and that this needed to include both quantitative and qualitative methods and indicators to better capture social impacts. In addition, the critical role of benchmarking outcomes for a nuanced perspective was emphasized. The research offered insights that validated the direction that Univé wanted to embark on and provided a first step to developing a customized SIM tool for their organization.

A more recent development is the engagement of Univé in collaboration with DCO and other regional and local stakeholders in developing new structures that will accelerate the regional innovation ecosystem in Stadland Groningen-Assen region (see chapter 4 for more details).

univé

The Arts & Society Knowledge Centre (KC) researches and develops new artistic practices in connection with various sectors in society focused on social issues. How can artists, designers, musicians and teachers of art education contribute to a more humane and sustainable world? The KC Art & Society conducts practice-based research to answer this question. To this end, the arts are engaged in intensive collaboration with other sectors.

Art & Society

The KC Art & Society (KCKS in Dutch) was established in 2011 and consists of the research groups 'Lifelong Learning in Music', 'Art Education', 'Image in Context' and 'Art & Sustainability'. These research groups are linked to various disciplines: music, visual arts, design, pop culture and the associated teacher training programmes.

The KCKS research programme consists of three strategic themes: Art & Participation, Art & Education, and Art & Sustainability.

Hanze in ENGAGED practice

Art & Participation

Economic decline, earthquakes, aging and increasing demand for healthcare – what are the consequences of these regional developments on the liveability of an area. And what influence do they have on participation, inclusion and social cohesion? Researchers and participants from the region work on innovative solutions from a multidisciplinary approach. Artists have experience with processes of change, because the artistic process is characterized by constant recalibration, change or reinterpretation. From that perspective, artists deploy specific (artistic) methods, for example by reflecting on developments, stretching and questioning self-evident forms of meaning, and opening up new perspectives from unexpected angles. An important aspect here is the emphasis on participatory research methods, which means that the people who are the subject of the research are also actually participants in the research. Participation can take shape in many ways and is therefore an essential aspect of research and activities in all research groups.

Examples

Meaningful Music in Healthcare: A great example of an innovative project within this theme is Meaningful Music in Healthcare (MiMiC) on which the Lifelong Learning in Music (LLM) research group has been collaborating since January 2016 with the University Medical Center Groningen (UMCG). LLM investigated the effect of live music for hospital patients and their nurses. They looked into the effects on recovery and well-being of patients, especially older patients who had undergone surgery. It turned out that the pain after surgery was indeed alleviated.

From this project professional musicians (including master students participating at the time) who participated in the project established the Mimic Foundation. They wanted to transfer the lessons into their practice. The UMCG has further financed this way of coaching. In addition, research is now being conducted at Erasmus MC into 'recorded music'. ZonMW has made funds available to develop a new healthcare guideline from this.

The designing attitude: In 2019, the Image in Context research group worked together with the Waag and Het Blauwbörgje on the research *The Designing Attitude*. Het Blauwbörgje is an institution for people with dementia. Here, a group of informal carers and caregivers were introduced to artistic methods. They are now implementing this in their institution and are causing a minor revolution by making and distributing a series of highly personalized posters in which they express and represent their vision of care. In addition, the elderly of the institution will present clay figures that will be brought in on family day to reduce the gap between family members and caregivers. The project has granted them a form of autonomy.

Arts & Education

The arts play an essential role in people's lives not only as a means to sense-giving and truth, but also as a potential source of change and development, and therefore of learning. The KC Art & Society investigates learning and educational processes in society. Within this theme, it is a matter of both reinforcing the position of art education in the Dutch formal and non-formal education system and developing learning environments in which art is the catalyst.

An important topic in this theme is the learning of artists: How do artists learn? How can they be trained to become reflective practitioners and lifelong learners who take control of their artistic careers? In which environment does the learning of the artist, who is oriented towards society, best take place? How do cross-cultural aspects play a role in art learning? The learning of artists is a subject that concerns all research groups and that ultimately is concretized in the contribution that the research groups make to curriculum development within the programmes.

An example: Curious Minds: The Arts Education research group is working in a large multi-year research programme to develop 'talent-based arts education. Central to that programme is the aim to look at what "talent" means. In the arts field, talent traditionally is mainly associated with top talent: the musician with an international performing career or the artist whose work is included in museum collections worldwide. From the conviction that art is meaningful and valuable for everyone, the research programme develops an art education didactic that does not focus exclusively on 'the talented' but that takes a much more inclusive approach to the idea that every child is talented in his or her own way and, if that talent is stimulated, can grow into a person for whom art is meaningful and valuable in its own, idiosyncratic way.

Art & Sustainability

The use of raw materials and their finite nature, with climate change as a consequence and the way in which the majority of production systems are set up with their waste and litter, force us to make changes aimed at sustainability. This concerns nature as well as social profit, the human scale, and stable and reciprocal relationships. The KC Art & Society investigates the role of the artist as 'sustainable designer'. This involves the (further) development of creative practices and the knowledge of materials, language, technical skills and new earning models emerging from that.

For this reason, researchers are seeking to collaborate with other sectors on sustainability issues. After all, innovation often takes place at the edges of fields and across disciplines.

One example: Hemp Design Factory: The Innovation Workplace Circular Design Factory is an important catalyst for the interweaving of research and education around sustainability issues. In this Innovation Workplace, a multidisciplinary approach is taken to working with regional partners on the theme of sustainability through concrete projects involving bio-based materials. Every year about fifty students from various courses within the university work on (multidisciplinary) projects. Within the Hemp Design Factory, Design student Tessa Hesseling developed her idea for an environmentally friendly festival bracelet made of hemp. She made an initial prototype which was further developed within the Innofest project with market leader Dutchband and presented to various festivals. The product received national press attention, and in January 2020 it was chosen as the best innovation during the Eurosonic Popfestival. Currently, the business case and how the bracelet can be produced on a large scale are being examined.

NOORDERRUIMTE

Research on the built environment

The NoorderRuimte Knowledge Centre conducts practice-based research into the built environment of the Northern Netherlands region. This specifically concerns the themes of earthquakes, sustainability, health & welfare and quality of life. The approach is integral. This means that the professors, teacher-researchers and students link the fields of architecture, construction, civil engineering, facility management and real estate - always together with practice.

Internal knowledge and experience are used in working with residents, organizations and governments, for instance to find an integrated response to the consequences created by earthquakes and shrinkage while promoting sustainability and health and welfare. Buildings will be better suited to the demands of our time. Smarter buildings will make work easier, contribute to health and better performance. Living in villages and neighborhoods will become more enjoyable, more sustainable and cheaper. It will become easier to live independently, also for people with physical and mental disabilities.

NoorderRuimte is thus an open house for everyone concerned with the built environment, in the North of the Netherlands and far beyond. It is about sharing knowledge, listening to practice, to students and to other stakeholders.

A few examples

German-Dutch Innovation Workplace EDRiT (Ems-Dollard region in transition): This cross-border Innovation Workplace is located in the Entrepreneurs' Factory in Winschoten and is part of a project in which, among others, the Hanze UAS, the municipality of Oldambt, the Hochschule Emden Leer and Landkreis Leer work together. This Innovation Workplace wants to develop knowledge and experience together with governments, knowledge institutions, social organizations and residents to develop knowledge and share experience in and about the Ems Dollard Region. From the Innovation Workplace, students of the Hanze UAS work in cross-border assignments for municipalities, entrepreneurs, foundations and associations around the living environment in the Ems Dollard Region.

For example, students research rural developments or the role of volunteering and what this means for the liveability of a village or region. Additionally, they look at possibilities for entrepreneurs to expand to a new target group and how to serve it. As the Innovation Workplace works across borders, knowledge and experience are easily exchanged between German and Dutch partners. This allows them to learn from each other and improve their own projects and methods.

The municipality of Oldambt applauds this: *"The EDRiT Innovation Workplace is of great importance to our region. Not only because of the stated objectives (counteracting the brain drain, making opportunities in the region visible, creating a place for meeting and research) but also because the project increases the resilience of our region to the consequences of population decline and the project strengthens cooperation across the border. The barrier effect of the border is reduced and the project contributes to a coherent development of the Dutch-German region."*
- G.J. van het Land, L. Broekhuizen and A. Saman

Experiment Krewerd:

Owner centred

In recent years a lot of experience has been gained in the earthquake area. Krewerd is a small village in this area. Here, just like everywhere in the earthquake region, residents often got stuck and too often feel abandoned as a result of the slow take-off of concrete reinforcement measures. The Krewerd experiment is about regaining trust in the experts so that reinforcement solutions can be started quickly. In the experiment, solutions are developed within a team including the owner and his chosen architect. The involvement of the owner and an own architect - from the very beginning - appears to be of great importance for the acceptance of the technical solution.

Efficient deployment of technical experts

In addition to speeding up the reinforcement process, the way of working within the Krewerd Experiment also shows that the limited number of technicians available can be used more efficiently. This is mainly due to the repetition element in the approach. This insight can also contribute to the acceleration of the reinforcement operation in the entire earthquake area.

Cross-over technology and social: what do residents think?

During the Krewerd Experiment, the research team of Dr. Elles Bulder, lecturer in Living Environment in Transition at Hanze UAS, spoke with residents of Krewerd. The aim is to map out what the past months have meant for the residents of Krewerd. The research revolves around two key aspects: well-being and resilience.

One of the residents says: *"When it comes to the earthquake problems in the region, the Hanze UAS has become a very valuable and indispensable partner in the field of engineering in earthquake zones, 'bottom-up' assessment of engineering of the houses and research into the psychological effects on the residents involved. They are the glue between the parties involved, where it comes to assessing the houses and working with the construction and engineering firms involved.'* Soon, the results of this research will be published and shared with the residents.

Collaboration is crucial in Experiment Krewerd

The Krewerd Experiment falls under the responsibility of national earthquake coordinator. Within the experiment, a team of more than twenty architects, the Krewerd village council, engineering firms and the Hanze University of Applied Sciences in Groningen are working together.

Krewerd

Hanzehogeschool Groningen
University of Applied Sciences
Kenniscentrum NoorderRuimte

> “Engaged is a label suited to Hanze. This institute delivers hundreds of graduates in a conducive environment. These professionals are prepared to deal with current and future societal challenges such as climate change, energy transition, stabilizing homes in the earthquake zones, digitalization, greying populations in areas of shrinking economies which in turn are creating new challenges of quality of life, health and other related service provisions.”
>
> - René Paas, Commissioner to the King, Groningen

Regional food chain

Towards a cooperative regional chain economy in the Northern Netherlands - with social, economic and ecological values in balance

New focus in agricultural policy

There is something odd happening. Although the demand for food from the region is increasing, the Dutch agricultural sector is still largely focused on foreign exports. Out of all the produce in the Netherlands, only a quarter is for its own market.

However, things are changing. The new Dutch agricultural policy zooms in on a regional circular approach. The minister wants a system change. Only then the pathway towards an ecologically and economically vital, common production method can be shaped. An important role is also reserved for nature-inclusive agriculture and cooperation on a regional scale.

It is precisely here that the opportunities arise for new regional SME activity; in the craftsmanship that we already know, but also in the innovative processing that we do not know yet. Healthy and tasty meat substitutes, for example from legumes. Protein-rich products to support muscle training for the elderly, so that they can continue to live healthily and independently for longer. Or meals with products that help people gain strength before and after operations. What is needed for this? Sustainable agriculture, a food system that handles raw materials, energy, water and minerals sparingly and efficiently, and a circular food chain with added value for the region, producer and consumer, lots of new knowledge, new training, new businesses and new investments in processing plants and machines. We can start developing these in the region.

Towards a cooperative system in the Northern Netherlands - Gebiedscoöperatie Westerkwartier

Gebiedscoöperatie Westerkwartier has been operating for five years in the region. Inclusive, sustainable, entrepreneurial and meaningful - these are the pillars of this new regional cooperative – regiocoöperatie. With great momentum, inspiration and agility, the partners from the quadruple helix build together new alliances and chains with a social, ecological and economic impact in the region. One example is the development of a new food chain that is now taking shape with the construction of a regional food chain.

> "This cooperative is different. This is not just about 'strong together'.
> Here unity is also emerging from diversity. This is exciting. Here, solutions are being developed for today's problems.
> But even the Gebiedscoöperatie, however attractive, is of course not a panacea. They are intensely concerned with how to turn today's success into sustainable, stable growth."

Meals from the region for the region - this is the concept that the Gebiedscoöperatie Westerkwartier has developed together with farmers, producers, processors, transporters and buyers. You achieve two goals in this way: stable sales of regional products and healthy food from nearby via large buyers in the area. For example, the hospitals in the Northern Netherlands region. They need 17,000 meals (breakfast, lunch and dinner) per day. But why do patients get potatoes from Tunisia and a fish from Vietnam on their plates? And why are regional pigs transported to Italy to have them made into sausage, when they can be consumed locally?

A new system as a whole of new chains and links

The regional chain is one of the ways to find an answer. Here five chains go hand in hand, which can only be realized, connected and further developed in cooperation between regional entrepreneurs, governments, knowledge institutions and social organizations. Read below, what these chains are and what is needed to be done and keep the wheels moving, while keeping them moving.

Production

The region wants a cooperative network of regional agro- and food entrepreneurs specialised in production, processing and logistics, engaging in alliances with regional buyers, so that the delivery and sales can be relied on from both sides. The idea is that the Northern SMEs from the agrifood sector cooperatively produce meat, vegetables, cereals, fruit, fish, dairy produce that are also processed further in the region. The first agri-food cooperative is already in place. It consists of farmers who will supply natural meat from cattle that graze in nature reserves. A win-win-win situation: there will be an alternative business model for dairy farmers, the nature reserves will be managed in a natural way and consumers will get healthy meat from the region.

For the diversity of the products, suppliers from all over the North are needed: cattle farmers from the Westerkwartier, grain and potato producers from North and East Groningen, fruit and vegetable producers from the southern parts, fish and shellfish from the coast. In order to serve the sales market in a truly customized way, there are also new business opportunities in sight with new sustainable and healthy products and business models, for example products for the protein transition.

Biobased Energy Converter as earnings model

The waste flows from this chain and from other production lines in the region can be converted back into energy. A wide range of so-called biogenic residues, biomass, organic materials, manure, sludge, plastics and synthetics, etc. are reprocessed into high-quality diesel, gas, gasoline and kerosene, and electricity. This allows undervalued biogenic materials and other residues, including residue streams from farms, to be converted into these high-value energy carriers - a prerequisite for a functioning cycle.

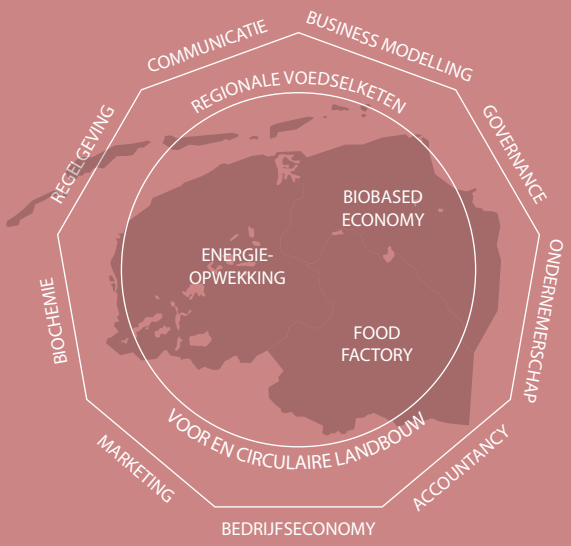
Biobased and circular economy

In a regional food chain, biobased production is of crucial importance. This involves the interplay of existing and new crops with technologies, which ultimately produce new products based on biomass for new markets. They are central to the transition from an oil-driven economy to a biomass-based circular economy. If you farm with nature, you can actually utilize biodiversity in soil, water, crop, animal and business. You reduce dependence on external resources and realize a system that is able to cope with the risks of climate fluctuations, diseases and pests itself.

Sustainable Cooperative Enterprise

All these steps together form the links in a regional circular process. Farmers, processors and buyers use and supply raw materials from each other's chains and residual flows from the food and energy chains and from the food and biobased industry.

Together with the Gebiedscoöperatie, all its members, the regional entrepreneurs and institutions, Professor Willem Foorthuis and the Professorship Sustainable Cooperative Entrepreneurship are the driving forces behind this movement. Nevertheless, much additional knowledge is needed. In principle, a large part of this can be found within the current knowledge network: Hanze UAS Groningen, Van Hall Larenstein UAS, University of Groningen. Within these institutions, the necessary knowledge development processes must be mobilized and aligned, well coordinated and orchestrated in planning and execution. It is therefore important to move together to a new system.



“Grand social challenges are at the core of our quest to find workable solutions - be it at the global level (UN’s Sustainable Goals), the EU level (Horizon Europe), national level (mission-driven innovation policy) or the regional level (RIS3).

I am convinced that the regional scale is the right scale to address and solve grand social challenges. A major bottleneck to solving them is also our mono-discipline knowledge traditions. Only when boundaries are crossed - of disciplines, organizations, interest groups, etc. - will such complex challenges be solved. I believe that Universities of Applied Sciences have an important role to play to enable cross-boundary collaborations.”

- Rob Verhofstad,
Chairman of the Dutch Association of Universities of Applied Sciences, UASNL & Chairman of the Executive Board of HAN.

Start-up City

At the Zernike Campus, among the diversity of striking buildings, there is an eye-catching black building, constructed from reused shipping containers. This is Start-up City, the innovative hotspot for entrepreneurs and enterprising students. Students are guided here in their journey of discovery on the way to their own start-up. Knowledge institutions work together with entrepreneurs and various other parties to create an excellent entrepreneurial climate. It is the place on the Zernike Campus where Groningen University with its VentureLab Noord and the Hanze UAS with its Centre of Expertise in Entrepreneurship offer support to student entrepreneurs and other starters, start-ups and scale-ups. Start-up City is a vibrant part of a national and international start-up ecosystem.

Entrepreneurial skills

Students from the HEIs can discover and develop their entrepreneurial skills here, learn to collaborate with other entrepreneurs and build networks. Diverse programmes such as the top entrepreneur scheme and the business development programme of VentureLab North are open not only to students but also to start-up and growing entrepreneurs. Start-up City also hosts regular workshops, meet-ups and other meetings. Furthermore, there are physical spaces available in the form of flex spaces, office space and shared inspiration spaces. Already, around 250-300 students can be found in Start-up City every week, from different programmes and education.

In 2019, this led to more than 500 students registering at the Chamber of Commerce to start their own businesses. In doing so, students create their own employment opportunities and those of others. An entrepreneurial attitude, even among young people who do not choose to be self-employed but rather have jobs, is very important for the region to be able to see developments and translate them into new opportunities that lead to growth in economy and employment. As seen during the Corona crisis, entrepreneurship is of great importance for finding alternatives to quickly respond to emerging problems or even create new opportunities.

Entrepreneurship has a purpose across the disciplines: the artist who wants to tap into a new audience, the physical therapist who sets up their own practice, the engineer who develops an innovative application, the social worker who tries to create prospects for people with a distance to the labor market. Entrepreneurship in Groningen is therefore not just about technology-driven startups, but certainly also about social enterprise and creating innovative and sustainable solutions for all sorts of social challenges.

Ambitions for the future

In recent years, the focus has been very much on quantity. In the coming years, the focus will shift towards more attention to quality: to the development of innovative and growth-oriented companies that create more jobs and can make a greater economic contribution. To this end, more connections will be made with the Innovation Hubs and Workplaces in the region to make links between new ideas, entrepreneurial types and an excellent support system. To this end, the collaborations between the knowledge institutions and organizations such as RABO Bank, EY, Founded in Groningen (Municipality of Groningen) and with network programmes such as Startup Assist and Startup in Residence will be expanded.

Help to fall back on

A thriving start-up ecosystem is not made up of start-up entrepreneurs alone. A successful entrepreneur needs to be encouraged, challenged and supported. Experienced entrepreneurs can stand by. They have previously travelled the same route, as well as investors and advisors in e.g., legal, administrative, technical, commercial fields. Around the core of student companies and talented student entrepreneurs, Start-up City organizes a layer of well-equipped teachers and coaches, students from all sorts of courses and professionals and entrepreneurs from the region who can provide tailored advice, solicited and unsolicited.

A few examples of start-ups

Basicly: If you want to prepare students for the future, you have to start with the teachers. This is the starting point of Basicly. This company has developed a total package for digital literacy in primary and secondary education. Teachers are relieved of all worries and can start working with digital literacy in the classroom in a structural way. It's about basic ICT skills, information skills, media wisdom and computational thinking: students must learn to work well with the computer and online applications and be able to use online sources critically.

For this purpose, Basicly has developed teaching materials with worksheets, powerpoints, talking boards and instructional videos. This way, the teacher can easily prepare and implement the lesson. The goals covered per lesson can be seen, what is needed and what steps to follow. Each student can work independently on their own account or you can complete a lesson together using the classroom methods.

The company was founded in 2014 and now consists of 10 people. Assignments come from all over the country. The biggest assignment is in the earthquake region. Basicly offers schools in North and Central Groningen intensive guidance to fit digital literacy into the curriculum. With the 100 participating primary and secondary schools and 12,000 students, Project ICT is the largest educational project in the Netherlands in the field of digital literacy.

Envitron: Using energy smarter - That, in a nutshell, is what the Groningen start-up Envitron does. Envitron builds hardware and software solutions that give customers insight into their energy use. It allows us to see which device uses how much of which energy type and also gives suggestions on how to reduce the use or even regulate it fully automatically. All energy flows that go in and out of a house - gas pipes, power cables, the central heating boiler, a heat pump, a car charging station, solar panels, amongst many others - brought together by Envitron, translated into data and analysed. Finally, at a glance you can see on a dashboard, where and how much is being used and what you can improve.

It started as a hobby to make a sailing boat self-sufficient. After a trajectory at Venturelab, the hobby turned into a business. All this was only two years ago. By now the team consists of 16 people and projects have been carried out in Groningen, Amsterdam, Brabant, Germany and Jordan. It is initially business to business, but the young entrepreneurs do not rule out entering the consumer market later. Their dream is also to be able to analyse and adjust all energy flows at a higher level for an optimal balance. Not just buildings, but entire neighbourhoods, villages, cities, regions.

Envitron

BuffelBox: Getting more people to exercise by making sports accessible to everyone - healthy ageing in practice, sustainable, with social impact and accessible. That is the proposition of the founders of The BuffelBox.

- The BuffelBox - This is a reprocessed old shipping container, converted into a self-sufficient storage space for sports materials. A special pass or app gives you access.
- The BuffelBox - This is also an inclusive way to let more people exercise and do sports in an accessible and low-threshold way. Just outside, in the neighbourhood, allowing people from all social groups to make use of it.
- The BuffelBox - This is an environmentally friendly start-up. The entrepreneurs work with upcycling, the reuse of the entire product. Less waste, less raw materials and less CO2.

The founders were rewarded with the 3rd place for the Rabo Ondernemersprijs during the BusinessMatch Groningen in the autumn of 2020.

Bicycle Alert: If you are on the road by bike and something happens to you, a device on your bike sends a text message to three people with an exact location and directions. With this product, the recently graduated entrepreneur won the Rabo Business Award 2020. As for the 10,000, he wants to use it for further technical development. After all, a smaller device reduces costs and makes it more attractive to the market.

Flash Bell: The Flash Bell was developed by eight students from the Hanze UAS, whose company was chosen in a national competition Student Company of the Year 2020 in the category HEI. Suppose a swap bike is neatly parked. How is it found among the hundreds of other bikes that look exactly the same? With a click on the key ring, a bright LED light shines from the flashing bell. This allows them to find the bike quickly, even a hundred meters away. The flashing bell has been taken into production and can be acquired by subscription. The first copies are about to be delivered.

WIJS

WIJS is a Dutch acronym and stands for "Neighbourhood Engagement by Youth & Students". It is a collaboration project between the municipality of Groningen, Hanze UAS, the social services team in the Groningen, the University of Groningen and the VET colleges Alfa College and Noorderpoort. In March 2020, WIJS also started to work closely with SNS-Bank. To this end, they merged their offices in one of Groningen's suburbs' shopping centres. In addition, students also work in the community centre in another residential area and in the cultural centre in the inner city.

WIJS wants to contribute to a society in which every student contributes to their district or city. Residents and students get to know each other, with all their questions, knowledge and experience. WIJS wants to be the connector between students and non-students. Together they start projects and activities for the Groningen society in the districts. As a learning workplace WIJS offers students the possibility for internships, projects and group assignments with a multidisciplinary character.

During their work, students can always fall back on guidance from teachers and consultation with experts from the field. Students who do their internships or graduate at WIJS form a multidisciplinary team in which everyone helps each other based on his or her own field of study. Each semester there is a new group of students from all sorts of study programmes, such as Applied Psychology, Social Work, Communication, Business Economics and Law.

Figures and impact

Between September 2019 and July 2020, students were active in Groningen society in 26 overarching projects through WIJS. In addition, 23 graduation studies were delivered. A total of 1007 students were employed in the 2019/2020 academic year.

In 2019, the impact of WIJS on society and on the students active within WIJS was examined. Three new insights emerged from the research:

1. WIJS' approach promotes self-reliance.
2. An equal relationship arises between residents and students because they take time for each other and pay attention to each other.
3. From this equal relationship, reciprocity in learning arises. Both students and residents learn from these practical issues. They mutually encourage their learning process and progress.

Some practical examples

Cooking workshops for young people in the Korrewegwijk district

Two students of Nutrition and Dietetics wanted to prevent obesity among young people. Their approach was to inform young people well about nutrition at an early age. Experience shows that just telling a story does not work. Therefore, they designed a cooking workshop especially for young people between 10 and 14 years in the Korrewegwijk area. At the end of the workshop the children could take the recipes home so that they could prepare the dishes themselves.

Help with tax returns

Together with the Groninger Forum, the tax authorities and the municipality, WIJS set up an urban campaign in 2020 to generate attention for help with tax declarations. Residents could use a new appointment system to contact WIJS students for help in their own neighbourhood or village.

Samenwijs: the project that didn't care about corona

In January 2020, 15 students from Noorderpoort, Alfa College, Hanze UAS and the University of Groningen started a practical project to tackle a 'wicked problem'. Their topic was loneliness. Only a few weeks after the start of the project, the Netherlands went on lockdown. By a stroke, this made the topic the students were researching more urgent than ever. In the Selwerd neighbourhood, the students saw major changes during the protection measures against COVID 19. Initiatives to help others were mushrooming. One student explains that the topic of loneliness became more alive in the neighbourhood because of the coronavirus. *"As a group of students, our dream is to set up a system that allows people to connect digitally in the neighbourhood. We call the idea 'Neighbourhood Buddy'. When the pandemic measures are relaxed further, we will look at how we can also continue these contacts, for example by meeting for a walk."*

The students had good experiences with multidisciplinary work. They were excited to see that everyone could contribute the subject from their own education. They also noticed that differences between the group members have a positive effect. Everyone is good at something different and can contribute to the end result in their own way. By collaborating online and making contacts in the neighbourhoods, the students in groups each arrived at an appropriate contribution for each neighbourhood. Of course, it was preferred to not only meet by phone and online, but the contact was good and the cooperation worked even without really meeting each other face to face.

The aim of all groups was to fight loneliness despite the coronavirus in three neighbourhoods. Whereas the group in Selwerd focused on strengthening mutual contacts through digital means, students in Corpus den Hoorn set up safe physical encounters in the neighbourhood nursing home. At the same time in Paddepoel, together with the crochet and knitting club, they worked hard on a tapestry to which every resident could add his or her own piece. Each group of students contributed in its own way to the fight against loneliness. The problem has not yet been solved, but these new initiatives can make life easier.

challenge

A new challenge: young people in corona times

Youth workers in the city are facing major challenges. Because of all the corona measures, young people are in danger of getting out of sight. Youth workers therefore call on the help of students: how can young people be better reached and offered continuous prospects? What is still possible within all the RIVM measures? Participation is open to students from VET colleges and HEIs in the city, regardless their discipline or study year. Students work in a mixed team in which they, in consultation with youth workers, look at how they can help youngsters. In their teams, they will develop and implement a plan. A budget of up to 1,000 euros is available for materials or the development of tools. Teams can tackle the problem in many different ways. Online apps, technology workshops, culture, sports and games, you name it. You can also look at underlying sociological or psychological aspects. In addition, the plan can indicate how students can play a lasting role in this, e.g., as volunteers or in a follow-up project.

EUROPEAN NETWORKS

Regions connecting to other regions with similar or complementary ambitions, challenges, capacities and histories are increasingly driving new initiatives at the European and global scales. Hanze has chosen to consolidate its efforts and joins others to be visible, contribute and have a voice in EU policy directions but also benefit from new European initiatives. Hanze has a lot to contribute and to benefit by a strong presence in Brussels and in European networks and initiatives: EURADA has recognized the innovative developments in the region and has offered this as a good practice to other regions. Universities of Applied Sciences have joined forces to form the UASNL to have direct communication with policymaking related to applied research and professional education and funding instruments related to them. They also serve to offer complementary perspectives on regional and societal challenges and recommendations for new research and innovation pathways. The European Engaged Universities is an initiative of Hanze to jointly develop the 'engaged university' role as a consortium, whilst deepening joint teaching and learning practices and policies to support regional and societal challenges. Another example of European collaborations is the New Hanseatic League of Universities (HLU) alliance that created a new ranking system to break the mould of traditional views of universities that goes beyond scientific publications and patents as primary indicators of excellence. The European Enterprise Network for the Northern Netherlands region is located at Hanze and connects education, research and small and medium sized businesses in seeking international partners and opportunities.

Networks for Next Practices

- EURADA Benchmarking
- EEU – European ENGAGED University
- UASNL
- HANSEATIC LEAGUE
- Enterprise Europe Network EEN

EURADA Benchmarking

Hanze's Professorship Sustainable Cooperative Entrepreneurship (DCO) explores new types of regional governance and collaboration between entrepreneurs, knowledge institutes, government entities and community-based organisations. The place-based cluster, Gebiedscoöperatie *Westerkwartier, also* referred to as *Place-based Cooperative Westerkwartier* in English, is a new type of cooperative. It was chosen as one of the two best innovations in Europe by the European Association of Development Agencies (EURADA). EURADA collected over 50 best-practices on key policy areas: social innovation, stimuli for the entrepreneurial discovery process and comprehensive support measures for SMEs. *Gebiedscoöperatie Westerkwartier* was selected for being highly innovative, for its transferability, sustainability, impact on a regional level, and its quadruple helix and multi-stakeholder approaches. It encompasses deep collaborations between education, research, governmental organisations and Small and Medium-sized Enterprises (SMEs).

Gebiedscoöperatie as a new approach towards innovation ecosystems

EURADA recognized a well-balanced cooperation within the triple-helix: students and researchers play a key role in developing and sharing innovative entrepreneurship models; local and regional government bodies facilitate processes activities of the cooperative; and businesses collaborate across multiple sectors. These orchestrated interactions contribute to the ongoing development of an innovative ecosystem, to support sustainable social and economic well-being and regional growth.

The principles shaping *Gebiedscoöperatie Westerkwartier* were captured in EURADA's Canvas for Best Practice Transfer below. EURADA's team worked closely with the Professorship DCO to support other European regions.

EURADA's Canvas for Best-Practice Transfer: The REGIONAL COOPERATIVE WESTERKWARTIER

KEY PARTNERS	KEY ACTIVITIES	VALUE PROPOSITION	KEY BENEFICIARIES
*Gebiedscoöperatie Westerkwartier is a Regional Cooperative open to all the actors of the quadruple helix (4H) in the region. *The Cooperative's board is formed by a representative of each of the 4H sector. *The Cooperative's board has: **Standard board members** with voter status - SMEs (max. 3/4) - civil society organisations (max. 3/4) **Strategic board members** with advisory status - university; local cooperative banks; regional / local authorities (max. 3). *The Cooperative also has a **Research group**. → Board design's logic: large corporations/civil servants/politicians undermine the decision-making process due to conflicts of interests.	*Facilitation of participative processes with regional actors of the quadruple helix (4H) to define middle-term regional development PILLARS (e.g. energy transition) linked to S3. *The WORK CYCLE of the Cooperative builds on: 1. PILLAR LEADERs (knowledge/field experts) set priorities (e.g. biomass) within their pillars according to which they contact Acquisition Managers. 2. ACQUISITION MANAGERS organise public meetings (e.g. for 3 pillars / 12 yearly meetings) to simulate regional 4H actors so as to collect ideas/proposals related to the priorities, these are then sent to Process Managers. 3. PROCESS MANAGERS organise 1' level - cooperative meetings with 4H experts& leaders supervised by pillar leaders; whereby the idea/proposal is: A) rejected or B) validated. 4. If B), PROCESS MANAGERS select relevant regional VET/ university institutions; 2' level - cooperative meetings are then held between idea/proposal's owners and students/researchers to co-create a research plan. 5. The research plan's outcome can be: A) direct implementation of idea/proposal or B) development of idea/proposal into a project with local/regional/EU funds to then implement. *RESEARCH GROUP: monitors the activities of Acquisition Manager and Process Manager; B) evaluates implemented projects and disseminates their outputs.	**PROBLEM** *Regions where the cooperation amongst regional actors of the quadruple helix (4H) can be improved so as to address structural challenges (e.g. lack of SME competitiveness and innovation capacities). **SOLUTION** *The Gebiedscoöperatie Westerkwartier (Cooperative) was developed to solve this problem. *The Cooperative brings together all 4H actors in the region to collectively define regional development pillars (e.g. energy transition; regional food chain; social inclusion), and jointly mobilising actors of diverse domains / sectors / levels to create solutions in line with the pillars. *Through the Cooperative a transition to a more community and systemic paradigm of regional development is enabled.	***Regions** – with max. 1 ml population (trust relevant), mainly rural / non-urban, SMEs-dominated regional economy (fewer large corporations) best profit from the Cooperative. ***Regional development** – Cooperative's Process Managers facilitate regional actors of the quadruple helix to co-work so as to implement ideas/proposals with potential for the region through R&I of regional VET/academia. ***Regional cohesion** – Cooperative's Acquisition Managers ensure through public meetings and ideas/proposals' collection that all the quadruple helix regional actors participate in the regional development agenda, coherently with the co-defined regional development pillars and the regional S3.
KEY RESSOURCES *regional VET/university institutions; *SMEs; *decision makers' support for bottom-up and participative processes to define middle-term regional development pillars.			
COST STRUCTURE *Cooperative personnel: president; director; acquisition manager; process manager; communication officer; accountant; administration; 2 researchers; 1 project manager for each defined regional development pillars.		**REVENUE STREAMS** *National / regional / local funds: 60%; *EU Funds: 25/30%; Membership fees: 5% (ca 50.000€). *Annual turnover: € 800 000.	

The Canvas and Infopack were developed in the framework of Interreg Europe Project Beyond EDP

EEU – European ENGAGED University

"Establish European Universities" is an initiative that came out of the Gothenburg Summit in 2017. The EU and its member states encouraged higher education institutes and their partners to build strategic partnerships across the EU. The European ENGAGED University (EEU) is an example of a bottom-up initiative. It is an alliance of six universities that want to shape a future-oriented student population. Rooted and engaged in their regions, students will contribute to sustainable and resilient regional development. The EEU will enable students of all ages to study and combine programmes from diverse EU universities for their degree. This promotes and contributes to the regional and international competitiveness of these universities and their regions.

Who are the partners?

- The Netherlands: Hanze University of Applied Sciences (Coordinator)
- Finland: Tampere University of Applied Sciences
- Germany: City University of Applied Sciences Bremen
- Ireland: Waterford Institute of Technology
- Portugal: Polytechnic Institute of Bragança
- Romania Alexandru Ioan Cuza University of Iaşi

What is the aim?

The partners aim to develop shared European study courses and even a shared curriculum in research, learning and teaching through active involvement of staff, students and the civil society. They will work towards a university where stakeholders of the quadruple helix will use their energy, expertise and feedback to shape a permanent and well-structured engagement strategy in the regions involved. In other words, a university which delivers a regional innovation ecosystem, fostering and ensuring sustainable and democratic regional resilience and prosperity.

Typically, the EEU, as a result, will have activities in place that incorporate the students', experts' and public's engagement into their research, knowledge exchange, teaching, and social responsibility. It ensures that all – staff, students, entrepreneurs and representatives from public bodies – in academic, validating and supporting roles have opportunities to get involved in formal and informal ways. Together, they develop their innovation approaches for regional transition, based on a regional agenda, embedded in curriculum, and with new concepts for lifelong learning.

EEU

The central aim has three objectives:

- Boosting entrepreneurship: 21st century skills; open innovation, transdisciplinary working;
- Accelerating industrial transition: employing Key Enabling Technologies, building regional chains and developing new regional business models;
- Supporting sustainability for people, planet and profit, accelerating the transition towards a regional circular economy.

What is the approach?

The partners have prepared the ENGAGED work programme in order to establish an inter-institutional cooperation model. The cooperation structures will enable smooth, effective and efficient partners' collaboration leading to the EEU. Each partner is responsible for one or two cooperation structures:

- European Engaged University and regional and inter-regional stakeholder engagement methodology: focusses on mapping and evaluating existing levels of engagement activity within the consortium and refining a methodology to enhance such activities over the lifetime of the project;
- ENGAGED EuroKnowledge Lab: teaching and learning strategies which are focussed on developing, testing, evaluating, disseminating and securing joint teaching & learning strategies in support of the ENGAGED curriculum.
- ENGAGED Curriculum Lab: directed towards building a coherent joint curriculum on defined social challenges, technological and industrial transition.
- ENGAGED mobility platform: aims at developing an ENGAGED mobility strategy and platform for physical, virtual and blended mobility.
- ENGAGED Challenge Lab: will contribute to the knowledge creation - partners will conceptualize a multi-disciplinary, cross-sectoral and inter-university research development model.

- ENGAGED Experimental Incubator where actors from all cooperation structures will meet with industry, business and relevant stakeholders and co-create, carry out experiments, implement and test ideas.
- ENGAGED Campus: establish an open and engaged campus where students, teachers, researchers, staff and stakeholders will collaborate physically and virtually.
- European ENGAGED University (EEU) Model will consolidate all results achieved when building the cooperation tools of truly engaged Universities.

How is the project progressing?

On December 2, 2020 during their online ENGAGED commission meeting, the six university's presidents and rectors signed the Memorandum of Understanding formalizing the alliance to start their activities. In addition, the first online webinar was organised and attended by more than 150 participants. The partners' representatives introduced their institutions and the ambitions to be realised within the EEU initiative. Finally, the first pilot action for a challenge-based extracurricular module for student and staff mobility was presented by a representative of the Polytechnic Institute of Bragança.

The January meeting and webinar was hosted by the Polytechnic Institute of Bragança in Portugal. The Alliance members met Manuel Heitor, the Portuguese Minister of Science, Technology and Higher Education of Portugal. He presented the priorities for the Portuguese EU presidency and expressed his support for the EEU developments. Polytechnical institutes and universities of applied sciences are a game changer when it comes to innovation and employability. In addition, partners worked on their novel challenge-based module aiming to involve student in the process of solving societal challenges.

UASNL
UNIVERSITIES OF APPLIED SCIENCES NETHERLANDS

UASNL

Fourteen Dutch Universities of Applied Sciences (UAS) work together to strengthen their European research profile and are strategically located in Brussels. Hanze is one of its founding members.

UASNL's aim is to

- contribute to policy developments
- builds European partnerships
- demonstrate the value of applied research in answering the challenges facing Europe

In UAS, knowledge valorisation, applied scientific research and educational activities are strongly intertwined. Labs, projects, internships and workplace learning are often integral to research programmes. Students at UAS are well prepared for the labour market due to the professional orientation of UAS. UAS graduate's employability skills are also enhanced since they regularly particiate in research projects that lead to innovations in business but also social challenges giving them a head start for their future roles in society.

Research at UAS is always applied, demand driven with direct societal impact. Engaged research is reflected in the co-creative collaborations with regional partners (SMEs, government and public sectors). The UASNL institutes are driven by the Sustainable Development Goals set out by the United Nations and one or more of these goals form a focus area for applied research at these institutes. Societal innovation and technology innovations are pursued through community engagement.

The 14 universities encompass:

464.281
UAS students in the Netherlands in 2019

92%
Students with a job 3 months after graduation

57
Centers of Expertise

679
Researchers at Dutch UAS

From the UASNL website

HANSEATIC LEAGUE

Hanze UAS has collaboration agreements with a large number of universities and universities of applied sciences across the globe. These international ties offer opportunities for a wide variety of activities, such as the exchange of students and staff, joint curriculum development and research projects, double degree articulation programmes, the exchange of knowledge, best practices and benchmarking.

Hanze UAS is also building a network of strategic partners at an institutional level. The purpose of the strategic partnerships is to strengthen existing collaborations that take place between faculties or schools related to educational programmes, but to also explore new, innovative avenues of international cooperation, both in education and applied research. Such strategic cooperation agreements have been signed with the Belgian University Colleges Leuven and Limburg, Tampere UAS in Finland, the Belgorod National Research University of the Russian Federation, the Chinese Beijing Technology and Business University and the Incheon National University of the Republic of Korea.

The New Hanseatic League of Universities (HLU) is a highly remarkable cooperation alliance. Hanze UAS and eight of its strategic partners have jointly initiated this new league with the purpose of strengthening mutual friendship and collaboration in the spirit of empowerment. The proclamation was signed by the universities mentioned above and by the Northern Arizona University, the Uganda Christian University and the University of Dar es Salaam.

The name refers to the Hanseatic League, a confederation of merchant guilds and market towns in Northwestern and Central Europe. What began as a few Northern German towns in the late 1100s, the league dominated the Baltic maritime trade for three centuries along the Northern European coasts.

HANSEATIC

Hansa territories stretched from the Baltic Sea to the North Sea and inlands during the late Middle Ages, slowly diminishing after 1450.

HLU is open to all universities, colleges, schools and any institutions of higher education seeking innovation in research and education. What binds the partners is their desire to focus on practical applications of science and technology to increase their contributions to society and industry. There are no membership or annual fees.

A new initiative of the HLU is the creation of a new university ranking system, the 'World's Universities with Real Impact' (WURI), that evaluates a university's real contributions to society. WURI also highlights creative and innovative approaches to university research and education and will be based on four criteria:

- Industrial applications, rather than the traditional ways of counting research papers and lecture-type teaching;
- Value-creating start-ups and entrepreneurship, rather than a traditional focus on the number of jobs filled; and
- Social responsibility, ethics, and integrity, rather than a focus on knowledge and skills just for material success.
- Student mobility and openness for exchange and collaboration between schools and across national borders, rather than an independent yet closed system.

The WURI website on https://www.wuri.world provides information on the Global Top 100 Innovative Universities, and the Top 50 universities as to the values listed above.

Enterprise Europe Network EEN

The Enterprise Europe Network (EEN) helps businesses innovate and grow on an international scale. It is the world's largest support network for small and medium-sized enterprises (SMEs) with international ambitions.

The Network is active in more than 60 countries worldwide. It brings together 3,000 experts from more than 600 member organisations – all renowned for their excellence in business support.

Member organisations include:

- technology poles
- innovation support organisations
- universities and research institutes
- regional development organisations
- chambers of commerce and industry

Who are the partners?

In the Netherlands, there are contact points in Den Haag, Utrecht, Leeuwarden and Groningen. In Groningen, the EEN is positioned within the Marion van Os Centre of Expertise for Entrepreneurship (CoE Entrepreneurship) of Hanze UAS and builds on the CoE Entrepreneurship's strengths of applied research, entrepreneurship education and support for student entrepreneurs and its ability to provide relevant knowledge to SMEs. The EEN and the CoE Entrepreneurship together support more and better entrepreneurs in the region and beyond.

CoE Entrepreneurship is the leader of the Northern Netherlands consortium of the EEN. This consortium also consists of Wateralliance, New Energy Coalition and Business Development Friesland. Next to that the members of the consortium work closely together with a large number of regional stakeholders and support organisations.

What is the aim?

EEN experts provide businesses with the support they need to grow and expand into international markets. It can support businesses with finding the right international partners to grow and expand abroad. In particular, they provide solution-driven services to turn innovative ideas into international commercial successes. Teams of Network experts in each member organisation offer personalised services to businesses. They know the local business environment and have contacts for business opportunities worldwide. The Network can also offer a targeted approach aimed specifically at your business sector. Its expert groups cover all key economic sectors, from healthcare to agrofood, from intelligent energy to fashion and textile.

EEN

International partnerships
Expertise, contacts and events to connect you with the right international partners to grow your business.

Advice for international growth
Expert advice for growth and expansion into international markets.

Support for business innovation
Solution-driven services to help you turn your innovative ideas into international commercial successes.

What is their approach?

The approach of the EEN is to build a strong network of connections with SMEs and support organisations in the region, while at the same time, build out the International network within the EEN. By doing this business offers and requests can be matched effectively through partner searches.

The EEN is also active in organizing B2B matchmaking events and company missions in order to stimulate international cooperation.

And last but not least the EEN offers support to organizations that have won a grant under the European SME Instrument.

All of the services offered by the Network are offered for free.

How is the project progressing?

The Framework contract for the EEN covers the period 2015-2021. Currently a bid for the next contract period is being prepared.

In the current period around 80 matchmaking events have been (co)organized, resulting in over 1,000 1-on-1 B2B meetings. Over 112 partnerships have been realized. And with the help of the EEN an estimate of around 10 Million Euros of subsidies has been won by organizations in the Northern part of the Netherlands.

EEN

EUROPEAN PROJECTS

European programmes have funded the following projects. These programmes focus on specific themes or social challenges. They foster inter-regional collaborations and stakeholder engagement in order to promote common understanding and learning. New networks and strengthening existing ones are often important spin-offs. European projects involve region to region sharing of good practices and collective effort to solve common challenges through new knowledge development and innovation.

Region to Region in Next Practices

- E-COOL
- EMBRACE
- GROWIN 4.0
- ID3AS
- Inedit
- InnoHEIs
- LIBBIO
- Making-city
- Periscope
- REFRAME
- RIGHT
- SHREC
- Startup Ems-Dollart-Region
- Store and GO
- TraCS3

E-COOL

E-COOL is a project co-funded under the European INTERREG Europe programme.

The partners aim at promoting entrepreneurship as an important driver of smart, sustainable and inclusive economic growth. Entrepreneurship is valued not only for its economic and social benefits, as a driving force for job creation, competitiveness and growth, but also for contributing to personal fulfilment and societal impacts. Entrepreneurship has been acknowledged by the EU of its ability to unlock growth potential of businesses and individuals.

Who are the partners?

- Spain: Chamber of Commerce, Industry and Shipping of Seville (lead partner)
- Czech Republic: South Moravian Region
- Latvia: Zemgale Planning Region
- Romania: Harghita County Council
- United Kingdom: Devon County Council
- Italy: Puglia Region
- Netherlands: Hanze University of Applied Sciences Groningen
- Greece: Regional Development Fund of Attica/Region of Attica
- Croatia: Ministry of Economy, Entrepreneurship and Crafts
- Poland: Agglomeration Opole Trust

E-COOL

What is the aim?

The Entrepreneurship 2020 Action Plan, endorsed by the European Commission, promotes entrepreneurial education as it results in greater likelihood of students starting a business and are in general better at tackling challenges in their professional and personal lives.

Most educational approaches to youth entrepreneurial education have been focussed on improving the skills or competences within educational systems. E-COOL partners want to deliver an integrated approach, in which, school, friends, family and the social environment, play a relevant role, contributing to supportive environments boosting entrepreneurial mindsets, intrapreneurial attitudes and innovation capacities.

The partners' overall objective is to improve the effectiveness of regional policies in promoting the entrepreneurial spirit of young people, contributing to the future economic development and increasing competitiveness within the EU. They aim for identifying and exchanging good practices for creating open and accessible entrepreneurial ecosystems and actions to boost the entrepreneurship mindsets of young people. The good practices and lessons learnt will be transferred into Action Plans to be included in regional policies.

What is the approach?

To achieve their aim, partners have identified three main work packages:

- Improve and achieve more effective policies promoting the entrepreneurial mindset through evidence-based policymaking and by integrating recent innovative approaches for inspiring young people, especially those based on improving entrepreneurial environments and teaching methodologies. The good practices will be identified and exchanged at international and regional levels. The stakeholders' groups will analyse and develop regional Action Plans based on the lessons learnt in each territorial context, mobilising structural funds.
- Increase the knowledge of policymakers, professionals and public servants working on entrepreneurship and education. The new approaches will be addressed by identifying practices, exchanges between regions, developing joint analysis and creating activities for education stakeholders and policy makers.
- Increase awareness on the advantages of an entrepreneurial education, as well as to promote cooperation between EU regions in the development of new policies. This will be obtained through project disseminating activities and results to stakeholders across the EU and developing interregional project meetings, workshops and technical visits.

Young people in secondary education and their entrepreneurial spirit are subject to the policies to be improved, especially through a friendlier entrepreneurial environment. However, the project target groups are policymakers, professionals and public servants working on education and entrepreneurship, as well as the enterprises, who are also final indirect beneficiaries. The project will provide them with better knowledge of the most innovative and recent approaches on how to inspire young people and how policies could support these activities.

How is the project progressing?

The project started in June 2018 and will end in May 2023. Interregional seminar, workshops and capacity building webinars in the partner regions were organized in 2018, 2019 and 2020. During these meetings, partners shared good practices with each other. They project has reached its learning phase. In the current phase, each partner has selected good practices from other partners and will design regional action plans to implement these.

Hanze UAS presented two good practices to their partners:

- The Serendipity Tables: a programme to connect students with the wider community and enhances entrepreneurial mindsets.
- The Critical Friends Method: an approach about challenging, taking control and initiating. Through the help of Critical Friends students explore future potentialities.

For their action plan, Hanze UAS has chosen a good practice from Brno, where innovations labs were established at a business park to make collaboration between education and SMEs more effective and efficient.

EMBRACE

The EMBRACE project is funded by the Erasmus+ Programme, an EU programme for education, training, youth and sport. The project falls under the Knowledge Alliances programme (Key Action 2).

EMBRACE is a ground-breaking project with the potential to transform current businesses into future-oriented organizations and its staff to offer sustainable products, processes and services addressing societal needs. The project also provides a platform for more cohesive collaborative engagement between higher education institutions, policymakers, industries and citizens leading to sustainable job creation and retention, whilst conferring economic development for their communities.

A key goal of the project is to highlight and provide educational and training programmes to make businesses more 'social' whilst realigning their business strategies to embrace ownership and contribution to solve economic and social problems. Businesses need to reassess their roles and responsibilities for their activities and the impacts they have on their communities. The EMBRACE project aims to support young talents, entrepreneurs and corporations with new skills to embed a corporate social entrepreneurship culture in their organisations and to forge new alliances to achieve this.

EMBRACE

Who are the partners?

- Ireland: Waterford Institute of Technology and Digital Technology Skills Ltd (lead partner)
- Lithuania: Vilnius Gediminas Technical University
- Spain: DRAMBLYS
- Hungary: Budapest University of Technology and Economics
- Romania: National School of Political Studies and Public Administration
- Germany: Domhan Vision
- Greece: Hellenic Clothing Industry Association
- Portugal: University of Porto
- Netherlands: Hanze University of Applied Sciences

What is the aim?

The EMBRACE project aims to promote Corporate Social Entrepreneurship (CSE) in HEI educational programmes. The consortium partners will improve students' competences, employability and attitudes contributing to the creation of new business opportunities dealing with social change. The project aims to co-design and co-create an innovative, multi-disciplinary European Corporate Social Entrepreneurship Curriculum (ECSEC) and a digital portal, EMBRACEedulab. The EMBRACEedulab will provide a learning journey and meeting point for both university students and business sector employees to train in CSE skills and competences.

What is the approach?

The current global knowledge-driven economy demands greater emphasis on addressing the issues of social inclusion, social equality and engaging the society in research and innovation processes to generate solutions responsive to societal needs. Such aspirations can only be achieved if there is open collaborative, cooperative engagement between the quadruple helix actors in any given society. The foundation of developing such an inclusive, collaborative, socially aware entrepreneurial society is education.

The partners will deliver methods to facilitate embedding Social Corporate Entrepreneurship in their regions. The approach is framed by three dimensions:

1. **A favourable climate for social economy**: The first dimension is to establish, within the framework of the Social Business Initiative, a favourable climate for social economy stakeholders to become aware of the need to identify actions to increase the visibility of the necessity for Corporate Social Entrepreneurship and the development of a more socially sensitive entrepreneurial society in regions. This awareness building will be achieved through the consortium's access to a unique horizon scanning mechanism that identifies disruptive technological and societal trends.
2. **The co-design, co-creation, co-development and co-implementation**: The second dimension is the co-design, co-creation, co-development and co-implementation of an innovative, multidisciplinary European Corporate Social Entrepreneurship Curriculum (ECSEC) to be incorporated into HEI education programmes across all disciplines. The output of such a curriculum will be more rounded, employable graduates capable of contributing immediately to the intrapreneurial and social responsibilities of their employers.

3. **Sustainable environment that facilitates the exchange of knowledge between HEIs and enterprises**: The third dimension is the establishment of a sustainable environment that facilitates the exchange, flow and co-creation of knowledge between HEIs and enterprises; resulting in the creation of new business opportunities dealing with social change both within and external to organisations.

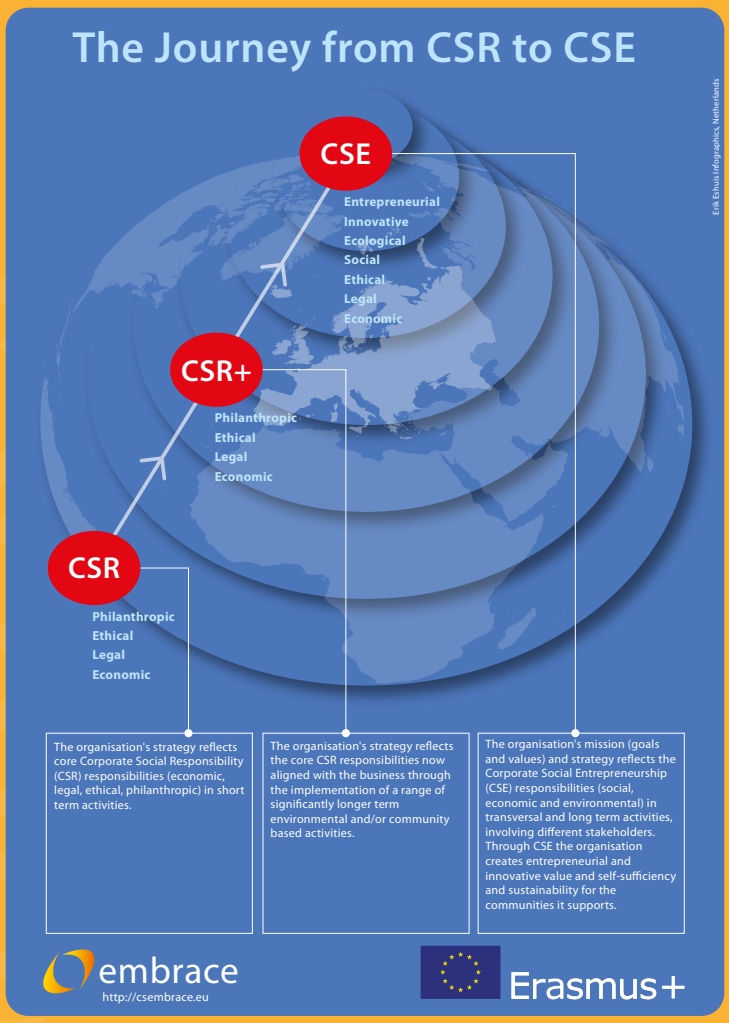
How is the project progressing?

The project was launched in February 2020, in Budapest and will run until December 2022.

- A review on CSE Programmes in Higher Education Institutions (HEIs) was published in August. Other activities included a webinar on Corporate Social Entrepreneurship Practices with four CSE practices from five different leading organisations in the field (September 2020).
- A first review of Corporate Social Entrepreneurship (CSE) Programmes in Higher Education Institutions (HEIs) was published: CSE was a relatively new concept with only two (in Belgium and Ireland) of the 602 HEIs reviewed offered CSE specific courses but there are an abundant number of CSE related courses; overall level of CSE awareness in the 34 countries reviewed was very low even as there was a lot of awareness on CSE related activities (social enterprise, entrepreneurship, Corporate Social Responsibility (CSR)); very little specific knowledge/ awareness exists about CSE and even then, most respondents, when they think they are talking about CSE are in actual fact talking about CSR instead. Thus, there is some confusion and a lack of awareness and knowledge related to the essence and benefits of CSE. This poses a challenge to developing and teaching CSE courses.

The findings led to a renewed definition of CSE:
Corporate Social Entrepreneurship (CSE) is 'a way of doing business' so that all staff in any given organisation (public, private or third sector) are fully aware of their role, responsibility and contribution to the sustainable socioeconomic enhancement of their organisations and the communities in which they live and work. The CSE process includes: creating an enabling entrepreneurial environment, fostering corporate social intrapreneurship, amplifying corporate purpose and values as well as building strategic alliances in order to solve economic and social problems and to promote the success of emerging innovative business strategies.

- A review of CSE in organizations (fall of 2020). This review showcased five good practices of organizations with CSE embedded throughout their organization. The five cases were: Delta Cafés (Portugal), Gebiedscoöperatie Westerkwartier (the Netherlands), Telefónica (Spain), Paroc (Lithuania) and Synerb Venture Catalyzer (Romania).
- A 'Guide to CSE', a manual for the implementation of CSE in organizations, will be published (the spring of 2021).
- Next steps include development of the European Embrace Curriculum for HEIs and professional practice and of the EMBRACEedulab.


The Journey from CSR to CSE
CSE
Entrepreneurial
Innovative
Ecological
Social
Ethical
Legal
Economic
CSR+
Philanthropic
Ethical
Legal
Economic
CSR
Philanthropic
Ethical
Legal
Economic
The organisation's strategy reflects core Corporate Social Responsibility (CSR) responsibilities (economic, legal, ethical, philanthropic) in short term activities.
The organisation's strategy reflects the core CSR responsibilities now aligned with the business through the implementation of a range of significantly longer term environmental and/or community based activities.
The organisation's mission (goals and values) and strategy reflects the Corporate Social Entrepreneurship (CSE) responsibilities (social, economic and environmental) in transversal and long term activities, involving different stakeholders. Through CSE the organisation creates entrepreneurial and innovative value and self-sufficiency and sustainability for the communities it supports.
embrace
http://csembrace.eu
Erasmus+
Erik Ethuis Infographics, Netherlands

GROWIN 4.0

The Interreg GrowIn 4.0 project is funded by the European Union and aims to foster innovation and create more growth within small and medium sized companies in the manufacturing sector. This way, companies strive to adapt and implement disruptive technologies in their businesses. Hanze UAS students, and in particular Master Interdisciplinary Business, Master of International Communication (MIC) and bachelor students of IT, Business and Communication students are actively involved in the GrowIn 4.0 project. They have carried out applied research in the field of IT, Human Capital and Communication. Research for the GrowIn 4.0 project is carried out in close collaboration with the professorships New Business and IT, Human Capital and Sustainable Communication.

GrowIn 4.0

Who are the partners?

- The following university, governmental and business partners in Belgium, Denmark, Germany and United Kingdom are part of this project:
- Belgium: Voka - Chamber of Commerce East-Flanders, Blenders, Open Manufacturing Campus and Flanders Make
- United Kingdom: Anglia Ruskin University, TWI and Opportunity Peterborough
- Netherlands: Hanze UAS and Northern Netherlands Alliance SNN
- Germany: Ostfalia University of Applied Sciences, European Institute for Innovation, Alliance for the Region GmbH
- Denmark: VIA University College (lead beneficiary) and Erhversvshus Midtjylland

What is the aim?

The manufacturing industry is very important for the North Sea Region economy and a driver for growth. GrowIn 4.0 focusses on the digital challenges manufacturing SMEs in the North Sea Region face today and the opportunities they bring. Many of these SMEs are moving towards the fourth industrial revolution - Industry 4.0 (I4.0) - which is regarded as the industry of tomorrow. If the manufacturing industry in the NSR is to remain competitive, they need to capture the potential for productivity and growth that Industry 4.0 appears to offer. There is a profound need for an experience-based and smart gathering of efficient methods, tools and knowledge to guide SMEs in their transformation towards Industry 4.0.

GrowIn 4.0 aims to build strong competences and tools in the participating regions for the benefit of manufacturing SMEs.

What is the approach?

The approach is to establish a strong partnership which pools knowledge on the manufacturing industry and Industry 4.0. Main challenges and solutions regarding the implementation of Industry 4.0 will be investigated.

Next to management and communication work packages the partners have prepared three work packages:

- New business models and strategy development: the objective is to strengthen the business strategies and business models of manufacturing SMEs in the context of the opportunities and challenges of I4.0. This is an important precursor that will enable SMEs to assess, improve and adapt their innovation strategy. It will also help them understand how to align their capabilities to their market environment and which aspects of I4.0 will be important for sustaining their competitive advantage.
- Better use of technology and development of products: the objective is in particular to transfer experience with I4.0 technologies between knowledge institutions and SMEs and between SMEs. This is necessary in many respects. For SMEs, the risk is particularly high in the use of new technologies without having the necessary experience. On the other hand, it is indispensable to remain technologically at a progressive level to compete.
- Training, education and recruitment of Industry 4.0 qualified staff (led by Professorship New Business and ICT, Hanze UAS): the objective is to increase the level of skills and knowledge needed for implementation of I4.0 in SMEs. Technologies associated with I4.0 like Big Data, IoT, Robotics and Additive Manufacturing offer many opportunities for manufacturing SMEs. In this part of the project, we want to persuade manufacturing SMEs to join I4.0 in co-creation endeavours. Therefore, it is necessary to develop knowledge to apply I4.0 technologies, as well as (soft) skills like negotiation, networking, branding and teambuilding.

GrowIn 4.0

The resulting collections of new or improved methods and tools - developed in interaction with SMEs - will be offered within different areas of the NSR.

How is the project progressing?

As a point of departure for the GrowIn 4.0 project a desk study was conducted which reported on generic drivers and obstacles, the current situation and opportunities and challenges in the future. It concludes that the partner regions face many of the same challenges but also opportunities with regards to industrial SMEs' uptake of Industry 4.0 technologies and business models. A common challenge is SMEs' lack of resources, skills and time for Industry 4.0. General obstacles for SMEs in the partner countries are lack of business support, a high degree of over cautiousness when it comes to investments in Industry 4.0, a lack of the right competences, a lack of digital standards, threats through cyber security, lack of finance and finally a lack of the right business tools. However, common opportunities are increased productivity, competitiveness and growth. General drivers across the partner countries are changing market needs, new technologies, regulatory interventions and firm internal drivers.

The first best practices, methods, tools and concepts have already been collected. They are:

- **Awareness/readiness assessment tools**: Partners looked into two tools, both designed to provide companies with an understanding of their position with regards to Industry 4.0 and assess their readiness level. They provide a set of dimensions from digital business models, digitisation of products and services, digital vertical and horizontal integration, data analytics, through to compliance and security.

- **Benefit Realisation tool**: This tool is aimed at helping firms identify the benefits, the dis-benefits and business challenges they might anticipate from adoption of new technology. Phase one comprises group work involving key actors (managers as well as those actually working in processes) examining the features of any given technology (what it actually does) and linking specific features (enablers such as data collection, performing tasks more quickly, eliminating some human tasks) to identifiable benefits. These changes are then linked, through structured discussion, to potential costs (activities which may not be done so well) and the requirements for other actions (training, task restructuring, organisational re-structuring). The relationships between technology enablers, business changes, benefits and organisational objectives are mapped visually to foster further discussion. Once the benefits are identified they should be quantified where possible and then plans put in place to measure and track them over time.
- **Return on Investment (ROI) or monetising tool**: One of the biggest problems facing change projects is that they require a commitment of resources – time, staff and money. Change is also risk – careers may be at stake along with the viability of the firm. It may, therefore, be important to generate reliable data on the financial benefits of a technology adoption. The ROI Methodology is a step-by-step credible process that meets the need to show the value used by organizations. The methodology is a simple-to-use and proven process that will generate a balanced set of data that is realistic and accurate – particularly from the perspective of sponsors and key stakeholders. To allocate funds to programmes, projects and improvement initiatives that deliver the highest value, a method is needed that credibly proves or "shows" the value. The 10 steps of the Phillips ROI Methodology will be used.

Grow In 4.0

- **New Business Models in Manufacturing Tool**: The tool is based on a project concerning new business models in manufacturing companies that were running in 2014, 2015 and 2016. The project targets small and medium sized manufacturing companies with growth potential and could be adapted to the transformation towards Industry 4.0. The project was coordinated by VIA University College in Denmark and involves counselling by consultants to help SMEs rethink their business models.
- **HRM 4.0 Tool**: A combination of tools to enhance I4.0 skills and knowledge and identifies current human resources. It also identifies current human resources. It offers the transition workshop for companies to deal with change. It also offers the Competence based management tool to identify the gap between competences needed in the future and current competences.

ID3AS.
Intelligente, toegepaste Sensorsystemen

ID3AS

Sensor technology is key for sustainable technological and economic development of innovative products, services and processes. It is also vital when it comes to the digitalisation of the working and living environment. Many companies still lack in-house technological expertise and specialists meet these challenges. These companies run the risk of losing competitiveness both economically and technologically.

This is why ID3AS was developed. It is a cross border research and development project directed to sensor technology and its applications. The project is co-funded under the INTERREG 5A Programme for the German-Dutch cross border region. It is an umbrella project with a broad variety of sub-projects and partners. The central goal is to realise an interregional innovation network within the field of sensor technology including business valorisation.

Who are the partners?

The lead partner is Hochschule Osnabrück, coupled by Hanze University of Applied Sciences.

Subsidy providers are:

A large number of consortia with more than 35 companies and more than 10 knowledge institutions in the Netherlands and Germany have participated in the ID3AS project.

What is the aim?

The key aim of ID3AS:
The partners, through their cooperation, want to further develop the manifold possibilities of sensor technology and prepare them for application for companies in the border regions of the Northern Netherlands and Germany. These companies will be partners of an open and sustainable innovation network of companies and institutions. The ultimate goal is business development.

What is the approach?

The ID3AS project is based on predefined themes and key projects, set up for complex problems and innovation issues that are vital to companies and the Northern German-Dutch border region. Innovation on these themes means substantial innovation for users. The umbrella themes and key projects include:

- Health - Acoustic pattern recognition
- Health and Life Science – Intelligent Living Environment
- Agro business and Food
- Logistics, High Tech Systems, Materials and Energy – Smart Supply Chain
- High Tech Systems and Materials – Intelligent Surfaces and Materials

Within the key projects, possible crossovers are sought by applying solutions in other domains. In addition, sensor-related themes were taken up to link the projects together, for example the energy supply of sensors and communication between sensors.

Ultimately, the project is expected to deliver various results:

- A sustainable open interregional innovation network of companies and knowledge institutions within the domain of sensor technology;
- Methods to realize and support the above;
- New products to enter the market;
- Increase in employment and insight into labour market discrepancies;
- Increase in the knowledge of employees within the companies concerned.

By setting up consortia with knowledge institutions, companies and representatives of users of future products and services, the project will lead to products and services with a business case. Within the project, the number of realised products that are new for the company and/or the market, the increase in employment and the number of employees who have received training among other things, are considered.

How is the project progressing?

The envisaged impact is sensor technology made accessible to companies. To this end, the partners have set up a consultancy desk, carried out feasibility studies, developed, tested and implemented prototypes driving on sensor technology and sensor applications.

Some examples:

- A sensor-based solution for sustainable and robotised weed control has been developed by ICTCI, Hanze UAS and van Hall Larenstijn. It is able to recognize crops and weed and decides on the weed control method. It remembers the position of the weeds and activates the weed laser. Thus, it provides a solution combining the use of smart sensors, robots, drones and artificial intelligence to control weeds in a labour efficient way without the use of pesticides.

Demo proof of concept

- An early warning system is developed by the SensEQuake (SEQ) partnership. StabiAlert, Target Holding, Veiligheidsregio Groningen, University of Bremen, NHL Stenden Leeuwarden and Hanze UAS have investigated how relevant and understandable information can be provided to support decision makers when an earthquake has occurred. Systematic updates of the actual situation on site are essential for emergency services. At present, only a small amount of the data necessary for this information needed is being collected which is not processed into relevant and easily understandable information for the decision makers. The partners have developed a heat-map based on scenario earthquakes and loss (hazard and risk assessment) estimation tools. After running several scenario quakes, critical points in respect to the expected damages and the distribution of existing sensors will be defined. More sensors are placed, critical to create a sufficiently high resolution.

Field test to measure liquefaction to be integrated in the system

After having realised a range of sub projects successfully, the initial ID3AS project has been completed in December 2020. The partners agreed to continue their cooperation by means of the research project KI Agile. This new cooperation in particular deals with the developments of information technology - and in particular in the areas of digitisation, data analysis and, building on this, artificial intelligence (AI). Partners want to find out how to improve the adoption of AI among SMEs. Based on projects with 6 partner companies from the Netherlands and Germany, the developed concepts will be tested and validated to be made available to SMEs with an AI development question.

KI AGIL.
Artificial Intelligence

ID3AS

Inedit

Furniture manufacturing is a relatively important industry that accounts for more than 25 % of world furniture consumption. It is also going through a transformation – from a Do It Yourself (DIY) to a Do It Together (DIT) approach. The EU-funded INEDIT project will create an ecosystem to transform the DIY approach within FabLabs into a professional DIT approach.

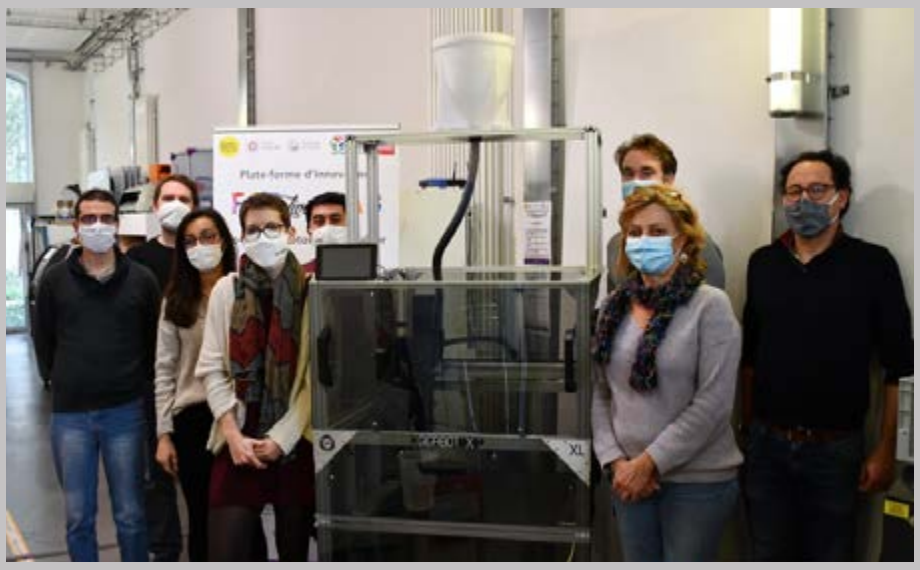
The project has received funding from the European Union's H2020 research and innovation programme. It started in October 2019 and will end in September 2022.

Who are the partners?

- France: Ecole Nationale Superieure D'arts Et Metiers (Project Coordinator), Universite De Lorraine, Crowd Prediction
- Germany: Forschungsinstitut Fuer Rationalisierung, Steinbeis Innovation Gmbh
- Italy: Centro Di Ricerca E Innovazione Tecnologica Srl, Tts Technology Transfer Systems Srl, Scm Group Spa
- Switzerland: Scuola Universitaria Professionale Della Svizzera Italiana, Veragouth Sa
- Poland: Transition Technologies Psc Spolka Z Ograniczona Odpowiedzialnoscia
- Spain: Asociacion De Investigacion Metalurgica Del Noroeste
- Netherlands: Stichting Hanzehogeschool Groningen
- Portugal: Uninova-Instituto De Desenvolvimento De Novas Tecnologias-Associacao

What is the aim?

INEDIT creates an open innovation European DIT ecosystem for sustainable furniture co-creation. It channels the creativity of consumers, shapes it through designers' professional skills, and makes it viable by leveraging the expertise of production specialists in order to deliver sustainable, smart and personalized new products in a shorter time to market. It will demonstrate the capacity to turn the well-known 'Do It Yourself' (DIY) approach applied by individuals within FabLabs into a professional approach named 'Do It Together' (DIT).



What is the approach?

Within the project, the DIT approach will be applied by customers and professional producers, especially SMEs, for conveying higher customer satisfaction through customer-driven production. DIT is a novel approach capitalizing on the knowledge, creativity and ideas of design and engineering conceptualized by interdisciplinary stakeholders and sometimes even new actors. It is powered by existing European innovation ecosystems shaping new products across EU countries.

INEDIT demonstrates the approach through four cross-use cases with high societal impact: sustainable wood panels manufacturing and 3D-printing of wood, 3D printing of recycled plastic and 'smartification'. Sustainability and consideration of individual preferences, especially of women and men, will be a guiding thread. INEDIT addresses societal challenges such

as contribution to reduce the amount of produced CO2 in focussing on European-wide production, creation and maintenance of EU-wide job opportunities. This will lead to new business opportunities supported by business model innovation. Moreover, these innovative networked local manufacturing competences and production facilities across the EU will solve ethical concerns within the manufacturing network.

To demonstrate the potential innovation around social manufacturing within the circular economy, the project will test it in four cross use cases: sustainable wood panels manufacturing and 3D-printing of wood, 3D printing of recycled plastic and 'smartification'.

InnoHEIs

Higher Education Institutes (HEIs) have a role to play within the regional innovation eco-system ensuring the efficient and effective use of their research and innovation facilities and services. InnoHEIs exploit the possibilities to enlarge the impact of HEIs as key stakeholders for fostering science and business collaborations aiming to enhance and speed up innovation processes. The partnership is directed towards improving regional policies to overcome fragmented regional and inter-regional collaboration to achieve integrated and sustainable cooperation among all relevant stakeholders. The project is co-funded under the EU INTERREG Europe programme. The project started in August 2019 and will run until July 2023.

InnoHEIs

Who are the partners?

- The Netherlands: Hanze University of Applied Sciences (lead partner) and Northern Netherlands Provinces Alliance SNN
- Finland: Council of Tampere Region and Tampere University of Applied Sciences
- France: DEV'UP Centre-Val de Loire
- Lithuania: Ministry of Science, Education and Sport and Lithuanian Innovation Centre
- Poland: Marshall Office of the Silesian Voivodeship and University of Silesia in Katowice
- Spain: Autonomous University of Barcelona
- Sweden: Mid Sweden University

What is the aim?

Partners aim to enhance contributions of Higher Education Institutions and their research and innovation infrastructures (RII) to regional innovation performances creating a favourable environment for interactive engagement of business and industry and collaboration among all Quadruple Helix actors addressing regional societal challenges

What is the approach?

The collaboration of partnership is based on three priorities:

- improve regional R&I policies, ensuring an effective and efficient use of (HEIs') R&I infrastructure using co-creation methods/spaces for business, industry, society/communities and researchers (demand-driven, user-driven, open innovations). The establishment of co-creation platforms and workspaces, test beds, open Living Labs enhance RII performance.
- encourage research and business/industry collaboration seeking to improve Entrepreneurial Discovery Process, companies' innovation performance attracting them to use R&I services, transfer technologies and the search of solutions to tackle societal challenges. Greater emphasis on RII of HEIs in cross-border and cross-sectoral cooperation at regional level encouraging collaborative research among HEIs and between HEIs and industry across regions to exploit complementarities, reach a critical mass and enhance regional knowledge triangles.
- enhance HEIs' sustainable role in regional innovation strategies improvement and development. Improved HEIs and RII performance will contribute to regional development and RIS3 successful implementation. HEIs can play a significant role evaluating and improving regional RIS3 policies related to the support for R&I infrastructure and science and business collaboration as well as contribute to the RIS3 implementation.

How are they proceeding?

During their project team meetings, the partners presented and exchanged good practices among which

- **BuildinG** at Zernike Campus Groningen: BuildinG is the independent knowledge and innovation platform for future-proof building in the north of the Netherlands. One of the focus areas is dealing with the consequences of earthquake damage to residents in northern Groningen are facing. In the coming years, homes and buildings will be restored and strengthened for the future. To this end, innovation is needed in both products and engaged processes. BuildinG has a crucial position in this and is the place for businesses and residents to work on these topics of the future. On the longer term, BuildinG contributes to a new cluster of businesses and (educational) institutions that will ensure high-quality knowledge, activity and employment. BuildinG, by providing access to test facilities, research guidance and demonstration possibilities, is relevant to entrepreneurs, authorities, researchers and students.
- **Digital Society Hub** at Hanze UAS: The Digital Society Hub (DSH) is an inspiring environment for teachers, researchers, students and entrepreneurs. DSH contributes to the social and economic development of Groningen and the Northern Netherlands region by identifying, denoting and applying relevant innovations in information and communication technology in the most important social issues in the field of care, energy, mobility, viable (rural) areas (*'leefbaarheid'*) and agriculture. For companies and social institutions, DSH is the facility to realize innovations that they cannot achieve on their own and with their own facilities. In addition, the innovative learning community offers projects, activities, methods and technologies for education and research purposes. It provides unique ICT data communication facilities, acquisition and process-

ing, networks, smart components (devices, products and sensors), creative design and development methods and a mixed population of students and professionals from different disciplines in an inviting, inspiring (inter)national environment. Also, it develops relevant useful digital solutions. Among others, it supports innovations in the bio-based economy, building, health, energy, agriculture and mobility fields. The DSH operates on the basis of its own innovation programme and innovation programmes that are implemented in collaboration with other hubs.

- **Water Application Centre** (WAC): The WAC is a fully equipped centre where businesses, knowledge institutions and other organisations can conduct experiments in the area of water technology. Water technology is a strategic choice in which the Province invests. Within the developed Water Campus, there is need for water related research facilities with focus on application development on the one hand and for education on VET and HEI level on the other. The WAC facilitates both purposes (education and research/piloting) and leads to a better integration between the theoretical and practical side of applied research. The aim is to facilitate applied research for companies combined with a state-of-the-art experimental hall, also useable for the practical aspects of vocational and higher education.
- **Bages' shared agenda** to tackled common challenges in Catalonia: Bages is a county in central Catalonia with a population of around 180,000. Its capital, Manresa, hosts the Bages University Foundation (FUB) – UManresa, one of the branches of the University of Vic – University of Central Catalonia. The university has been fostering the definition and implementation of shared agendas to tackle the challenges of the territory through innovation-based projects. The shared agenda on dependent persons and

chronicity tackles two main axes: ageing and its effects on chronic illnesses, and the economic development of the health sector and social assistance. To define and undertake innovation projects around these challenges, agents from the quadruple helix were mobilised, including public administrations (Manresa's City Hall and Bages' County Council), R&I providers (led by FUB, a large technology centre, and R&I institutions, including hospitals and other HEIs), industry (including SMEs, large companies, and business associations), and civil society (several associations related to these challenges). They have generated a network including the abovementioned institutions to foster the collaboration under innovation-based projects to tackle common territorial challenges. Under these collaborations, and tackling this challenge, they are developing a health observatory, a cluster around this sector, a network of business angels, or an accelerator platform for projects, among other initiatives.

LIBBIO

LIBBIO is a European research project on Andes Lupin (Lupinus mutabilis, tarwi) cropping in marginal lands for enhanced bio economy. The projected title is an acronym derived from 'Lupinus mutabilis for Increased Biomass from marginal lands and value for BIOrefineries'

Lupin has the ability to fix nitrogen, mobilise soil phosphate and has low nutritional requirements for cultivation. In the project, varieties will be chosen that give high yield of green silage or high yield of seeds which contain more than 20% oil, more than 40% protein and the remaining materials are carbohydrates, mainly oligosaccharides characterized as "prebiotics".

LIBBIO has received funding from the Bio-based Industries Joint Undertaking under the European Union's Horizon 2020 research and innovation programme. It started in October 2016 and was expected to finish in September 2020. The duration has been extended till March 2021 because of COVID-19 related delays.

LIBBIO

Who are the partners?

- Iceland: Innovation Center (Project coordinator) and Landgræðsla ríkisins
- Netherlands: Hanzehogeschool Groningen Stichting, Louis Bolk Instituut, Wageningen University, Color & Brain BV and Vandinter Semo Bv
- Germany: Deutsches Institut für Lebensmitteltechnik e.V.
- Spain: Agencia Estatal Consejo Superior de Investigaciones Científicas
- Portugal: Instituto Superior de Agronomia and Lusosem – Productos Para Agricultura Sa
- Greece: Agricultural University of Athens
- Romania: Universitatea de Ştiinţe Agricole şi Medicină Veterinară "Ion Ionescu de la Brad" din Iasi
- Austria: Höhere Bundeslehr- Und Forschungsanstalt Für Landwirtschaft Raumberg-Gumpenstein

What is the aim?

The partners' objectives are to develop consumer food, feed, non-food and bio-energy products from Andean lupin varieties (Lupinus mutabilis) adapted to European farming conditions by applying bio-refinery cascading principles for crop value creation and modern crop breeding technologies. They also aim to increase crop yield and harvest index and accelerate supply chain development via a consumer-driven approach for developing high value-added food and non-food products by applying state-of-the-art solvent-free technology for raw material processing.

What is the approach?

The overall concept of the project is to develop and optimize an Andean lupin breeding and cropping programme plus the primary processing pipelines while at the same time developing high value-added consumer or business-to-business products, thereby reducing lead times for products to reach the market.

Processing will result in new oil, protein, alkaloid and soluble fibre-based consumer and industrial products. Parallel development of all the elements of the supply chain will generate market demand by the time the first Andean lupin varieties adapted to EU conditions are available, thereby accelerating demand and stimulating production within the timeframe needed for Europe to reduce imports and enhance self-sufficiency in oilseed.

The project has adopted a supply chain approach by starting upstream with crop genetics, breeding, cropping, raw material processing, food and non-food product applications and ending down-stream with techno-economical evaluations (including market and consumer perspectives) parallel with environmental and sustainability evaluation.

Trans-disciplinary activities will be encompassed across the project within a "stakeholder-platform" to promote and facilitate interactions (e.g. via interactive workshops for knowledge circulation) among project participants and representatives of larger companies (non SME), NGO's, consumer organisations and farmer associations.

LIBRIO

Critical technologies (new oil crop varieties and green extraction processes for oils and alkaloids) will be developed to demonstration level by the end of the project. New products will be prototyped and be ready for further development by participating SME's and companies in the stakeholder board.

The main focus is on non-food applications of lupin products and on supporting and enhancing the European bio-economy. However, high-value food applications will also be developed to ensure the most valuable use of the whole plant in a cascading approach.

How is the project progressing?

The partners published diverse articles amongst about Lupin phenology and its agronomic performance under different planting dates in a Mediterranean climate, a general review about the state and progress of lupin cultivation in Europe, a review about lupin as an emerging protein crop and a general brochure about cropping lupin and its opportunities for Europe.

Making-city

Cities today have an essential role to play in tackling climate change by reducing their carbon emissions. MAKING-CITY is an answer to urban transformation. It addresses and demonstrates advanced procedures and methodologies based on the concept of Positive Energy Districts (PEDs), which are districts with an annual net zero energy import and net zero carbon emissions, working towards an annual local surplus production of renewable energy.

The MAKING-CITY project received funding from the H2020 Programme. It started in December 2018 and will last until November 2023.

Making-city

Who are the partners?

The MAKING-CITY consortium brings together expertise from 34 partners: 9 city councils, 5 universities, 4 research centres, 4 clusters and foundations, 4 rental housing administrators, 4 SMEs, 3 energy companies, and one construction firm.

- Spain: Cartif (project coordinator), Tecnalia, Municipality of León, Green Building Council-Espana Consejo Para La Edificacion Sostenible-Espana
- Netherlands: Municipality of Groningen, TNO, Grunneger Power, New Energy Coalition, Waarborg Vastgoed, Nijestee, CGI, Sustainable Buildings, Rijksuniversiteit Groningen and the Hanze University of Applied Sciences
- Finland: Municipality of Oulu, University of Oulu, Oulun Energia, Oulun Sivakka, Yit Rakennus, Jetitek, Arinan Kiinteistot, VTT
- Italy: Municipality of Bassano Del Grappa, Unismart - Fondazione Universita Degli Studi Di Padova
- Turkey: Municipality of Kadikoy, Demir Enerji
- Slovakia: Municipality of Poprad, Slovenska Technicka Univerzita V Bratislave, Mesto Trencin
- Bulgaria: Municipality of Vidin, Cluster Zelena Sinergiya
- Poland: Municipality of a Lublin
- France: LGI Consulting, R2M Solution, Cap Digital

What is their aim?

The partners aim at developing new integrated strategies to address the urban energy system transformation towards low carbon cities, with the positive energy district approach as the core of the urban energy transition pathway. The project will be intensively focussed on demonstrating the actual potential of the PED concept, as the foundation of a highly efficient and sustainable route to progress beyond the current urban transformation roadmaps.

Although in principle a PED approach seems a solid and ambitious strategy, this should be complemented with long term urban planning to ensure upscaling and fostering higher impacts. Currently, city energy plans are starting to be designed with a 2030 horizon, according to the standard city commitments, as for instance those reflected in the SECAPs and other more specific city plans. The project will address methodologies to support cities in their long-term urban planning towards an adequate energy transition, paving the way of the planning, implementation and up-scaling processes.

What is the approach?

MAKING-CITY is a large-scale Smart Cities and Communities demonstration project focussing initially on Groningen (Netherlands) and Oulu (Finland). Together, these 'lighthouse cities' develop new integrated strategies to address the urban energy system transformation towards low-carbon cities.

The insights of Groningen and Oulu are adopted by the six follower cities of Bassano del Grappa (Italy), Kadiköy (Turkey), León (Spain), Lublin (Poland), Poprad (Slovakia) and Vidin (Bulgaria). As the main goal, MAKING-CITY wants to apply the positive energy district approach as the core of the urban energy transition, with the districts producing more energy than what they consume. The project's set of solutions includes positive energy buildings, renewable energy systems, energy sharing, electric mobility and smart IT.

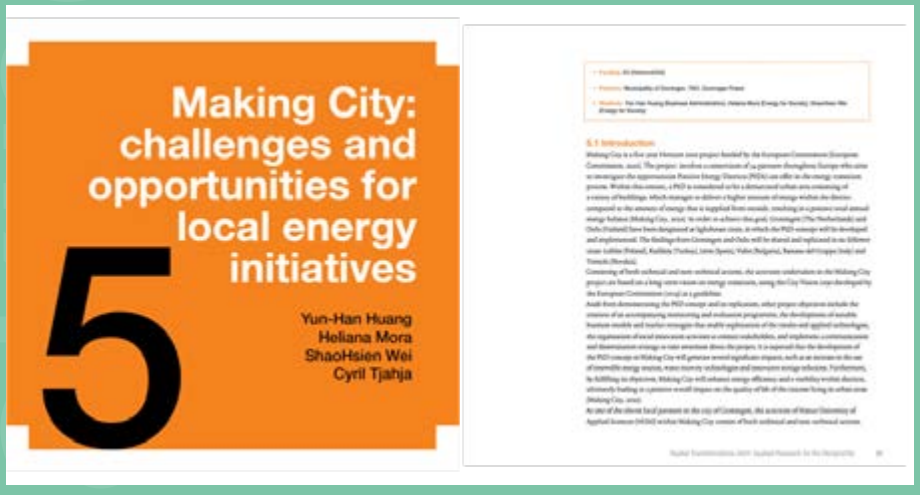
Furthermore, MAKING-CITY focusses on non-technical solutions such as effective policy innovation, business models, new regulations and standards, or actions to increase energy awareness among citizens. One of the key elements of MAKING-CITY is a strong collaboration and knowledge transfer between the cities, triggering public and private investments in

the developed energy solutions. The project will also foster the growth of new sustainable start-ups and small businesses, creating up to 4,000 new jobs.

Therefore, MAKING-CITY will not just contribute to mitigating climate change but also improve quality of life of the local citizens and stimulate the economy.

How is the project progressing?

To date, the partners delivered a range of findings and publications, centred on the topics of new long-term urban planning towards 2050, PED demonstrations in Groningen and Oulu, PED early replications, evaluation frameworks, citizen engagement strategies and tools, and exploitation and business models.



Book chapter on Making City, published by HUAS

PERISCOPE

The North Sea Region is a crucial area for Europe's Blue Economy with marine resources, technologically advanced industries, major port areas and increased offshore activities. Due to global drivers, the wider maritime, marine and offshore economies are exposed to profound challenges with some industries undergoing significant changes, including increased production (offshore wind in Denmark and Germany), as well as stagnation and decrease of production (oil & gas in UK and Norway). The North Sea Region is experiencing a period of considerable restructuring. PERISCOPE aims at establishing a permanent innovation ecosystem in the North Sea Region to grow transnational innovation partnerships for sustainable business development in emerging blue markets. The project is co-funded by the INTERREG North Sea Region Programme.

Who are the partners?

- Norway: South Norway European Office (lead beneficiairy) and Global Center of Expertise NODE
- Denmark: Aarhus University and Offshoreenergy.dk
- The Netherlands: Nederland Maritiem Land, SNN and Hanze UAS
- Sweden: Business Region Göteborg and RISE Research Institutes of Sweden
- United Kingdom European Marine Energy Centre, Offshore Renewable Energy Catapult and Marine South East

PERISCOPE

What is the aim?

The PERISCOPE partnership aims at establishing a permanent innovation ecosystem in the North Sea Region to grow transnational innovation partnerships for sustainable business development in emerging blue markets. The focus is on "Thinking growth" by strengthening cross-sector Blue Growth innovation capacity. The project will connect the diverse actors: businesses, entrepreneurs, clusters & networks, researchers, universities, business angels, incubators, investors and funds, customers & users, regional and local authorities and development & business support agencies. They will share knowledge and accelerate and launch new innovation-projects for sustainable business development.

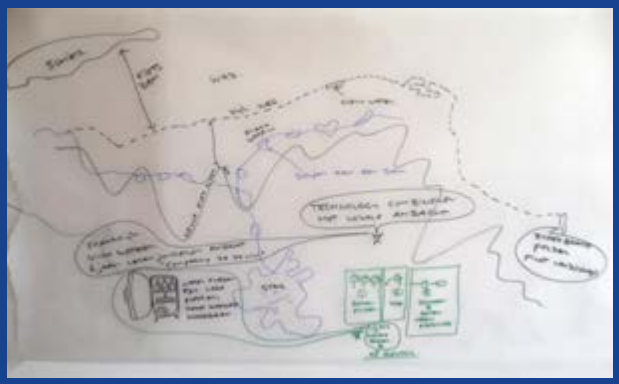
Increased competencies on markets and technologies, and the path into future markets, will help businesses realign from mature and declining markets towards attractive new market segments. Facilitating the formation of transregional and cross-sector partnerships to pursue opportunities, further boosts the business development potential. The resulting future readiness of NSR's players, particularly maritime and marine clusters and their members, may help it boost its position in the global blue economy.

What is the approach?

The novel approach is to establish a permanent strategic foresight platform at the core of the ecosystem. It gives a new framework for bottom-up knowledge transfer, while allowing public sector to enhance smart specialisation strategies and support businesses and knowledge institutions to take advantage of the opportunities and growth potential identified within the ecosystem. SMEs benefit by gaining access to strategic know-how, resources and new cross- border knowledge partnerships, which may lead to new markets unfolding.

To understand and enable emerging technological and market opportunities, which lead to sustainable innovations, PERISCOPE will establish an entrepreneurial discovery process to reinforce the knowledge base, identify and valorise innovation ideas, and open up a Blue Growth ecosystem to stimulate industry-driven action on the concrete opportunities ahead. PERISCOPE will bring together fragmented and specialised knowledge in a novel entrepreneurial discovery process (EDP) that will trigger innovations and sustainable business development. Concretely, PERISCOPE will enhance the capacity of 300+ NSR actors within the blue economy, kick start 10+ Blue Growth innovation partnerships within the NSR, accelerate at least two major cross-border innovation projects, and increase understanding of innovation support and conditions for blue business development in the NSR. Linking six NSR countries, PERISCOPE will also improve trans-regional innovation capacity by working with the public sector and enhanced smart specialisation will follow as a consequence of the ecosystem's dialogue platform. Closer transnational cooperation within the project will lead to better synergies in reaping emerging Blue Growth opportunities, utilising funds and infrastructures, and creating a platform for sustainable joint innovation actions and investment. The Hanze University of Applied Sciences took a different approach by developing a EDP-tool aimed at collecting bottom-up business propositions by 'tapping into the wisdom of the crowd', whilst embarking on a dual transition (i.e. an economic transition and a values transition).

PERISCOPE



How is the project progressing?

The partners have delivered a range of outputs:

- Blueprint paper on trend jams, idea jams & workshops, providing guidance on how to prepare, conduct and follow-up trend jams, idea jams and workshops. The blueprint serves as a template and should, be adapted to the regional context.
- PERISCOPE Foresight strategy cockpit, an online platform for entering and analysing new ideas and adding new pieces of information.
- Bottom-Up Business Opportunity approach (BUBO), a bottom-up approach to generate new ideas by engaging citizens living in the province of Groningen. This approach developed by the Hanze University of Applied Sciences can be regarded as an operationalization of the EDP.
- Country fiches per partner with information related to RIS3, diverse regulations and legislations, financial instruments and support infrastructure.
- PERISCOPE Deep Dive method, an approach to establish a Blue Growth ecosystem, consisting of four steps: 1. Scanning and scouting the changes on the horizon; 2. Crowd-based evaluation of the opportunities; 3. Selecting opportunities for deep dives; 4. Executing the deep dives.

PERISCOPE

New insights/highlights

The BUBO approach has been adopted by colleagues from the University of Wroclaw to play a role in the Polish energy transition, and is currently being further developed as a democratic innovation philosophy and methodology in collaboration with Dutch Universities of Applied Sciences. The BUBO approach is also used as a design thinking tool in master programmes.

The pictures included in this section are images of sketches that were drafted as part of a BUBO-pilot that took place in the province of Groningen in July 2017.

REFRAME

Many food products in supermarkets, restaurants and institutional kitchens have travelled thousands of miles before ending up on the plate. They have been imported from distant countries, causing carbon emissions and social injustice. The quality is often compromised by the long-distance transport from farmers to slaughterhouses, processors and distributors. For each step that is added in the food value chain, there is a risk of reducing the quality. Shortening the food supply chain can help reduce the carbon footprint and enhance food quality. In addition, it boosts regional economy and local labour markets. In the REFRAME project, partners work out solutions for developing sustainable short food supply chains. The project is co-funded under the EU INTERREG B Programme. The project runs form March 2016 until May 2021.

Who are the partners?

- The Netherlands: Municipality of Groningen (lead benefi-aciairy) and Gebiedscoöperatie Westerkwartier
- Belgium: Economic Council of East Flanders, Vives University College, Vegetable Research Centre and Centre for research and advice in agriculture and horticulture in West Flanders
- Germany: Rural District Wesermarsch, Grassland Centre Lower Saxony/Bremen and Diaconate Charity of Ev.-Luth. Church of Oldenburg
- Denmark: Taste of Denmark
- Sweden: Agroväst Food, Västra Götalandregionen Natural Resource Management and Lokalproducerat I Väst

REFRAME

What is the aim?

The project activities are targeted to develop and implement

- Data and understanding of current supply and demand
- Business innovation through smart specialization
- Regional organization in a cooperative structure
- Policy decision-taking on urban food policies and intentions
- New skills for food related SME's and other stakeholders within a regional food frame
- Regional food for environment, climate and health

What is the approach?

By recovering and setting up regional food chains, REFRAME is taking steps towards creating better conditions for food related SMEs, social enterprises and initiatives. The project promotes greater diversity in the supply of food, supports innovation and sustainability, and creates local employment, thereby strengthening the local communities. This involves developing new skills for food related SMEs, fostering regional cooperation, supporting transnational learning and stimulating innovation. REFRAME also supports food-related SMEs by raising awareness of regional food supply and demand as well as nudging local governments and large-scale consumers to buy food regionally, and mostly regional food.

The central question is how to implement short food supply chains. Changing consumer and citizen demands add to the existing pressure on rural employment. All food chain related SMEs are affected by these demands towards the sourcing and the environment, climate and health impact of food. Since 2016 Reframe has stimulated these SMEs to innovate and specialize within a Regional Food Framework (re-)creating short food supply chains.

REFRAME takes up these challenges and supports SMEs to use the opportunities in short food supply chains for a better environment, climate and health impact. Continuing the living lab of five regional pilots, REFRAME strengthens the support infrastructure for food related SMEs, develops new smart specialization strategies focusing on a changing demand. New data will reveal more regional possibilities. Partners will continue to demonstrate how to scale up and accommodate urban food demands and regional supplies. The transnational learning lab for all stakeholders focusses on health, climate and environment impact of new solutions. REFRAME collects the know-how needed to set up these Regional Food Frames in a transnational network of experts, each closely linked and footed in its own pilot region.

How is the project progressing?

REFRAME has realized the co-creation of short food supply chains, connections between consumers and SMEs, the development of specialization strategies and cooperation structures. Involved SMEs are very aware of the challenges and opportunities of the changing consumer and citizen and ask for more, specific support measures.

- In order to create data and understanding of current food production and demands, diverse mapping processes have been realised, namely, in the German Wesermarsch region and in Groningen. In addition, a data management process has been developed to be applied on the smartphone and matching food demand and supply.A range of business innovations has been developed for SMEs to better meet the demand from the regional market players. For instance, in the city of Groningen a community start-up and social enterprise has been opened selling and processing affordable fruit and vegetables, meals and catering. In Kungälv, West Sweden, the retail store

REFRAME

Citygrosshave provides their customers with a wide range of regionally produced food. The share of regional products in the assortment today is about five percent. Cooperation with Locally Produced in West (Lokalproducerat i Väst), the resource centre for small-scale food producers in Region Västra Götaland has turned out to e successful here. Also in Sweden, a programme was implemented to support SMEs strengthen their market communication and increase the visibility and attractiveness of their products on the shelf in the grocery stores. In this way the SMEs are more capable to meet the demand from the big regional grocery stores. In the Westerkwartier region in the Netherlands, a regional beef cooperative has been set up as a joint venture of various actors in the meat chain: dairy farmers, cattle farmers, nature conservation organizations, meat processors and care institutions. They breed, process and sell their products to regional purchasers and consumers. In Ghent, Belgium, in 2016 the covered market Lousbergmarkt first opened its doors. Four local businesses joined forces to create high-quality traditional craftsmanship with local products.

- Another achievement of the REFRAME project is establishing *Gebiedscoöperatie* (place-based cooperatives) arrangements between regional suppliers and large-scale purchasers (public and corporate) to provide for a sizable regional B2B food market. In Sweden the REKO-ring has been realised. It is a way to buy locally produced food, without unnecessary intermediaries. Consumers and producers in one place joins forces and start a REKO-ring, a digital trading channel using Facebook to sell and buy local food. The Groningen team of REFRAME developed a simple, yet effective way to sell and buy local food. They initiated a food market, invited restaurant owners and chefs to meet producers and let the magic happen. A network is getting connected and coming into motion. In the East

of Flanders (Belgium), three producer cooperatives have been established. Within these local initiatives, regional producers' experiences are exchanged and their products are bundled, making local products more accessible to the consumer.

- An essential part of the REFRAME project is to support large purchasers to decide in favour of regional food. Reframing their food policies and expressing their intentions for regional sourcing is the basis needed to cooperate with regional suppliers. The project partners have prepared new approaches for procurement tenders. Recommendations include dividing the procurement into smaller parts to make it more feasible for small producers to deliver. Also, it is important to formulating requirements about product production and delivery (for example animal welfare and traceability) and to following the Best Value Procurement Strategy. Not in the last place, teaming up with local food businesses can be a way for public organisations to acquire local produce to their kitchens while at the same time creating a unique educational opportunity. The participating food business can reach a new market and find new potential labour for the future.
- The REFRAME project aims at supporting food related SMEs and other stakeholders to develop their skills in order to realize the potential of food production for the region. To this end, HEI and VET colleges were involved to develop and embed the short food chains principles into their curricula. One example is the new educational programme at Terra MBO, a VET college in the Groningen region. The aim is to provide the student with a broad knowledge of the world of food and nutrition. To achieve this, the teaching programme includes five main branches: - Preparation and Processing. Large and small scale. - Chains and Distribution. Global and regional. - Innovation and transition. - Society and Health. - Food profiling. When

graduating, students are familiar with the broad world of food and nutrition and the role of food in social and environmental issues. The programme is a level four programme and offers good transfer possibilities, for example to higher professional education, such as the Nutrition & Dietetics and Nutrition & Design programme.

REFRAME

RIGHT skills for the right future

Today's jobs can no longer be taken for granted in the future. This is due to an ageing workforce, a faster than ever changing technology, digitalisation, internationalisation, globalisation and an economy increasingly based on short contracts and self-employment. We are faced with skills polarisation, a mismatch between skills on demand and skills offered and growing regional differences.

The RIGHT project is going to deliver solutions. In doing so, the Interreg North Sea Region co-funded project partners want to enhance regional innovation support capacity to increase long-term innovation levels and support smart specialisation strategies. To achieve this, RIGHT concentrates its efforts on developing the relevant workforce skills for SMEs in the participating regions within the energy and blue sectors. What do they need for a future-proof regional economy and how can the different regions learn from each other about this?

The project started in November 2018 and will be completed in December 2021.

RIGHT

Who are the partners?

The RIGHT project's partnership encompasses seven countries and 14 organisations in the North Sea Region. They are regional and local authorities, knowledge and R&D partners and industrial development bodies.

- Norway: Vestland County Council (LB), Alver Municipality, GCE Ocean Technology, NCE Seafood Innovation Cluster.
- The Netherlands: The Province of Groningen, Hanze University of Applied Sciences
- United Kingdom: Fife Council (Scotland)
- Sweden: Skåne Region, Industrial Development Center South (IUC Syd)
- Belgium: The Province of Antwerp, Ghent University
- Germany: The Johann Daniel Lawaetz Institute, Hamburg University of Applied Sciences (HAW)
- Denmark: Vordingborg Erhverv

What is the aim?

There is a deep gap between skills needs of today and in the future. The knowledge about how to bridge the gap is varying in EU-regions. Together with knowledge institutions, the regions around the North Sea are looking for shared solutions for long-term growth and development. In this way, the various regions can increase each other's innovative strength.

The main objective of the RIGHT project is to enhance regional innovation support capacity in order to increase long-term innovation levels and support smart specialisation strategies. The partners are going to gain knowledge on long-term growth potential in the partner regions, develop measures to ensure innovation capacity is being developed accordingly and bridge the current skills gaps acting as a barrier to innovation and growth.

What is the approach?

Partners will build methodology and knowledge for designing a model for long-term solutions and transferability. They will design and test tailored educational and training programmes and initiatives to bridge the skills gap in a fast-changing skills environment in emerging and growth sectors. The results will be capitalised by the partner regions to give long-term impact as a response in the context of fast changing skills demands. The idea is to roll out the success stories in other North Sea regions and Europe.

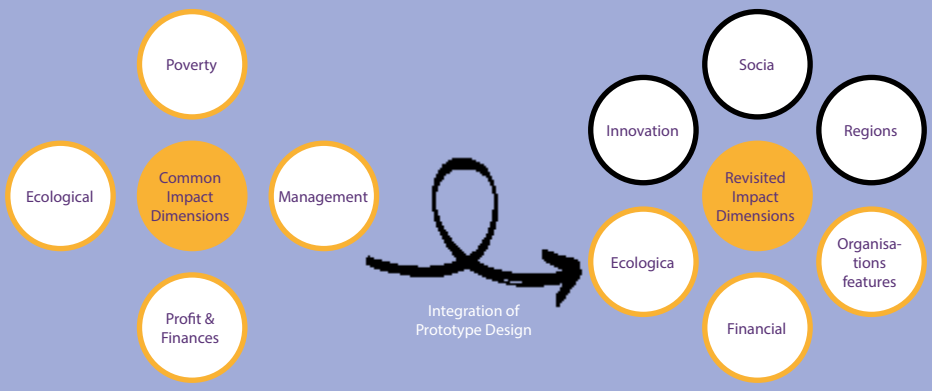
Next to management and communication activities they have prepared three work packages:

- Mapping the skills gap for building a knowledge base
- Bridging the skills gap with pilots
- Increasing innovation capacity through policy

The pilots – an example from The Netherlands

To date, the RIGHT partners have concluded their first activity phase by mapping the skills gaps in their regions. They have proposed pilots contributing to close the skills and innovation capacity gaps in the different regions.

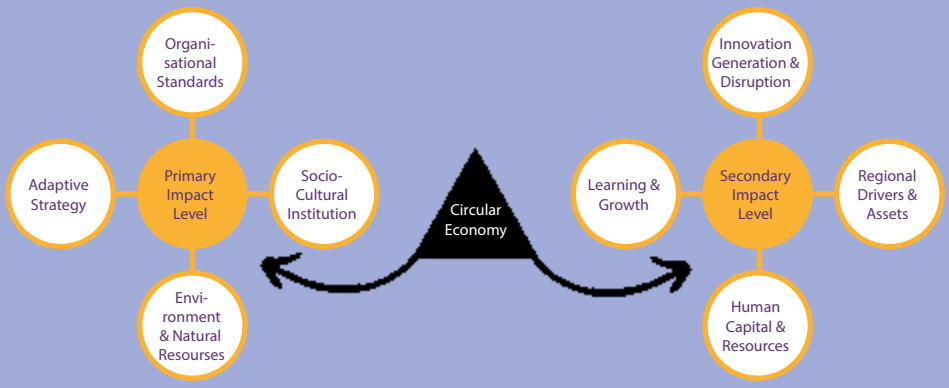
One such pilot in Groningen is the Green Hydrogen Booster at EnTranCe, an open innovation energy transition centre at Hanze UAS. The innovation hub EnTranCe wanted to enhance their Key Performance Indicators (KPIs) to reflect regional impacts and possibly encourage SMEs in their Green Hydrogen Booster networks to also review their potential regional impacts. The pilot intended to develop a database that would support innovation hubs and innovation-oriented organizations to become more sustainable, regionally inclusive and to have a broader and integrative perspective on KPIs.



What is the regional impact assessment indicator tool (RIAT) about and why is it necessary?

An analysis of conventional impact assessment tools showed that current impact dimensions were limited. New enhanced impact indicators were needed to capture social, regional and innovation dimensions.

The RIAT is a database of key impact dimensions such as intra-organizational efforts, socio-cultural institutions, natural resources, regional attractiveness, industry and human capital aspects, innovation investments and networks, etc. An exciting feature of the tool is its multi-dimensional impact assessment of current KPIs, and potential improvements for better integrative and robust business strategies.



How it works

A special feature of the tool is the multi-dimensional mapping of KPIs, showing how one indicator can impact more than one dimension. This, in turn, offers potential improvements for better integrative and robust business strategies. Primary and secondary impact levels each have four main factors as shown in the illustration with an additional factor, 'circular economy' that was identified by experts and users and relevant to both primary and secondary levels.

The tool encourages innovation hubs and organizations to incorporate sustainability trends into their KPIs but with the focus on regional impacts.

RIAT can be used as a starting point for organizations to extend their current performance indicators so that they can become more socially and regionally driven by developing new or additional KPIs that are aligned to generate multiple and relevant impacts. The prototype has been validated in its current development by policy and innovation hub experts from three European regions to ensure a broader usage in its

final developments. The tool offers policymakers and regional development agencies (RDA) insights when faced with decisions regarding public procurement, funding, collaborations and future strategies.

Ideally, a fully developed regional impact monitoring tool would support businesses and organizations to reset their KPIs to reflect regional impacts and therefore contribute towards regional resilience.

Future developments
RIGHT partners Hanze University and EnTranCe are further testing the prototype and will expand the features and usability of the current tool. Ultimately, the regional impact tool will be a digital cloud database that generates regional and national benchmarks.

Other pilots in the Groningen region

Gas 2.0 is another pilot carried out in the Netherlands which is preparing for the energy transition when jobs in renewable energy sector will need new skills and competences. The programmatic approach of this pilot is an important best practice for other regions in preparing for future jobs in rapidly changing energy and other traditional sectors.

IBOSS is a new service extended to SMEs in the northern region through place-based cluster organizations in collaboration with Hanze. SMEs are invited to explore their internationalization opportunities and to get support for knowledge, networks, competences, etc. Students from Hanze will provide information and customized field research for the businesses. In addition, through this initiative, business are encouraged to cooperate with other businesses on joint internationalization activities.

SHREC

There is an urgent need for transition to a cleaner, more sustainable and less carbon intensive energy future. Still, an important challenge for the EU member states and regions is a heavy dependence on fossil fuels. The project "SHifting towards Renewable Energy for Transition to Low Carbon Energy" (SHREC) investigates the possibilities of transition to a low carbon economy, in relation with renewable energy use of business and households. The project supports and facilitates them to invest in low-carbon, renewable energy measures reducing CO2 producing activities and shifting to activities with low CO2 footprint. The project is co-funded under the EU INTERREG Europe programme and runs from August 2019 until August 2023.

Who are the partners?

- The Netherlands: Hanze University of Applied Sciences (lead partner)
- Sweden: Mid Sweden University
- France: Auvergne-Rhône-Alpes Energie Environment Agency (AURA-EE)
- Spain: Ayuntamiento de Mondragon
- Italy: Region Piemonte
- Romania: South Muntenia Regional Development Agency
- Lithuania: Vilnius Gediminas Technical University
- Slovakia: Slovak Innovation and Energy Agency

SHREC

What is the aim?

The project's overall objective is to improve regional and national policies increasing the share of energy from renewable sources in the overall energy mix and encouraging and facilitating the production and use of renewables by businesses, communities and households aiming at less carbon intensive energy future.

Partners cooperate with a focus on encouraging business investments into renewable energy and new innovative technologies and increasing involvement of energy consumers as active players. The cooperation is based on three main pillars:

1. Encourage business investments into renewable energy and new innovative technologies in order to move to more sustainable, low-carbon alternative energy: Growth in renewable energy is driven by the most innovative technologies that deliver substantial greenhouse gas savings. An important factor is the significant cost decreases for renewables technologies.
2. Increase involvement of energy consumers as active players through demand response, self-consumption or storage in wider use of renewable energy: Renewables will play a major role in the transition to a clean energy system. A shift to renewable energy will help to mitigate EU import dependency for oil and gas. Working together with energy consumers, business/industry will develop innovative solutions for clean renewable energy. Energy consumers are increasingly taking an active role in the energy system as "energy prosumers": households, SMEs, communities that, in addition to having the choice of their suppliers, are also producing energy themselves and could become important participants in energy markets.

Increase an acceptance and awareness among households, communities, business and public actors of the need and opportunities to use renewable energy as the low-carbon alternative energy: Integrated regional strategies related to shift to the consumption of renewable energy are needed to identify the most promising areas of action, mobilise stakeholders, facilitate and channel public and private investments and increase the awareness among inhabitants, business and public actors.

What is the approach?

To achieve the project goals partners will look at possibilities to encourage technological development in renewable energy (support for business, industry to develop new technologies) as well as to use social innovation concepts to involve consumers (households, communities, industry, business representatives, public authorities) in the transition process shifting towards renewable energy production and consumption. Partners seek to increase the awareness among households, business and public actors of the need and opportunities to use renewable energy as the low-carbon alternative energy.

How is the project progressing?

Partners have organised three project meetings in the Netherlands, in Sweden, Slovakia and Italy. In all partner regions regional Stakeholder Groups' meetings took place aiming at regional stakeholders' involvement and contribution to the project implementation. From 2020, all meetings have been held online. To date, partners have already presented diverse good practices, all located in the North Netherlands:

- **Groningen Seaports:** stimulates renewable energy production for consumption by the industry in the ports. Groningen Seaports plays a prominent role in the energy transition in the Northern Region of the Netherlands. With several power

plants, the connection with the NordNed electricity transmission cable and a substantially big transform station, Groningen Seaports facilitates 8000 MW power point and balancing hub. The chemical cluster in Delfzijl has 'greened' its energy consumption by >70% and increases with new initiatives. Groningen Seaports connects different industries, guides several processes and is developing more projects, all to accelerate the energy transition at an industrial level. With the focus on the renewable energy, Groningen Seaports distinguishes itself from other harbours.

- **Grunneger Power:** a local energy cooperative that has over 1000 members in the city of Groningen and neighbouring villages, where it develops solar parks. Grunneger Power develops energy projects in cooperation with the municipality of Groningen, whereby the municipality contributes financially (loan) or provides real estate (land) for rent. Furthermore, by making use of crowdfunding, financial loans of the bank and strategic marketing techniques Grunneger Power established several energy projects with regards to solar energy production or heat production. Members of Grunneger Power participate in the cooperative. Grunneger Power has established many projects in different sizes, all with the active involvement of citizens in the local area. The involvement of these citizens has led to a high rate of social acceptance of the renewable energy projects they are developing.
- **Energie VanOns:** a licensed energy supply company that buys and sells the locally produced energy cooperatives. It buys locally produced energy from local cooperatives and sells it to small end users. A share of the income will return directly to the energy cooperative; therefore, creating more capital to invest in new projects. Over 100 energy cooperatives in the northern region of the Netherlands are a member of one of three overarching institutions.

Startup Ems-Dollart-Region

In the Ems Dollart Region in the North of the Netherlands and North-West Germany, startups have contributed significantly to the region's overall economic success. Especially in the metropolitan areas of Groningen/Netherlands and Oldenburg/Germany, well developed startup and entrepreneurship ecosystems have added to the economic and societal prosperity in these areas. Such ecosystems consist of companies, regional policy institutions, universities and other private or public support organisations that optimally interact together. It has to be emphasized that particularly rural areas in the Ems Dollart Region can profit from the enhanced ecosystem and the cross-border startup activities. With more cross-border entrepreneurship and the bundling and creation of new knowledge, young entrepreneurs, SMEs, and the innovativeness of the entire Ems Dollart Region are profiting from the Startup Ems-Dollart-Region project.

Startup Ems-Dollart-Region is an Interreg 5A programme funded by Interreg Deutschland/Nederland, Niedersächsisches Ministerium für Bundes- und Europa-Angelegenheiten, Provincie Groningen, Provincie Drenthe, and Provincie Friesland.

Who are the partners?

The consortium consists of the six partner organisations. In total approx. 20 colleagues across the consortium are involved in day-to-day operations of the project:

Netherlands:

- Hanze University of Applied Science, Groningen
- Incubator Leeuwarden
- Zero to One, Emmen

Germany:

- University of Oldenburg
- IT-Emsland, Lingen
- Emder GründerInnenzentrum

Figure 1: the Startup Ems-Dollart-Region project concortium

What is their aim?

The project partners aim to establish and facilitate a cross-border startup ecosystem in the Ems Dollart Region. This will include the formation of a (digital) network, specific mentoring programmes and cross border curricula among the region's higher education institutions. Regional startup support offices will help local entrepreneurs and new ventures to explore business on the other side of the border. The project further connects to the existing stakeholders of the regional focal points such as energy, climate, IT, sensor technology, and agriculture. Especially the already existing participants and ongoing activities of the regional ecosystems will be further strengthened and drawn upon.

What is their approach?

The project builds on an Entrepreneurship Ecosystems Approach where the economy is seen as a mutually dependent set of actors and factors organized in such a way as to enable productive entrepreneurship.

As a first step, the ecosystem was thoroughly mapped based on five elements, namely network, support, education, finance, and expertise. The interaction between these elements is critical to the success of an ecosystem. Over 400 stakeholders were identified and categorized over the five criteria whereas the "network" dimension made up nearly 50 percent of the entire ecosystem.

Through eight work packages, the six regional ecosystems are enhanced and sustainable ways for interregional collaboration are established. During the three-year project period regular events, seminars, and supporting activities for starting entrepreneurs are organized. Specifically trained mentors are supporting starters to include business

internationalization in their new business ideas and established Dutch startups are guided in exploring Germany as a new market (and vice versa). An important part of the project is to also link cross-border startup behaviour to the region's existing economic and technological focal points. Both North-West Germany and the North of the Netherlands are guided by similar policy programmes in areas such as renewable energy, IT and digitalization, health, and agri-business, to name a few. Entrepreneurship related aspects and startup activities are equally touched upon by these national and regional policy guidelines in both countries. The project builds on these focus points and connects regionally relevant programmes from each side of the border. An important part of the Startup Ems-Dollart-Region project is also to support the entrepreneurial formation of young talent who are studying on each side of the border. In a dedicated work package, cross-border entrepreneurship topics are developed to find their way into the curricula of the existing higher education programmes. Another important outcome of the project in this domain is the actual collaboration of teaching staff and student teams cross-border.

Figure 2: Mapping overview of Startup Ems-Dollart-Region ecosystem

In six regional support offices that are managed by the consortium partners, local entrepreneurs can connect directly with the project. In a rotating way, every region takes on the project leadership for a period of up to 5 months. This decentralized structure is enhanced by a digital project platform.

How are they proceeding?

Regular events and seminars are already helping startups and startup prospects to understand doing business across the Dutch-German border. The growth of knowledge and activated regional networks will contribute to cross-border value creation. In Spring 2021, the project leadership will switch for the first time from the Hanze UAS to the GründerInnenzentrum in Emden, Germany. The activation of the current ecosystem elements and its stakeholders are meant to form a dynamic system that will reinforce itself over time and make the cross-border startup ecosystem in the Ems-Dollart-Region a long-term factor for more prosperity and social integration.

Startup

Store and GO

According to the Paris climate Agreement, global warming has to be reduced to 2 °C or, in a best-case scenario, to 1.5 °C. To reach such targets, greenhouse gas emissions must be reduced dramatically, as reflected in the EU's ambitious climate targets. In order to meet these targets, energy production must come mainly from renewable sources. However, power supply from wind and solar will surpass demand at times – for instance, during sunny summer days – and vice versa. Energy has therefore to be stored to be made available when needed. This is where STORE&GO comes into play. The project was funded under Horizon 2020 from 2016 to 2020

STORE&GO

Who are the partners?

- The Netherlands: ECN Energy Research Centre, Rijksuniversiteit Groningen, Energy Valley, Energy Delta Institute
- United Kingdom: ATMOSTAT,
- France: French Alternative Energies and Atomic Energy Commission,
- Switzerland: Climeworks AG, Electrochaea, Swiss Federal Laboratories for Materials Science and Technology, Ecole Polytechnique Fédérale de Lausanne, Hochschule für Technik Rapperswil, Hysytech S.R.L, Regio Energie Solothurn, Schweizerischer Verein des Gas- und Wasserfaches
- Italy: Comune di Troia, Engineering, Engineering Ingegneria Informatica SPA, IREN SPA, Studio Tecnico BFP, Politecnico di Torino
- Germany: Gas- und Umwelttechnik GmbH, German Technical and Scientific Association for Gas and Water, Gas- und Wärme-Institut Essen e. V., Karlsruhe Institute of Technology, Thyssenkrupp, Uniper Energy Storage
- Austria: Energieinstitut-Linz

What is their aim?

The partners will work on long-term and large-scale storage. This demands for high energy density, low costs and little self-discharging. One option is to use power-to-gas (PtG), which allows for storing power by producing renewable hydrogen or renewable methane., STORE&GO was running three pilot plants with different innovative power-to-gas technologies. On top of the technology demonstration, the 27 European partners were investigating the potential of PtG in the European energy grid.

What is their approach?

An interdisciplinary approach: The spirit of STORE&GO was nurtured not only by multinational, but also interdisciplinary collaboration, which is required to meet the need for a great variety of expertise. "We are convinced that it is not sufficient to simply serve the public a powerful new technology," highlighted Dr. Frank Graf (Head of department Gas Technology at DVGW Research Centre at Engler-Bunte-Institute of Karlsruhe Institute of Technology (KIT)). "Instead, we need to analyse the strengths of PtG so that we can give precise recommendations regarding how and where to roll out this technology." For this reason, the STORE&GO consortium involved large industrial players, innovative small companies, and research institutes, which jointly focussed on reactor concepts, electricity grids, techno-economic studies, business development and legal aspects.

Innovative Technologies: Each of the concepts being demonstrated at the three STORE&GO pilot sites involved new methanation technologies, and each was adapted to the respective demonstration site. The PtG plants are integrated into the existing power, heat and gas grids. This enabled the researchers to feed renewable methane into the existing natural gas grid in a climate neutral way without any restrictions. The synthetic gas can be made available for a wide range of customer applications. "The demo sites provide highly diverse testing environments, e.g. different climates and topologies; different grid types like transmission or distribution; different combination of solar, wind and hydro energy and different CO2 sources, including bioethanol, wastewater and directly from air," Graf elaborated. "In this way, we can analyse and compare the advantages of PtG in various environments."

STORE&GO

Power-to-Gas: Beyond just storage - Furthermore, the renewable gas generated by PtG can gradually replace fossil gas in all gas applications, especially in heating and transport. It thus helps to free the heating and transport sector from CO2 emissions. It also diminishes the need and costs for expanding the electricity grid as hydrogen or renewable methane can be easily transported in the existing gas grid. The results are presented on this site in form of a short summary in the Results section and in form of the Publications made in the project.

How is the project progressing?

The partners have delivered diverse project materials concerning a Power-to-Gas Roadmap, general project presentation, public training courses, flyers and fact sheets etc. Next to this they have produced a series of scientific papers and other project deliverables.

TraCS3

Regional innovation infrastructures and innovation capacities are the backbone of dynamic regional innovation ecosystems. The TraCS3 project therefore addresses challenges on regional innovation infrastructures. Partners will exchange knowledge about fostering Interregional collaboration and support for innovation infrastructures in S3 key priority areas. They will develop Regional Actions Plans with a focus on the improvement of regional innovation ecosystems.

Who are the partners?

- The Netherlands: Hanze UAS (lead partner)
- Belgium: Province of West-Flanders
- Spain: Fundación CEEI Albacete
- Finland: Suomen Itämeri-instituutti
- Romania: Agentia pentru Dezvoltare Regionala Nord-Est
- Germany: University of Bremen
- Lithuania: Institute Labour and Economy

What is their aim?

The project objective is to improve regional policies in support of innovation infrastructure in S3 key priority sectors: strong innovation potential, address societal challenges and enhance interregional cooperation. Partners want to know how to improve the support for regional innovation infrastructure. They want to achieve better employment and more involvement in innovation value chains. TraCS3 also looks for solutions for regions to increase their innovation capacities.

What is their approach?

Partners focus in particular on three cooperation areas:

- SMEs in relation to research and innovation institutions: To innovate, industry partly relies on research and innovation institutions. This is especially true for SMEs. The capacities of research and innovation institutions provide access to the necessary technology infrastructures. This is needed for upscaling, prototyping and validation of new solutions before an enterprise can enter the market.
- Gaps and opportunities: The project partners will look for ways to stimulate the development and utilisation of innovation infrastructures. What are the gaps and opportunities? TraCS3 aims to support further collaboration between existing infrastructures to increase innovation capacities.
- More innovation through interregional collaboration: The project partners seek to strengthen regional innovation potential through the interregional collaboration. They will explore opportunities to establish and improve financial schemes for use of the European Regional Development Fund (ERDF) outside the area of the programme.

TraCS3

How is the project progressing?

The first output is a gap analysis to identify possible gaps in the regional and European innovation infrastructure. The results of this analysis are a crucial part of the project's ambition to influence regional and European policies regarding innovation infrastructure. As a result, we can use the results during the further course of TraCS3, having a better view on the status and needs of regional and European innovation infrastructure.

In November and December 2018 all project partners conducted a gaps survey. It was directed towards all relevant regional stakeholders of TraCS3, namely, owners or employees of the innovation infrastructure.

The survey itself entailed three parts: The first part was related to questions about the identification of the innovation infrastructure. The second part referred to questions about possible gaps. This was the main part of the survey. To get a broad view on possible gaps, Partners selected seven indicators: usage of innovation infrastructure, connectivity & cooperation, innovation capacity, financing, sustainability, influence, external and regional conditions. The survey concluded with examples of good and successful innovations that took place at innovation infrastructure facilities.

Among others, the survey revealed that most support facilities are under booked or equal as to supply and demand. A very large majority would like to establish or improve the institutional connectivity with other innovation infrastructures within 3-5 years. This relates mainly to strengthening the existing connections and improving connectivity at regional and international levels. In addition, more connections with SMEs and industrial companies as well as increasing connections with leading institutes on food, agriculture,

health, energy and chemistry are said to be necessary or required. The majority of support facilities indicated they don't have sufficient human resources and qualifications. Finance in most cases stems from public resources.

During the partnership meeting a range of good practices have been presented. For instance the Science and Technology Park and the Center for Physical Sciences and Technology in Lithuania, both serving as a lab for enterprises, scientists and students to connect their knowledge, experience and ideas. The German partners presented their Cooperative Problem Solutions Playroom for academic and economic partners. The core application is an industrial prototyping Design Thinking Process that is executed to specific challenges of an industrial stakeholder. In Tampere, partners designed a situational picture of the entrepreneurial ecosystem in order to sketch a multifaceted snapshot about the ecosystem and its development. The picture is used to monitor the regional ecosystem. The Belgian partners presented the Sirris Application Lab. Sirris evaluates the technological and economic feasibility of new technologies related to mechanical engineering & mechatronics, and Industry 4.0. Hanze UAS zoomed in on EnTranCe, offering an inspirational setting with state-of-the-art facilities and technical support for product research, development and testing. In addition, Hanze highlighted the Centre of Expertise Healthy Ageing, and the vast number of almost 50 Living Labs it incorporates, for issues ranging from innovation to health and care.

The previous chapters cover several essential building blocks for next *economy*, *next governance* and *next education*. In each of these, a paradigm shift, moving from the Anglo-Saxon model to a more inclusive regional approach is taking place. This final chapter combines these phenomena and concepts in the ENGAGED regional innovation ecosystem: the structural collaboration of partners in the regional quadruple helix to establish welfare and prosperity in their region. Higher education institutions are important players as are partners in the region.

In the first section, the development of a regional knowledge ecosystem is described using concepts from the Complex Adaptive Systems theory. Seven concepts are proposed to support formation of a regional knowledge ecosystem: the context; the interconnections between different system levels; leveraging differences; the players; the process of collective sensemaking; and the discovery of new patterns. Finally, the models of *Gebiedscoöperatie* and *Regiocoöperatie* are described as components of a regional knowledge ecosystem in the Northern Netherlands.

The second section shows how the players in the regional quadruple helix started this process. How they defined their regional knowledge ecosystem; how previous experiences shape current developments and the steps taken to realize an ENGAGED region. The section also describes the processes and the campaign of inclusive dialogues and information sessions, working groups, etc. that culminates in shared vision, ambitions, commitments and ultimately the development of a Regional Innovation Framework.

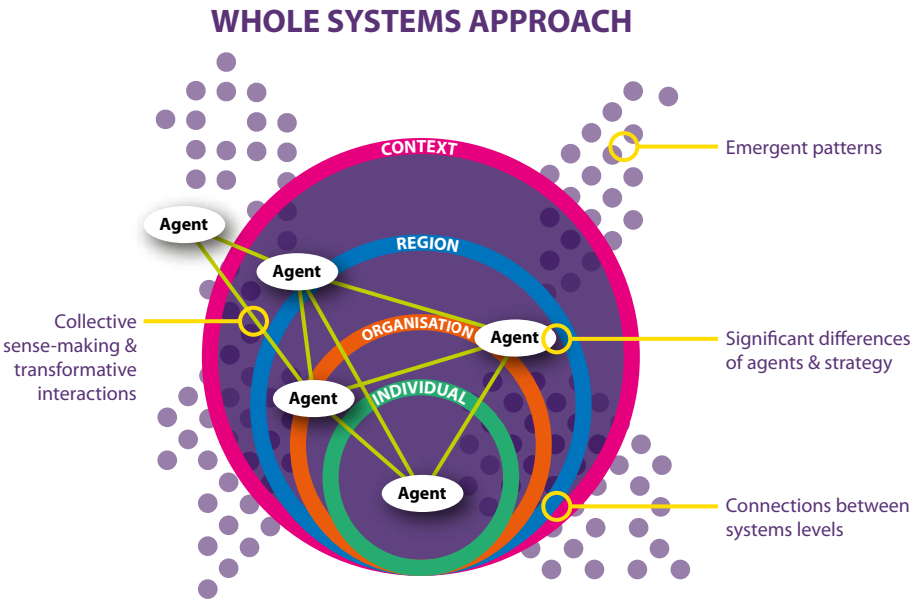
The last part of the section describes how Hanze extends its ENGAGED ambitions through its *Region to Region* collaborations. This inter-regional strategy supports knowledge development and learning amongst other engaged universities and their regions, with regions and their stakeholders who are working on similar challenges through European Projects and coalitions. The aim of these *region to region* collaborations is to boost innovations for social, ecological, economic value creation and new business developments.

4

Towards a new region-centred approach - ENGAGED

4.1 ENGAGED, TOWARDS A NEW REGIONAL KNOWLEDGE ECOSYSTEM

This section is divided into parts. Each part is a starting point in building a regional knowledge ecosystem. Together they form the ingredients for a dynamic whole systems approach. The whole systems approach, based on complex adaptive systems, is captured in the model below, and this model in turn, highlights key aspects of complex systems' developments as described in detail in chapter 2.



Dynamics of complex adaptive systems (Manickam & van Berkel, in Manickam, 2018)

- **The context of the knowledge ecosystem** - the context of the region is different from the context of other regions because its historical development is different and so is its geographical location. The context is also partly similar, because every region wherever in the world is confronted with the same major problems, such as energy supply, food, air quality, virus control, robotization, and so on. Every region will have to respond to them in one way or the other.
- **Connection between system levels** - Individuals live together in groups, in organizations, in regions, in countries, continents, the world and the cosmos. All these system levels are interrelated. They influence each other in a dynamic way. On each level, it is important to consider what happens on the other levels.
- **Differences that matter, a strategy of engagement** - In complex situations, the best strategy for dealing with differences is not one of competition, but one of using the differences.
- **The players ('agents')** in the construction of the regional knowledge ecosystem - There are differences between the stakeholders. Four main players have been identified in this section: the knowledge institutions, the business community (SMEs), governments and social organisations. Stakeholders can use their positions, power and knowledge to make the world around them a better place.
- **Collective sense-making and transforming interactions** - In order to take up this challenge together, it is necessary to engage in collective sense-making. This is not that simple because it requires a complete change in everyone's thinking and acting. Here it will be referred to as transforming interactions.
- **New patterns in the knowledge ecosystem** - While experimenting with this new strategic approach, visible results can be seen in many places, a few have been described in the previous chapters. The patterns that emerge are characterized by engagement, interdisciplinary cooperation, top-down and bottom-up and inclusiveness.

- **A regional knowledge ecosystem** – An outline of what such a knowledge ecosystem could look like is described and is based on recent developments in the *Stadland Groningen-Assen* region in which *Gebiedscoöperaties* (area cooperatives) and a *Regiocoöperatie* (regional cooperative) are being set up.

The context of the knowledge ecosystem

The context is about issues related to the geographical location of the region (part of the Netherlands and Europe, bordering Germany and the North Sea), the history that plays a role in the present (the ecosystem as it has developed over time) and developments from elsewhere that strongly influence the region (climate, energy transition, globalization, European and national policies, Covid-19). Earlier in this book, in the section on 'Regional Development, Region development, an approach based on complexity', recommendations were given on important themes that play a role in the context. Two more topics are addressed here:

- the impact of globalization and digital technology on the region. Both developments also provide opportunities for the region.
- the resilience of regional knowledge ecosystems. Opportunities to arm themselves against changes that threaten regions are briefly described.

The impact of globalization and digital technology on developments in the region

As a result of globalization, digital networks and open borders, the region is no longer necessarily the place where business is done and where money is made. Looking around is easy and often attractive for any organization because knowledge, technology, quality, quantity, low costs and markets can be found everywhere.

This development also brings disadvantages. In particular, the future sustainability of the regional ecosystem can be affected:

- All the developments that the world is facing are also present in the region, such as economic crises, Covid-19, environmental pollution, the widening of the gap between rich and poor and between richer and poorer regions, the effects of global warming, and so on.
- Production-consumption chains in combination with knowledge-development chains in the region are being breached. Production, knowledge and craftsmanship is disappearing elsewhere.
- Historically grown regional ecosystems have deficits. Previously existing knowledge, networks and structures are not necessarily preparing them for their future. Current economic, social, cultural and educational institutions do not guarantee social cohesion amongst different population and age groups.

However, globalization and digitalization also offer new opportunities for the region:

- Before 2000, globalization was dominated by large corporations and institutions like the World Trade Organization (WTO). Currently, globalization is shaped by the bottom-up regional knowledge capacities driven by notions of a knowledge-based economy. Phil Cooke (2005) described this development and pleaded for the importance of regionally engaged universities.
- In addition, digitization also offers opportunities. Establishing relationships becomes easier, both within and outside the region. Relationships between governments and citizens, between creators and buyers, and between people with specific expertise and others in search for knowledge.
- Each region will have more opportunities to build its own international (digital) network, that is in line with the strategic policy formulated within the regional ecosystem. For instance, a digital platform cooperative, which facilitates products and services developed by the collective and makes them widely available.

The resilience of a regional knowledge ecosystem

Crisis situations highlight the weaknesses of an ecosystem.

The Netherlands has a lot of accumulated knowledge in energy related to gas and gas infrastructure. This consequently led to lagging developments in wind and solar energy. In fact, only when earthquakes occurred resulting from gas extraction, did it become obvious that dominant economic interests of Shell and the Dutch government were leading and that public safety and concerns of inhabitants and experts were neglected. The public safety outcry led to unveiling weaknesses of the Dutch energy policy and practice.

The resilience of a region is threatened by several factors:

- Risk assessment is often short term and substandard.
- Signals are only noticed late.
- People with more power exert their influence.
- Underestimating the consequences in other areas.
- Divided opinions.
- Underestimating the need for broad cooperation.

Regions cannot always avoid these risks, but they can increase their resilience by bearing in mind these factors. Just as individuals, companies, countries and continents, regions can adopt the following recommendations:

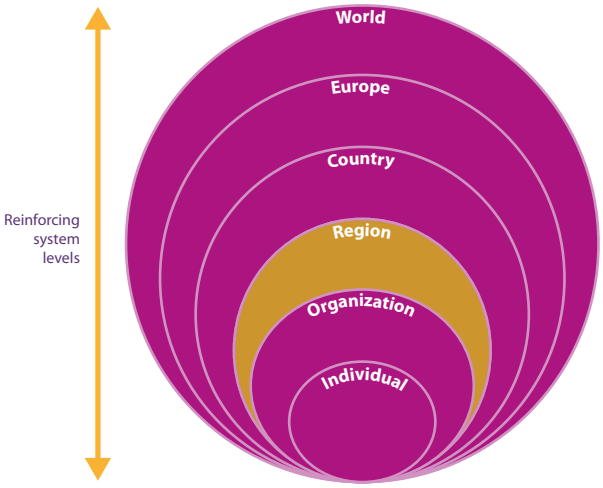
- Regions can assess long-term risks and develop prospects. This offers opportunities for the knowledge economy. Major social changes always have an impact on the region. Climate change brings risks and opportunities to every region. The same applies to energy transition, food supply, water management, robotization, digitalisation and so on.
- Identifying problems and opportunities for the region. For example, how can the regional knowledge ecosystem contribute to greater self-sufficiency in cultural, social and economic terms? How can it reduce destructive polarisation between social groups?
- Attention to regional democratic and emancipatory processes, so that it is not power but common wisdom that determines the future.

- Bringing developments together. Demography, for example, has to do with attention to population groups and health, with rural depopulation and with future opportunities for young people. Knowledge building must be inclusive.
- Strengthening mutual dialogue: discovering together what is going on and what can be done.
- Working together across departments, services, branches and disciplines to jointly approach regional issues. Using insights from all stakeholders. Knowledge is everywhere, not only at recognised knowledge centres.

Connecting system levels

Individuals, towns and villages, regions, countries, Europe and the whole world are at different system levels. Developments at one system level often lead to reactions at other system levels. Globalisation, for example, led to a movement of anti-globalists who criticised the power of multinationals and broached the issue of cultural flattening (McDonaldization). Developments within the EU led to renewed nationalism with an emphasis on protecting its people and its culture. The rise of the yellow vest movement in France and later elsewhere was the result of dissatisfaction with measures taken at a national level.

Connection between system levels means, first and foremost, recognition of one's own strength and the importance of each level. The citizen, the region, the nation state, Europe and the whole world are all important. By understanding the interests of individuals and supporting them in joining forces, the region can strengthen itself. The European Commission is also aware of this. It has set up a Committee of the Regions, which is consulted on policy areas of relevance to local and regional authorities.



Interaction between system levels

Engagement in the region also means engagement at the other system levels. Regional commitment cannot be achieved without the commitment of individuals and organisations in the region. The Netherlands and Europe weaken themselves if they neglect the regions.

Differences that matter, a strategy of engagement

Our world has become more manageable and prosperous through strategies that have emphasised rationality and efficiency. This has led to far-reaching specialisation and division of labour everywhere. Society has been clearly divided into sections. Separate worlds have emerged: the cultural world, the business world, the government, the not-for-profit world, and so on. These separate worlds have also been subdivided. Governments are equipped with different services and departments for defined policy areas. Higher education with faculties, departments, schools, study programmes and research. The business world and the not-for-profit world with separate companies and institutions where competition is much more common than cooperation.

The division of society into separate compartments has given us more than just security and prosperity. It has brought us an enormous growth in knowledge and skills in sub-areas, reflected in specialised professions and disciplines. Management strategies based on rationality and efficiency brought disadvantages: professional jargon that outsiders cannot understand; the emergence of autonomous silos with their own strategies but also blamed others for failure; the expansion of management to bring everything that was produced in the individual units back together again for a common purpose.

Due to the increased complexity of society many problems arise, and we are slowly understanding that these problems can no longer be solved by individual units. Temperature rise, soil depletion, obesity and so on. It is becoming increasingly clear that, in addition to strategies based on rationality and efficiency, we need new strategies based on cooperation so that all the accumulated knowledge and skills can be combined. All these cross-cutting problems first become visible where people work and live. Villages, towns, regions and districts are therefore the first playground for such a combined approach. The greatest challenge for the creation of a future-proof regional ecosystem is to end all the silos inside and outside organisations. In more positive terms: making use of all the differences (insights, ideas, specialisms, interests, power, etc.) that matter in tackling today's complex problems.

The players (stakeholders) in the regional knowledge ecosystem

Agents are the players who can create a sustainable, future-proof and shock-resistant regional ecosystem. In this book they are called stakeholders. Stakeholders need to be 'Engaged': committed to the challenges and future of the region; willing to promote the prosperity and well-being of the region together with other stakeholders and to tackle problems together; and acting like co-owners.

Stakeholders are not just the triple, quadruple or quintuple helix mentioned in this book, but anyone who can and wants to contribute to the prosperity and well-being of the region. Organisations, groups, individuals. Some stakeholders are forgotten at first, such as the financial institutions. The same goes for stakeholders, who are not always immediately visible but can have a major influence on many developments. The European Commission, for example, or international movements such as the environmentalists, who are concerned about the long-term effects of short-term regional decisions. Below are a few comments on the role and position of stakeholders in the quadruple helix.

Higher Educational Institutions in the region (HEI)

The key message in chapter four was: committed universities contribute to regional developments and embed these regional developments in their key functions (education, research, innovation). Moreover, they align their strategic mission with that of other important stakeholders in the region and beyond. The fact that there is still room for improvement is made clear in a report by the European Commission (European Union, Benneworth, P., Arregui-Pabollet, 2020). It presents the results of a study carried out in the Northern Netherlands on the role of higher education in the design and implementation of the European strategy for smart specialisation. Many suggestions are made about how knowledge institutions can strengthen the regional knowledge ecosystem:

- More cooperation between knowledge institutions across the borders of school types, provinces and disciplines, thus influencing the regional agenda from a key position
- From a joint financial management, coordinate the various innovation projects and living labs even better and deploy students in the right places and at the right times
- Not only focus on technological innovation, but also on social innovation, intra- and entrepreneurship and the application of knowledge in innovation contexts
- Make much more use of the large numbers of students in order to increase the innovative strength of SMEs
- Making it easier for SMEs to access knowledge hubs

- Strengthen competences such as setting up and managing innovation projects
- The design of innovation workplaces
- Focusing on mutual collaboration on social issues
- Collective design of a *regional knowledge agenda*
- Etc.

SMEs as players in the region

SMEs are an important factor in the Northern Netherlands. The North Netherlands Innovation Monitor 2020 describes the results of a survey among North Netherlands SMEs (T. Broekhuizen, E, Meerstra-de Haan (2020). Several conclusions stand out:

- The social orientation of many SMEs has steadily increased over the years. This concerns corporate social responsibility / social enterprise (also through social and environmental innovations). The increase is particularly strong in the field of sustainable energy, for example in the increased number of eco-innovations.
- In the case of eco-innovations, SMEs benefit from collaboration, innovation and testing possibilities offered by innovation infrastructures. For social innovation, the use of incubators can help.
- Socially oriented SME entrepreneurs can use help in finding cooperation partners to achieve their social goals. (Semi)public institutions such as provinces, SNN, knowledge institutions (RUG, Hanze) intermediaries, sector organisations and other institutions could help.

Participating in a regional knowledge ecosystem has definite advantages for SMEs. They learn to develop long-term strategies and sustainable business models by making use of learning communities. They also can make contributions such as contributing to (new) forms of lifelong learning and playing a role as a coach for students and others in innovation workplaces.

Municipalities and provinces as players in the region

Governments, like other stakeholders, need to answer the question on their role in building a regional knowledge ecosystem.

The role of governments is changing. Of course, core tasks in the field of safety, infrastructure, education, culture and social services will continue to exist. In order to fulfil these tasks properly, many systems have been set up which, through departments and services, algorithms, procedures and rules, can ensure that the government treats everyone equally in a predictable and reliable manner. However, governments are less equipped to deal with complex and unique situations through their departments and services, although a change is gradually becoming noticeable. New developments such as energy transition, decentralisation of youth care, social wellbeing and participation in the labour market, migration to the cities, ageing population, pandemic and financial crisis management are examples of complex challenges that make it necessary for governments to operate differently. The collaboration patterns amongst regional partners are becoming increasingly clear:

- Increased public-private partnerships
- Giving room for citizens' initiatives
- Inviting start-ups by local governments to propose solutions for complex issues (Start-up in Residence programmes that first took place in San Francisco but have since been widely replicated, such as in The Hague and Groningen)
- Direct communication channels between citizens and public services via apps.

Civil society players in the region

Civil society players are inhabitants of the region and civil society organisations. These can be welfare organisations, but also, for example, residents who take the initiative to run a local convenient store, community facilities or a windmill. Two relatively new opportunities for civic participation are the so-called 'Right to Challenge' and 'Citizen Science'. The Right to Challenge gives residents the opportunity to take over tasks

from governments if they think they can do it smarter, better, cheaper or different. In practice, research has shown that this is not easy, there are many legal obstacles and citizens are not used to dealing with existing procedures and often do not know enough about the financial obstacles. There is a great need for 'knowledge sharing', manuals, good examples, desired paths and best practices.

The second possibility for citizen participation is called Citizen Science. This means that non-professional researchers carry out research. This is often done in collaboration with scientific researchers, but not necessarily. Examples are the measurement of aircraft noise pollution. Measuring water quality and the reporting of sightings of animals.

Above mentioned new possibilities make it more attractive to work in a network with professionals, knowledge centres and with municipalities and provinces.

A third and possibly even more interesting option, as elaborated in various chapters, is working together in cooperatives or innovation work places in which professionals, citizens and knowledge institutes work together and, in this way, do not only provide services in a new way, but also combine this with training and professionalisation.

Leadership in transitions

Transitions are system changes that are a result of interacting forces in society. A frequently mentioned example is the transition from coal to gas and now again from fossil energy to renewable energy. This is a battle between the status quo and change agents. Change agency is about leadership, but leadership has taken on a new meaning when dealing with complex issues. For example, Plowman and Duchon (2008) have uncovered a number of leadership myths: it turns out that leaders are less likely to be the ones shaping the vision than is commonly believed, they are not necessarily the ones who can lead change, they do not always provide the necessary clarity and they do not always steer others in the right direction. Uhl-Bien, Marion and McKelvey (2007) make a distinction between *administrative,*

adaptive and enabling leadership. Administrative leadership is about the manager's roles: top-down planning, coordinating and controlling. Adaptive leadership is about the interactive change process and Enabling leadership provides a connection between the two forms of leadership mentioned earlier, which are diametrically opposed. Sotarauta, Beer and Gibney introduced the theoretical concept: 'place leadership'. This theory is based on a change team of people or institutions working together on a regional change process. It is precisely because there is cooperation and so the theory is based on multiple actors. This offers the possibility to combine vision, strategies and individual competencies of different actors. Ideally, change agents comes from all participating organizations in a transformation process.

Collective sense-making and transforming interactions

Collective sense-making is the term used here to clarify the process of building a regional knowledge ecosystem.

Collective sense-making is trying to understand, in interaction with others (agents, stakeholders), what is going on around a complex challenge one is facing. By having a dialogue based on different insights, a common picture can be developed about what is going on and a perspective can be created for a new approach.

Collective sense-making is not just about the willpower and ability to engage in a dialogue about common problems and how to tackle them. It is mainly about developing a common new paradigm of an inclusive regional economy, which is described more in detail in chapter two:

- The realisation that cooperation is essential and that there is interdependence.
- Thinking in terms of win-win instead of win-lose.
- It is not only about economic gain but also about social, cultural, technological and environmental value.
- Partners are producers and consumers at the same time.
- Participants have unique qualities and insights, which applies to everyone.

- Create new, interdisciplinary networks to tackle problems.
- Goals and frameworks arise from interaction and are not directed from above.
- Strategy is not necessarily a plan, but above all taking flexible and opportunistic steps towards improvement.
- Not striving for uniformity but using the power of differences.
- Experimenting a lot and not being afraid to make mistakes.

New patterns in the knowledge ecosystem

The way in which people treat each other has to do with socialization and the situations in which they find themselves. Behaviour is based on automatic responses in predictable situations. People nurture routines and common patterns of interactions. When an unknown situation arises, new behaviour and interactions is needed. This is often seen in migration, new jobs, economic crises, etc.

This book describes how dynamic and unpredictable the world has become and how existing attitudes, structures, processes and interactions have become less effective in meeting complex challenges. Many of these new patterns have already been described in previous chapter, but to summarize:

Changes in assumptions:

- Regions are unique ecosystems where effective interventions for daily life can be made.
- Regional stakeholders can take control of ecological, social, cultural, economic, technological and political developments.

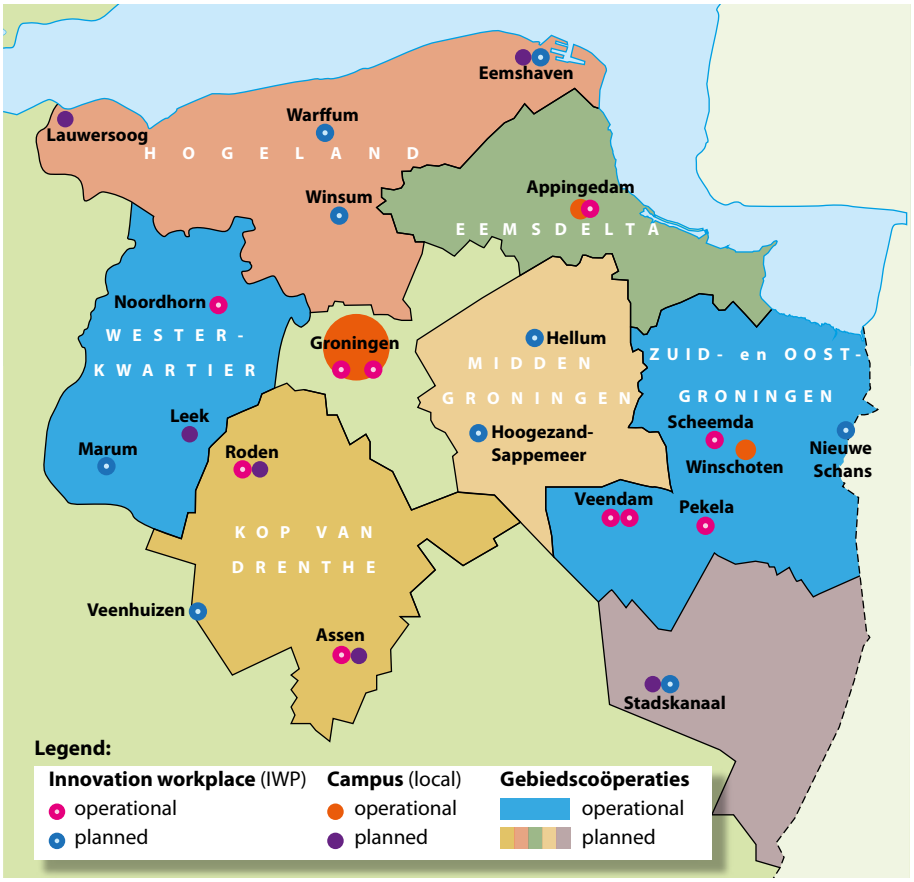
Changes in actions:

- Working together on common challenges beyond one's position and area of responsibility
- Sharing and creating knowledge for innovative approaches
- Developing regional chains (knowledge, services, products)
- Involving stakeholders in triple, quadruple and quintuple helixes

Changes in structures:

- Remove silos through the formation of clusters, cooperatives, public-private partnerships, innovation workplaces, etc.
- Form place-based cooperatives and a supporting regional cooperative for a coherent regional knowledge ecosystem (explained below)

An outline of a regional knowledge ecosystem



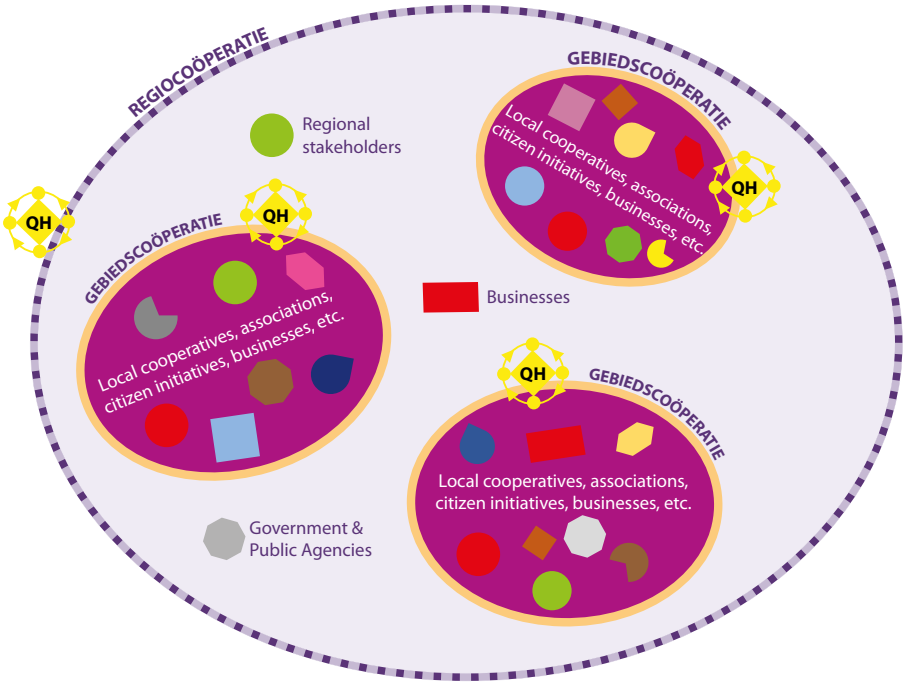
Mapping Regional Knowledge Ecosystem in Stadland Groningen-Assen (2020)

A new approach that encompasses cooperative collaboration is seen at the local and regional level as part of developments to form a new knowledge ecosystem. The central ideas and processes have been developed and are offered to others to duplicate this approach. The regional knowledge ecosystem continues in its development and more detailed information on various processes is provided in the next section. Here we reflect on a few key aspects in relation to the whole systems approach.

In Groningen and North Drenthe, the region we refer to as *Stadland Groningen-Assen*, this cooperation has been partly achieved through so-called *Gebiedscoöperaties (*area cooperatives). For example, the *Gebiedscoöperatie Westerkwartier* (see website). But the partners in *Stadland Groningen-Assen* go further. The intention is for representatives of the quadruple helix to join forces in a *Regiocoöperatie* Groningen.

Innovation in the region through cooperative collaboration

The starting point is the voluntary and cooperative collaboration of parties in the quadruple helix with the aim of strengthening the region. The quadruple helix consists of civil society, business, knowledge institutions and government. Civil society represents a wide range of organisations active in the public domain. They represent the interests and values of individuals or organisations and explicitly include citizens and their (cooperative) associations. They are represented at different levels (local- gebied(area) - region) in different ways (Monitor 4, 2020).



The Regional Cooperative and its regional members and partners (Manickam, Van Berkel, Rittersma, Lutz, Foorthuis 2020)

There are three levels:

At the *local level* (neighbourhood, village, etc.), new cooperative initiatives are emerging. Their aim is to develop new sustainable economic or social activities and social cohesion for the inhabitants. They often work closely together with local authorities, which in many cases offer funding. Well-known examples are a local energy cooperative or a village shop with local products and run by volunteers.

At the next level, often extending to multiple villages, districts and sometimes municipalities, but with a common geographical identity (*streek* in Dutch), the *Gebiedscoöperatie* (area cooperative) emerged. The purpose of a *Gebiedscoöperatie* is to increase the resilience of the area. This is done by facilitating and stimulating the development through the

strengthening of sustainable economic activities. The area cooperative distinguishes itself fundamentally from traditional cooperatives: it is cross-sectoral; it operates on the scale of an area or region; and has a wide variety of stakeholders: cooperatives, associations, social organisations, housing corporations, businesses and educational institutions. In addition to its members, an area cooperative also has partners that support the work of the area cooperative without being members. The local and regional authorities themselves are not yet members of the regional cooperative. In the current council or coalition agreements, however, this movement has been embraced and explicitly included by several municipalities and the province of Groningen. Control, responsibility and partnership are granted to parties in society. In terms of its legal form, the area cooperative is a cooperative. Decisions are taken during General Meetings of Members (1 vote per member) which is convened periodically and for all important decisions.

Area Cooperatives:

- Drive and coordinate the innovation ecosystem of areas in order to accelerate transitions.
- Facilitate and direct cooperation between innovation workplaces (IWPs), associations and cooperatives for transversal projects and activities.
- Promote new sustainable activities in order to make the area more resilient.
- Bring stakeholders in the area together to identify complex issues in (thematic) open sessions and gather information from their members as well as from partners and other stakeholders.
- Create a collaborative and learning environment for businesses, civil society organisations, governments and educational and research institutions.
- Distil and cluster challenges and deploy them at educational institutions that, in close cooperation with involved stakeholders in IWPs and associated learning communities, will develop and innovate knowledge.
- Use the outcome of these research and innovation projects to combine the insights and provide added value to all parties.

This, in turn can be used by the partners and contribute to keeping education up to date. In consultation with the research group and other knowledge institutions, projects and programmes are designed for which (political) support and funds are sought.
- Support innovation and knowledge development for different umbrella organisations.
- Connect itself in a regional cooperative to deal with issues and programmes that go beyond the boundaries of an area.

The third level is the Regional Cooperative (*Regiocoöperatie* in Dutch). The Regional Cooperative focuses on activities that need a regional scale. For example, creating new chains to increase diversity of livestock and crop farming, developing new crops like hemp and developing a new processing plant to facilitate higher value adding activities in the region, new crops in wetland or silted soils in the region.

For new business models and new chains cannot be realised within a single area or sector as seen in the example of a regional food chain, especially if this includes valorisation of residual flows based on circular and bio-based economy principles. Moreover, certain tasks such as research, knowledge management, human resource management and administration can also be organised and carried out better, more effectively and more efficiently on a regional scale. In order to create a functioning innovation ecosystem and to optimize the potential of *Gebiedscoöperaties,* a supporting organization such as the regional cooperative is needed. On the scale of *Stadland Groningen-Assen (urban-rural area of Groningen-Assen)*, several key persons have taken the initiative to set up the Groningen Regional Cooperative as described in the next section. The most important functions of the regional cooperative as proposed in the region are:
- The regional cooperative acts as a driver and orchestrator of the innovation ecosystem of the region and thereby fulfils the role of a change agent with three main goals: innovation, new business activity and support service.

- The regional cooperative has practice-based research as a basis for knowledge development in the field of sustainable cooperative entrepreneurship and the cooperative model. In addition, it is about research and knowledge development in the field of the themes that are formulated when drawing up a regional agenda, such as energy transition, the food chain and the circular and bio-based economy.
- The regional cooperative translates questions from *Gebiedscoöperaties* into projects and programmes for solving regional, cross-regional, complex issues (new regional chains, new economic activities and opportunities such as *Groeningen* (see also page 169), energy transition, training and restructuring of SMEs, etc.) with corresponding framework conditions (resources, capacity, knowledge, etc.). This serves the objective of 'business activity'.
- The regional cooperative supports area cooperatives in starting up, scaling up and professionalizing their organizations and in strengthening the cooperative model for area development that is still developing. It takes responsibility for the joint need for marketing and (digital) communication, financial, personnel and general administration, financial controlling, ICT, HR, legal affairs and subsidy acquisition. In this way, the regional cooperative serves the goal of 'service'.
- The regional cooperative seeks to connect with other national, European and/or international regions or institutions in order to broaden the horizon for innovation and knowledge exchange and to accelerate regional transition processes; for example, European Cluster Collaboration Platform, EURADA, SER-Noord, etc.
- The regional cooperative serves as a legal entity that can take on commitments, e.g., grant applications.

In the Netherlands, the legal entity of the regional cooperative is an association. Its members are *Gebiedscoöperaties* of the region Groningen-Assen and system partners such as provincial and municipal authorities, regional knowledge and educational institutions at intermediate vocational, higher vocational and university level, and representatives of the business community. The board consists of delegates from the system

partners. Funding is provided through membership fees, structural contributions from system partners and contributions from innovation funds.

Conclusion

Engaged in the region means an enormous change in the way of working for all stakeholders involved. The focus is no longer just on their own knowledge and skills, their own organisation, their own clients, their own interests, their own focus area and their own approaches, but on responding together to challenges that the village or city, the area and the region are facing. Building knowledge together and innovating together. This is a way of thinking and acting in an inclusive way, each participant can ultimately benefit from in terms of revenue.

4.2 ENGAGED IN PRACTICE

For the region, ENGAGED represents a change for all stakeholders involved on different levels; internally, within the organisation, it represents a working method, division of tasks and responsibilities, financing and reaping returns together. It is a time-consuming process and cannot be realized instantly. In order to understand what this entails, an overview of the extensive partnerships in the *Stadland Groningen-Assen* region; the understanding of a knowledge ecosystem by the regional players; how to achieve this in the *Gebiedscoöperatie*; what consolidation is taking place; how their collaborations are linked to the local level (local cooperatives) and to the regional level (regional cooperative); whilst discovering the way forward to become ENGAGED, is described. To conclude, the ENGAGED Manifesto, in which partners of the quadruple helix capture their shared ambitions and steps, and new developments and directions for next steps is presented.

A collective initiative in Stadland Groningen-Assen

An extensive network of stakeholders in the quadruple helix has been formed in a short time in 2020, consisting of entrepreneurs, administrators, civil servants and other experts from the municipalities of Het Hogeland, Eemsdelta, Midden-Groningen, Oldambt and Westerkwartier, with the joint purpose of addressing regional economic and social challenges together with researchers from the Professorship Sustainable Cooperative Entrepreneurship. Together, they looked for opportunities for regional knowledge generation, for translating such knowledge into products and services for valorisation and embedding this in their own locations. They aimed to create social and economic value in the region *Stadland Groningen-Assen*. This meant including inputs, tasks and responsibilities, monitoring and shared value for all in the quadruple helix.

In choosing such an approach, the book builds on the example of the municipality of Westerkwartier where the first *Gebiedscoöperatie* was founded five years ago, with an Innovation Workplace (IWP) as the operational unit. Following this example, *Gebiedscoöperaties* in South and East Groningen have also been in operation since 2018. In the spring of 2019, Innovation Workplaces were also launched in Appingedam and Winschoten, whilst efforts are being made to establish *Gebiedscoöperaties* in the municipalities of Hogeland, Eemsdelta, Midden-Groningen and Oldambt. These municipalities have decided to act collectively as they see the roll-out of *Gebiedscoöperaties* and Innovation Workplaces as building blocks for a robust regional knowledge ecosystem. They intend to develop an infrastructure as the basis of a dynamic ecosystem, which in turn is to be supported by an overarching regionally focussed cooperative – the *Regiocoöperatie* - in order to generate, exchange and valorise knowledge optimally and to support *Gebiedscoöperaties* to function optimally.

What do the partners consider to be an ecosystem?

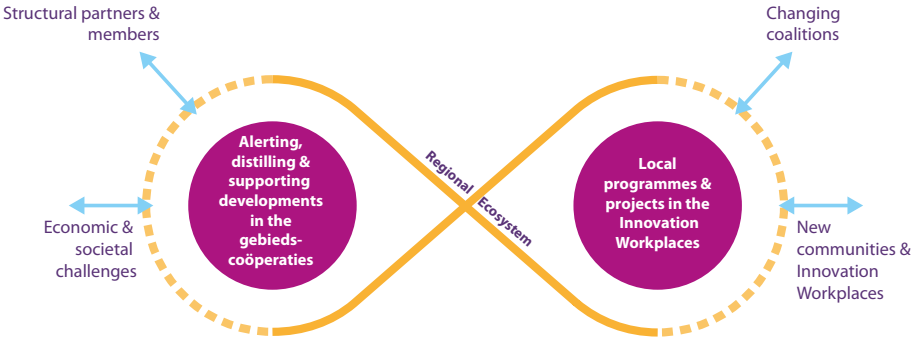
The concept of the knowledge and innovation ecosystem has been discussed at length in the preceding chapters. For the partners in *Stadland Groningen*, it was especially important to exploit the entire knowledge chain, secondary and higher secondary vocational education, higher vocational and professional education as these programmes generate applied research at different levels jointly with entrepreneurs, citizens and government agencies.

The region intended to better utilize knowledge centres at universities of applied sciences and research institutes as well as better connect higher secondary vocational education (VET) with as many SMEs as possible in the local areas. The priority was not only to reach first movers and innovation leaders, but also to reach out to the many innovation followers and also those not active in innovation but interested in participating in the development and introduction of new products and services to markets. Increasing and supporting such interactions

promotes local resilience, supports job creation and in the long run makes the region more attractive to young people.

Leveraging knowledge in this way has seen renewed opportunities to review and solve economic decline in rural communities and challenges connected to aging populations. Solutions for climate adaptation and energy transition have also been addressed as well as new business models ensuring economic sustainability of urgently needed innovations. In the *Stadland Groningen-Assen* ecosystem, the *Gebiedscoöperatie* and the Innovation Workplaces are connected: linking insights from the various IWPs to achieve both scale and effectiveness. The outcomes of such processes are emergent and not always to be predicted nor replicated elsewhere but they do show how bottom-up, location-based solutions can arise by creating the structures and mechanisms as described below.

The basic idea of the partners in *Stadland Groningen-Assen* is that there is a continuous, organised interaction between innovation processes at the IWP solving challenges at the local context in which new alliances for the challenges are formed and insights and solutions are further developed, adapted and transferred to the region through the *Gebiedscoöperaties*. The process of interactions, involvements of various actors and working on challenges in their social contexts provide the dynamics that keep the ecosystem vital.



Dynamics of regional ecosystems

Innovation workplaces (IWPs) for collaboration and value creation

The *Gebiedscoöperaties* are implementing their activities starting with an Innovation Workplace. This is a place for meeting, decision making and knowledge exchange for all partners in the quadruple helix. From here, they organize the planning and implementation of programmes and projects in which local stakeholders, such as entrepreneurs, citizens, institutions and officials, consider important for their municipality. The players of the quadruple helix have their physical meeting point here to work and learn together, close to home. The innovative plans of citizens and SMEs are then linked to students and researchers.

The Innovation Workplace is more than a place, it is a methodical approach that ensures a stable working environment for collaborations with the quadruple helix partners. The physical IWP location is not fixed. Countless discussions and meetings with entrepreneurs in the companies, everywhere in the region, are also part of the 'Innovation Workplace'.

In the *Gebiedscoöperatie Westerkwartier* ample experience has been gained over the past five years on how to implement collaborative work in an Innovation Workplace. This will be described in more detail below.

Gebiedscoöperaties for collaboration and orchestration

The formation of an innovation ecosystem requires work. *Gebiedscoöperaties* in the Northern Netherlands are providing stimulating and facilitating forces towards this work. A *Gebiedscoöperatie* is, typologically and organizationally, a new enterprise. It occupies a hybrid position with characteristics of both a public and a private organization. It is a legally anchored cooperative enterprise with members from the business community, education and research institutions and public organizations. Its main objective is sustainable and structural local development based on a local ecosystem formed by cooperative chains. On the one hand, its multi-stakeholder and multi-sector approach focuses on regional resilience, something

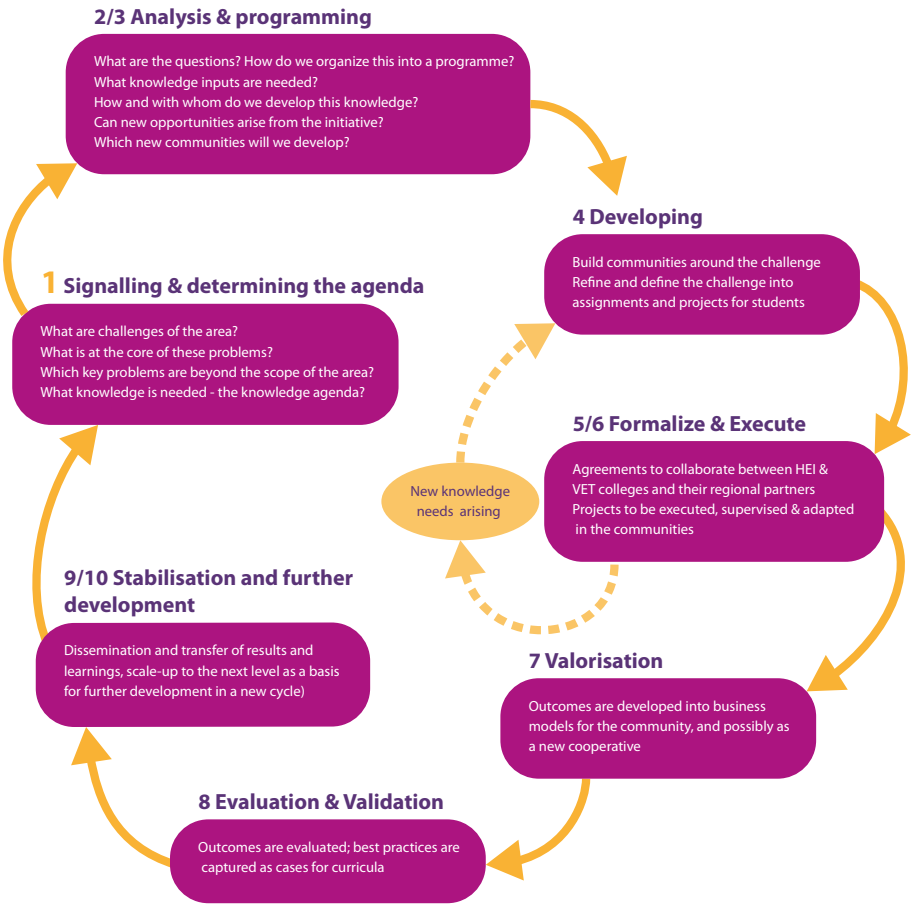
that was traditionally a role fulfilled by regional government. However, on the other hand, it operates as a business, with the understanding that profits are invested into new regional development.

The first *Gebiedscoöperatie* was set up five years ago in the Westerkwartier, with members from the business community, education and research institutions and public organizations. These members brought their innovative development capacities to the cooperative in a permanent alliance with education and research institutions. Following the first *gebiedscoöperatie* in the Westerkwartier, similar area-based cooperatives were established in Zuid-Drenthe and Oost-Groningen.

A *Gebiedscoöperatie* is connected to one or more Innovation Workplaces in its area. The *Gebiedscoöperatie* captures developments and signals from the various stakeholders that go beyond local levels and that have the potential for new economic or social developments that need regional scope and scale. Building on local perspectives and needs is an important step to boosting robust regional ecosystems. The *Gebiedscoöperatie* acts as a vehicle to stimulate regional agendas, issues, innovation, collaboration and knowledge sharing. Ultimately, this should be reflected in new products, services and business processes valorisation.

How does this work? An example from the Gebiedscoöperaties Westerkwartier

Gebiedscoöperaties work in a systematic manner even as the numbering suggests a sequence in time, but in practice, several steps are carried out simultaneously. For example, the programming can be initiated as early as the signalling process, or, implementation the first projects (low-hanging fruit) can already start before finalising the programming and formalisation. The illustration below presents these steps. Examples from the *Gebiedscoöperaties Westerkwartier* are included in the elaboration following.



A simplified representation of the approach adopted by Gebiedscoöperaties

Current practice has shown that this way of working results in significant acceleration, as one plan quickly stimulates several other ideas and some challenges and aspects cannot be addressed individually, without addressing other associated themes, etc. This makes the work in the *Gebiedscoöperaties* complex and time-consuming. Support from a *Regiocoöperatie* is indispensable as complex interconnections and the scale of the subsequent inputs and partnerships could be better handled, organized and delved into with additional expertise, resources and support but most importantly with regional stakeholders and solutions.

The process of the *Gebiedscoöperaties'* work is described and captured as a linear representation for the purpose of simplification even as in practice it spirals in various directions and speeds leaving out the 'viral' effect it has on developments.

1. **Signalling and determining the agenda**
   This step involves a thorough exploration of what is going on in the region. This goes right across all organizations, with all stakeholders, in all departments. Numerous meetings are organized, for entrepreneurs often in the evening because otherwise they would not be able to participate. Together you want to find out which key areas and themes are important for the region, also when it comes to regional, national, European and global developments. What challenges are encountered? What are the underlying questions? What do staff, students and teachers need to learn? What new competencies are desired to be shaped for a company or education? How could the current knowledge of the staff's current knowledge be actualized and where is it available? How does this fit with regional, national and EU policy?

   This results in an overview of key themes and knowledge questions per theme. For Westerkwartier this resulted, after the inventory round of the first year, in a lengthy list of about 130 questions, arranged into 14 themes.

2. **& 3. Analysis & programming**
   The previous list must be reduced to a manageable number of subjects and knowledge questions. What key points did the partners draw up together? On which themes are the parties willing and able to cooperate? Where do they reinforce each other? What are the main themes that they can work on? The Westerkwartier participants struggled with this for some time. The partners first came up with a programme with five themes: 1. Landscape, livestock, arable farming & food; 2. Energy, water & bio-based economy; 3. Living environment, health, & social welfare; 4. Young people & Start-ups; 5. New-style cooperative.

Over time, some of these themes turned out to be less urgent than thought initially. The current programme is more specific and focuses on four sub-programmes: 1. Food chains, 2. Biobased & circular economy 3. Social energy chain and a fourth topic, 'Social and inclusive society', which is cross-sectional and linked to the three other topics. The aspect of 'sustainability' is present in all subjects. All sub-programmes are supervised by the Innovation Workplace (IWP) Noordhorn and supported by a programme leader.

The members and other collaboration partners have a major role to play in this and all subsequent steps. They are the ones who need to put the most energy into the actual work and must decide where they see the potential, who wants to work on what and with whom they want to join forces.

4. **Developing**

The development process consists of establishing connections between the partners: *'the formation of communities'*. These are small working groups of entrepreneurs, experts from the various organisations and often also students who elaborate on shared objectives, consolidate their own implementation and activity plan, and distribute tasks between the partners. They agree on the expected results to be achieved, for the partnership as a whole and for each participating partner. Another important point is gaining insights into the financing opportunities, where it is essential to use the existing knowledge and money flows and sources in a smart way. What resources are already available and how can they be supplemented, as a joint effort, from available innovation programmes?

In the Westerkwartier area, the following communities are currently the most active: the Natuurvleescoöperatie, the Green North Ltd. for the cultivation and bio-based processing of miscanthus and the Food Cooperative for the regional food chain. The latter is also linked to the European food project REFRAME. The food cooperative was seen as a steppingstone to form regional partnerships. Once the

regional collaboration has been established, the cooperative will be supported and further developed at the regional level.

5. **& 6. Formalize & Execute**
   During this phase, agreements are made, while partnerships are formalised. As part of the planning process, the role of knowledge institutions is considered as the objective is to involve students and lecturers in practical research and projects.

   In addition to this, *Workcept* was developed as part of the *Gebiedscoöperatie Westerkwartier*. This is an online database where entrepreneurs, place-based cooperatives and Innovation Workplaces (IWPs) in the urban field of Groningen can place their assignments or vacancies on https://workcept.nl/. Students and other interested parties can find work that suits them via search assignments and therefore this platform acts as a continuous mediator of supply and demand.

   What has also become evident is that there has been a clear shift of the schools (faculties) towards the region, in part due to growing closer collaboration. This is also reflected in the fact that education and research programmes are becoming more flexible and IWPs are better embedded in curricula. The IWP is a first key achievement of the collaborations. The schools and regional partners have built a sustainable structure whereby partners can easily find each other. This is a process that is optimized step by step. It is one of the areas that should receive support from the *Regiocoöperatie*. However, when concrete agreements have been made, the responsibility should return to the *Gebiedscoöperaties* and its communities. The agreements made are owned by these parties involved as a collective concern. In the Westerkwartier, a current project is formalizing Natuurvleesöperatie and the Green North bv. In addition, an ongoing collaboration with the municipality of Westerkwartier is in place for carrying out the 'Lokale voedselakkord' (Local Food Agreement). Numerous projects

are carried out in the different communities that have been formed. Requests for new research assignments are communicated personally and through *Workcept*.

7. **Valorisation**
   Business models eventually emerge from the projects. The members identify their proposition and revenue model, so that communities then operate as independent businesses. These businesses can then become members of the *Gebiedscoöperatie*.

8. **Evaluation & validation**
   Data and information (outcomes) are retrieved from the various projects within the IWPs. The data is then gathered by the *Regiocoöperatie* to analyse, evaluate, develop and disseminate best practices at both local and regional levels.

9. **& 10. Stabilisation & further development**
   This step is also conducted at the regional level, where acquired knowledge and competences are described and transferred; and improved curriculum is realized with new education and training packages developed. By linking results from different *Gebiedscoöperaties* and IWPs, have therefore direct the spin-offs for education and the communities. In addition, new insights emerge that help improve the current approach as well as the understanding that businesses and education institutions need to invest in new activities. At local level the inventory of new knowledge questions gathered by *Gebiedscoöperaties*, also leads to further development of the existing and new programmes in the IWPs.

Multiplier Effect

The multiplier effect of this way of working has been demonstrated, for example by research within the Innovation Workplace De Wijert in the municipality of Groningen. Results showed that a project with jobseekers led to a ROI of 2.64 for every euro invested. In addition, government spending in a partnership is always matched by the other partners in the quadruple helix, which

means that the available resources are multiplied in any case and can be used as an own contribution to obtain additional national or European funds.

Besides this direct return, indirect multiplier effects are also noticeable, which emerge once things start to change. More and better education and training opportunities have an impact of attracting young people, new businesses and households, of the number of start-ups and also, due to the mutually reinforcing effects of these factors. In addition, the numerous meetings and the participating students spark new dynamics into the region, which forms the basis for new developments.

Facilitating collaborations between the local and regional levels

The excerpt above shows that through the *Gebiedscoöperatie,* one is constantly aware of what is happening in local areas and stakeholders are able to strengthen each other. The arrangement allows efforts of regional partners in education and civic organisations to become more efficient and effective, both qualitatively and quantitatively. In addition, investments, financial and human resources can be combined and synergized. Joint efforts result in better outcomes due to an unlocking and exchange of knowledge, competencies and experiences, building on social capital. Enhanced outcomes are realized in each *Gebiedscoöperatie* but also between *Gebiedscoöperaties*. All of this prevents fragmentation and waste of resources whilst creating scale and capacities to initiate new processes.

The experience at Westerkwartier made it clear that a lot could be accomplished in the area by its own entrepreneurs and residents. For instance, the example, the start of livestock farming led to the establishment of the 'Natuurvleescoöperatie'. Members of the cooperative fatten their calves on grounds of Staatsbosbeheer (state forest management agency) and therefore do not compete with grazing land of the dairy herd. When the cattle are slaughtered, they are processed and sold in the region, which creates an additional source of income for its members.

In order to develop a substantial and innovative collaboration with a business case for the farmers, the entire food chain needs to be revised and this cannot be realised within one area. A regional based food chain includes production and processing of primary products, storage, marketing and distribution of end products as well as creating value for residual flows. To accomplish this, the products and production lines from various areas need to be connected.

This is where the *Regiocoöperatie* plays an important role. The *Regiocoöperatie* will support cross-regional initiatives, alliances and projects, acting as a connector and sometimes also as a driving force and accelerator to regional initiatives. It fulfils a new and place-independent role that brings together different, and sometimes competing, projects and parties into an ecosystem. *Gebiedscoöperaties* will be members of the *Regiocoöperatie* as well as system partners from the regional and local governments, regional knowledge and educational institutions of all levels (secondary, higher and university levels) and representatives from the business community. By keeping each other in balance they can safeguard the independence, ambition and quality of the innovation agenda. Moreover, the *Regiocoöperatie* can support *Gebiedscoöperaties* by organizing and coordinating research, knowledge management, human resources and administration more effectively and efficiently at a regional scale. An important aspect of the approach adopted by *Gebiedscoöperaties* is 'learning', since sometimes entrepreneurs take the role of lecturers, sharing their expertise whilst lecturers and policymakers take the role of students. Students offer new research insights and share them with the rest, etc. This creates a new, practice-oriented and integrated form of Lifelong Learning.

Setting up a knowledge infrastructure together

The stakeholders presented at the beginning of this section wanted to set up the infrastructure *Gebiedscoöperatie* with the associated IWPs and a single overarching *Regiocoöperatie*. To this end, they first had sessions to identify their ambitions and

focus and the results were as follows. Each group of players identified their needs:

- Entrepreneurs (from Univé to Google, from local B&B to the garage)
  - Seeking answers to issues, also via other players in the quadruple helix
  - Identifying possibilities for collaboration in new chains
  - Developing new products and services
  - Training for employees
  - Connecting to future employees
  - Incorporating Corporate Social Responsibility
  - Getting acceptance and support, i.e. 'Licence to operate', from the local community
- Citizen & Civic organizations
  - Developing, implementing and maintaining own initiatives in strong alliances
  - Developing new concepts for facilities in own communities
  - Preventing urban migration/population decline
- Municipalities and provinces
  - Enhancing economic development
  - Stimulating sustainable agricultural activities: circular, higher value adding, regional chains, etc.
  - Facilitating robust SMEs and cooperative societies by bringing together innovation, knowledge and societal value creation
  - Ensuring vibrant and dynamic countryside where young people stay and have work
  - Facilitating dynamic and complementary relationships between urban and rural landscapes
  - Tackling earthquake challenges with innovations in construction and energy transition
  - Creating a system for Lifelong Learning with educational institutions in the region
- Educational institutions
  - Ensuring interesting and rich learning and research contexts for students, lecturers and researchers
  - Accelerating evolution from knowledge factory to engaged regional partner
  - Developing Lifelong Learning structures

The commitment to set up an orchestrated knowledge ecosystem by regional stakeholders based on experiences of existing *Gebiedscoöperaties* and the respective IWPs and outcomes of specific needs and interests of stakeholders led to the next stages of development.

A joint campaign

Various working teams focussed on specific local areas and their needs; development of common future perspectives with local stakeholders, a stronger local and regional ecosystem with new IWPs and *Gebiedscoöperaties* as required with an overarching Regional cooperative. Other focus areas involved more practical implementation aspects.

The ambitious plan of developing a regional knowledge ecosystem needs orchestration and facilitation of the processes needed. An active group of initiators joined forces with the Professorship Sustainable Cooperative Entrepreneurship. The Professorship, a collaboration between Hanze UAS, Terra VET and the *Gebiedscoöperatie Westerkwartier*, is supported by EU programmes aimed at educational innovation. The Professorship Sustainable Cooperative Entrepreneurship forged partnerships with others, often cooperatives, who sought to revitalize their cooperative roots in response to current economic and social developments. Their motto is: back to the members and the region. These included the insurance cooperative Univé, but also the Rabobank and numerous other smaller cooperatives. These alliances were bound to strengthen during 2-year pilots through shared experiences and learning together. This process also applies to collaborations between the various stakeholders in the innovation chain to be developed.

The initiating group had a strong foundation to design and launched a comprehensive campaign. The process started with a number of meetings between the executive authorities of the participating institutions and governments. Subsequently, some of the group members were appointed as the 'Kartrekkers' (spearheading group) to commence the work

with an experienced administrator from the region chairing the process, as well as representatives of the quadruple helix. This team was supported by a Campaign team with experts from the business community and knowledge institutions, whose role was to communicate between working groups that included large numbers of employees of the participating institutions and to regional stakeholders, entrepreneurs and citizens. The 6-month campaign was structured along a number of threads:

- On-going dialogues with stakeholders and interested parties were organized on the design and expected returns of the Innovation Ecosystem. This included consultation of executive branch of government & boards of knowledge institutions, a working group of civil servants and entrepreneurial consultations through key business associations (VNO/NCW and MKB Noord).
- A dialogue amongst strategic staff of knowledge institutions to understand each other's approach and methodology, to facilitate finding a common framework as a foundation for the Innovation Ecosystem. The Innovation Workplace was the key concept of the proposed ecosystem.
- A dialogue with personnel involved with strategic investment portfolio of participating partners to develop a financial analysis of the proposed Innovation Ecosystem including costs, participant contributions and possible gaps. Most importantly, a ten-year commitment was proposed.
- A research group to develop an overarching governance model for knowledge institutions, businesses and civil society.
- A communications team to produce PR material and organize meetings across the region. The corona crisis resulted in webinars instead of on-site events.
- New IWPs were initiated by the campaign team in Appingedam, Winsum, Veendam with others to follow. Visible results, next to dialogues, were important to show what the campaign offered even as 2,000 students have participated through the proposed approach in various sub-projects.
- An important development thread of the campaign was support of transition and strategy processes of the

participating institutions and businesses. At Hanze UAS, for example, the 'Engaged' concept has been translated into a strategic working model through an intensive internal process. Similarly, at Univé, an identical process was also in progress. Municipalities, such as Westerkwartier, have also embarked on similar processes in order to improve their own organizations and to the connect with others in their community and the region. These initiatives aimed to strengthen the quality of economic, social and ecological landscapes. Furthermore, engagement models to facilitate participatory governance by citizens is an important aspect to be supported.

The ENGAGED Manifesto

To reinforce their commitment, the participating organizations presented their ambitions in the ENGAGED Manifesto. The Manifesto makes explicit the underlying principles of their collaborations.

As representatives of education & research, entrepreneurs, governments and civil society (quadruple helix), they reaffirmed their commitment to jointly provide new answers to prevailing economic and social challenges in the region. To this end, they were dedicated to building a cooperative regional innovation ecosystem. They wanted to use their joint resources and expertise to create new knowledge resulting in increased innovation capabilities; and ensuring that new knowledge is made available to entrepreneurs for new and improved products and services. Transitions to improve the resilience and vitality of the region will therefore be orchestrated as a joint effort.

The sense of urgency amongst the partners is high. Major global challenges are looming and demand urgent action: tackling climate change, promoting the transition to a circular and bio-based economy based on renewable raw materials, restoring biodiversity and nature, promoting social justice, citizenship and democracy. In addition, specific challenges related to Groningen such as ending gas extraction, the

ongoing threat of physical damage and safety of citizens that led to distrust of policy and governments. Moreover, a weak economy in areas of economic and demographic decline as well as large proportions of SMEs made it necessary to act urgently.

The experiments with IWPs and *Gebiedscoöperaties* in several regions in the last years meant that partners were ready to take the next step to develop an innovation ecosystem and the subsequent further professionalization, expansion and scaling up of networks.

The joint agenda they foresaw included:

- A vibrant countryside where young people want to continue living and working.
- A dynamic relationship between city and countryside where the city is fuelled by the countryside.
- Circular vibrant agriculture and industrial production sectors, in regional chains, with high added value.
- Sustainable solutions for the challenges related to earthquakes; innovations in the construction and energy sectors.
- The consolidation of a system for Lifelong Learning with knowledge institutions in the area.
- Better quality of life with robust SMEs with increased innovation capacities.
- Strengthening durable SMEs by catalyzing innovation potential, knowledge creation and sharing
- Healthy ageing

RIF: the first steps in a dynamic and ongoing process

Preparations to establish the Regional Cooperative progressed rapidly. Multiple online sessions (due to Covid 19) were carried out with stakeholders ofthe quadruple helix to develop the mission, vision and principles. In the course of these sessions, the partners adopted the notion of a Regional Innovation Framework (RIF, in Dutch it also refers to a reef). A reef is an organic unity in which each organism functions on its own and at the same time functions as part of the whole. The RIF is

a structure consisting of multiple entities (citizens, SMEs local government, education institutes) each with their own goals whilst sharing a common goal of learning and innovating in the region *Stadland Groningen-Assen* through meaningful collaborations.

The principles framing the RIF are:

1. ***Cooperation.*** *We take part in a democratic, cooperative process. Each person or organization is responsible for their own actions whilst participating in collective sense making and collaborates in the RIF for the benefit of the whole as in a coral reef. Individual and collective interests reinforce one another in a win-win situation. The RIF community consists of citizens, entrepreneurs, NGO's, governmental organizations and educational institutions and they are working for each other, accepting and supporting each other. Every one is invited to contribute to the benefit of all.*
2. ***Openness.*** *We are transparent in what we do and how we do it. We are in favour of open innovation, sharing knowledge, creating knowledge. We do not shy from experiments and learning from mistakes. We embrace diversity in knowledge, experiences, interests and ideas.*
3. ***Engagement.*** *We advocate societal improvement, innovation and transformation in the region. Social, cultural, technological and ecological values are as important to us as economic profits. Increasing regional resilience by stimulating, facilitating, exploiting and strengthening sustainable economic activities and by collective knowledge creation also by means of lifelong learning, is pivotal.*
4. ***Efficiency.*** *We have shared responsibility in governance and control, work lean and mean, and use our resources to obtain results efficiently and effectively. We connect, form and strengthen networks, benefit from one another's results and stimulate further development and avoid fragmentation. We seek structural cooperation anchored in a legal status in order to be able to undertake actions such as applying for and acquiring funding legally.*

5. ***Adaptability.*** *Mission, vison, aims and procedures originate from interactions, bottom-up instead of top down. Strategy is not fixed but flexible and attuned to the situation at hand. We are like a reef in constant interaction with our environment, constantly adapting to changing circumstances.*

These five principles are a touchstone for our development.

The RIF currently includes the Regional Cooperative, five Area Cooperatives that are linked to a number of Innovation Workplaces (see previous sections for more details on these). The realization of the RIF and the commitment to cooperate builds on a common understanding of how these building blocks will operate together to distil, analyse and prioritise regional issues that arise from various parties and persons in the region. It also offers a working framework to ensure that issues are addressed at the relevant levels, which could be local (*streek*), areal (*gebied*) and, or regional (*regio*). The RIF can scale up issues that are common across many areas or when need of extensive funding or resources due to their complexity. At the same time, the RIF allows diffusion of knowledge and innovations throughout the region and therefore increases inclusive growth and learning opportunities.

In order to operationalize this initiative, the development team has developed brochures and initiated information sessions to explain the RIF and opportunities for participation. The development continues through various working committees to focussed on implementation issues that include details about

- Developing capacities to organize and mobilize urban-rural innovation potential of 100,000 students, supervisors, lecturers and researchers with a total of 150,000 persons into programmes, projects and innovation routes – with (Lifelong) Learning at its core
- Safeguarding continuity of innovation and Lifelong Learning through realizing physical space (at least one per municipality) for stakeholders to meet and collaborate through a practical model of organizing entrepreneurs, citizens and institutions to solve urgent local and regional challenges as described earlier in this section.

- Incorporating a governance structure and the required capabilities to oversee and support the diverse place-based initiatives and programmes transparently, effectively and efficiently and upscaling them to the regional level when needed.

In addition, a business plan for the RIF is in place and committments from key stakeholders underwriting their contributions and commitments to the RIF has been realized. A common vision and mission statement on the Regional Cooperative, the area or area-based cooperatives and Innovation Workplaces have been clearly articulated. Furthermore, processes and phases of implementation with the corresponding financial and governance models have also been documented.

The RIF is built on mutual interdependencies, commitments and relationships between different aspects of the knowledge innovation ecosystems across areas and stakeholders/partners. Developments continue in the *Stadland Groningen-Assen* region of the Northern Netherlands and more lessons will be learnt in this process. It is our journey to become *Engaged, moving towards a resilient region.*

Region to Region

Hanze has extended its ENGAGED ambitions through its Region to Region collaborations in a programmatic way. A whole section of the book has been dedicated to European initiatives of various projects and networks. Internationalization is not a new phenomenon to the University as it has a long history of partner Universities that offer student and staff mobility through bilateral agreements and the Erasmus programme. In addition, supporting businesses in internationalization and developing international networks for research and business programmes have been key focus areas of the Professorship International Business. In recent years, the inter-regional collaborations, particularly the cross-border activities with Northern Germany, have grown into shared development and innovation projects rooted in inter-municipality and inter-provincial agreements that involves the Groningen city and Province. The Ems Dollart Region (EDR) plays an important part in these developments. The Professor of International Business has a seat in the board of the EDR.

Another important development over the years has been Hanze's increased participation in European Inter-regional Programmes such as Interreg North Sea Region and Interreg Europe. The latter being focussed on policy learning and policy shaping activities. The Centre of Expertise Entrepreneurship, in particular, has seen a rapid increase in the number of European Inter-regional projects and therefore an increased interest, focus and expertise in connecting to regions with similar challenges and development issues. The moment has come to consolidate these isolated activities and knowledge into a strategic framework. A coordinating Dean of Internationalisation will oversee the development process of creating more coherent and synergistic internationalization activities in the near future. This allows knowledge, expertise and resources to be consolidated for greater impact.

One example of recent activities reflecting a shift from ad hoc and fragmented collaborations to become more systematic and sustainable is that of the establishment of the European Engaged Universities (EEU) Consortium that consists of a

strategic partnership of 6 universities. Originally an initiative within the Erasmus Knowledge Alliance Programme, the value of a sustained working relationship in a consortium soon paved the way to its inception outside of the funding programme. Some of the 6 universities were already important partners of Hanze but are now working together in a systematic and programmatic way to have sustained joint programmes and developments. Hanze has brought into the consortium partnership its own developments with the region. The consortium offers a new and more sustained connection between the 6 regions and their stakeholders supported by knowledge-driven innovations. This *region to region* development is in its infancy within the consortium partnership but an important first step is being taken to create a publication based on the current *Engaged, Towards a Resilient Region* edition. This reflects an impetus to expand *engagement* to explore and include inter-regional shared learning and collective developments. This journey will take shape in the coming years. This process allows such insights and innovations to be both grounded and embedded into practice as they emerge.

The EEU consortium provides a rich context for developing inter-regional strategies supporting knowledge development and learning amongst the engaged universities and their regions/ stakeholders who are working on similar challenges. The *region to region* strategy will include development and co-design of various projects that will feed into a pipeline of projects to be funded, organized and realized. The primary impetus to develop a continuous stream of projects and funding is to boost innovations for social, ecological, economic value creation and new business developments through region to region collaborations. The collective approach will enable deeper insights and innovations that can be tested and validated in different settings and through engaged investigations, which are grounded and embedded into practice as they emerge.

The *region to region* strategy at Hanze is a vital next step towards building an innovation ecosystem of learning and sharing across regional borders.

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GLOSSARY

In this glossary, a number of terms from the preceding chapters have been defined so that it is clear with what sense they are used in the book. Where possible, sources have been indicated. Usually, the definitions are the result of a compilation of several sources supplemented with insights from personal research.

Bottom-up/top-down

Strategies by which policies, changes or innovations are developed, introduced or implemented. In a top-down strategy, the intended process starts at the board, the executive board or the (leading) management. That is also where the decisions are made.

In a bottom-up strategy, the ideas, opinions and wishes of the people concerned (shop floor, residents or other affected parties) are first inventoried and structured and these provide the input for a plan or development.

Cluster

See ➜ Economic cluster

Cluster Emergence Model (CEM)

A model that expresses the relationship between three factors: conditions (can the cluster adequately respond to developments outside the cluster), dynamics (can the cluster connect to developments elsewhere), and transformation (do interactions in the cluster lead to new patterns and innovations in the system), (Manickam, 2018).

Collaborative Economy

Collaborative economy, also known as the sharing economy. In this economy, consumers share products instead of purchasing them themselves.

Collective sense-making

Trying to understand, in interaction with others (stakeholders), what is happening around a complex challenge that one is facing. In this way, in dialogue, based on different insights, a shared view can be developed about what is going on and a perspective can emerge for a new approach in the region (Van Berkel & Manickam, 2019).

Commons

In the Middle Ages, farmers could graze their cows on common pastures around their villages, hence the name 'The Commons'. Today, the term is also used for the common use of all kinds of resources or tools that everyone within a group or community may use. The Commons is about right of use and not necessarily right of ownership. Compare, for example, Wikimedia Commons.

Cooperative (as a business model)

A cooperative is an association with a business. The cooperative consists of members. The highest power lies with the General Meeting of Members. This meeting appoints the board, which usually also consists of members. The cooperative's profits are distributed on the basis of agreements made by the members.

A cooperative is a member-owned business. The members decide democratically at their annual general assembly. This meeting appoints the board, which usually also consists of members. The cooperative's profits are distributed on the basis of agreements made by the members.

Digital platform cooperatives

A digital platform designed to provide and sell products and services. Those who participate in it collectively own and jointly run it.

Doughnut Economics/ Doughnut Economy.

Economic model by Kate Raworth (2017), through which she advocates for a regenerative, circular economy, in order to stop the depletion of the earth and give the earth's self-healing capacity a chance. She also advocates a distributive, social economy that provides basic human needs such as water, food and (green) energy. The doughnut refers to the shape of the accompanying diagram. It captures the space between the ecological ceiling (outside boundary) and the social minimum (inside boundary).

Economic cluster

Companies, governments, research centres and educational institutions working together in a particular field in a region, thereby making the region more competitive than others within a particular sector.

Ecosystem

An ecosystem is a community (physically or conceptually bounded) in which different stakeholders interact with each other and with other systems to form an environment in which problems can be identified and solutions can be devised

See also ➜ Regional knowledge or innovation ecosystem

Engaged Region

Strategy of strengthening a region by building a regional ecosystem that aims to enhance:

- Prosperity, well-being and social cohesion;
- Resilience, adaptability and innovativeness;
- A sustainable, circular and inclusive economy.

To this end, a structural learning and collaboration network is formed by stakeholders who take responsibility in a cooperative context (*Gebiedscoöperatie* and *Regiocoöperatie*) to identify and address regional challenges.

Engaged University

The 'engaged university' is a concept that describes how education and research in HEIs can provide an answer to questions in the region. The regional focus has been reinforced by the EU regional policy and the focus on the Regional Research and Innovation Strategies (RIS3). The engaged university is seen as a university with a developing role, focussing on all relevant regional stakeholders, conducting its activities mainly through case studies and merging its university missions with other policies in the region (Uyarra, E., 2010, Conceptualizing the Regional Roles of Universities).

Gebiedscoöperatie & Regiocoöperatie (Place-based Cooperative & Regional cooperative)

A *place-based* cooperative is a cooperative enterprise within an area. It has members from different sectors within the quadruple helix. These members not only aim to strengthen their position in the market together, they also want to strengthen the area in which they live and work together.

Members of a *Place-based* Cooperative decide on a long-term collaboration in a formal framework. Together they have drawn up a spearhead programme by means of a place-related agenda that is concrete and describes the agreed cooperation. They strive for a responsible collaboration between entrepreneurs, knowledge institutions, citizens and governments. By means of a collective approach they foster area development and employment and increase the resilience in their area.

A regional cooperative is a legal entity that functions at the regional level as a booster and manager of the innovation ecosystem of this region. It has three main goals: innovation, business activity and service provision. Members of the Regional Cooperative are place-based cooperatives in the area of operation of the Regional Cooperative, system partners such as province and municipalities, regional knowledge and educational institutions - Vocational Education and Training, academic and applied sciences universities - and business associations and representations. Funding is achieved through member contributions, structural contributions from system partners and contributions from innovation funds.

Governance

The term "governance" can be defined in various ways. It usually refers to the way in which an organization is governed, including an implicit or explicit code of conduct, and oversight of governance and behaviour. In this publication, the term governance is used to refer to the way decisions are made and conflicts are resolved. It refers to "the processes of interaction and decision-making among the actors involved in a collective problem that leads to the creation, reinforcement, or reproduction of social norms and institutions." (Hufty, M., 2011), Investigating policy processes: The Governance Analytical Framework).

Inclusive Economy

An inclusive economy takes into account good working conditions, reduction of polluting emissions and other forms of social responsibility. It also sees a link between economic and social progress that can also be profitable for companies themselves.

Innovation

Literally, innovation is a merger of 'in' and 'novare', meaning 'to introduce something new'. A compilation of the many existing definitions leads to the following working definition:

Innovation is a way of thinking and working that leads to incremental or disruptive renewal of products, services, processes, concepts, organizational forms, systems or policies. In other words: Innovation means successfully translating a new idea into commercial and/or social value. To do this you continuously look at whether, and if so, how something can be improved. Existing patterns, structures and systems are improved or replaced by entirely new concepts.

This definition also includes the concept of 'social innovation': the smarter, more flexible and dynamic organization of cooperation between people and the way they can best use their qualities. The definition used also includes the concept of 'system innovation': a series of coherent innovations that solve persistent and complex problems (persistent and complex because they have multiple causes and consequences and are stuck in traditionally grown social structures). System innovation always involves problems that you cannot solve on your own and is therefore only possible through the cooperation of many actors from different sectors and disciplines.

Innovation ecosystem

See ➜ Regional knowledge or innovation ecosystem

Innovation Workplace

An Innovation Workplace is a learning community on campus or in the region where inquisitive and motivated students, inspiring teacher-researchers and regional partners meet, enhance each other's talents and knowledge and learn from each other. The aforementioned stakeholders work in co-creation on solutions to pressing regional practice issues put forward by the field.

Four types of Innovation Workplaces can be distinguished.

- Innovation Workplaces that are similar to a project: one central question, several sub questions, with a starting point and a clear end point when the question and any follow-up questions have been answered.
- Innovation Workplaces that are directly linked to one particular theme and one particular Professorship (such as the Health Hub Roden or the Digital Society Hub)
- Innovation Workplaces that are linked to a location, such as a city district with specific themes.
- Innovation Workplaces in Groningen regions such as the Westerkwartier, Zuid- and Oost-Groningen, the Eemsdelta or the Hogeland. These Innovation Workplaces form the Innovation Workplace Powerful Region and focus on all the themes on the agenda of these regions. They not only play a role in answering questions, but also support these regions in drawing up their regional agendas and development programmes.

Knowledge ecosystem

See ➜ Regional knowledge or innovation ecosystem

Short Chain

See ➜ Regional chain

Lifelong Learning

Lifelong Learning (LLL) refers to conscious intentional education throughout life. Equal importance is attached to formal, informal and non-formal learning. Learning is not limited to a single, specific phase in life at school, but also happens in different contexts, over the course of a lifetime. The Dutch Knowledge Centre for Lifelong learning suggests, the following interpretation: Lifelong Learning is the (pro)active development of qualities throughout life, based on one's own interests and values, for a sustainable contribution to society, one's own health and happiness (Foorthuis, Grit & Lutz, (n.d.), SPIRIT, A Shared Process in Regional Innovation and Transition).

SME

The category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million. https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32003H0361&from=EN

Paradigm

Deeply held ideas shared by many people in a particular time period and cultural context about how the world works" (Hutchin, 2012)

Quadruple helix

See ➜ Triple helix

Quintuple helix

See ➜ Triple helix

Regional cooperative/Regiocoöperatie

See ➜ Gebiedscoöperatie

Regional knowledge or innovation ecosystem

A regional knowledge or innovation ecosystem is a community of different stakeholders within a given region that, interacting together with each other and other systems, forms an environment in which problems can thrive and solutions can be devised (van Berkel & Manickam, 2019). It is thus an environment or infrastructure that enables entrepreneurs, researchers, education, policy makers and implementers to find each other quickly to generate, exchange, and make available information, expertise, knowledge, and funding needed to innovate. This structure facilitates real life meeting and exchange but also virtual collaboration with fast communication tools and places for sharing ideas, projects and programs. On that basis, a knowledge ecosystem functions as a real-life network and as a digital platform.

Regional chain

According to the definition of the European Agricultural Fund for Rural Development, it is "a supply chain involving a limited number of operators who are committed to cooperation, local economic development and close geographical and social relationships between producers, processors and consumers. In other words, a food chain in which between producer and consumer as few parties as possible can be found such as processors, trading houses and middlemen. And that is fundamentally different from the networks that the major wholesalers and large supermarket groups deploy to supply the population with food. Those networks span the globe (Foorthuis, Lutz & Groeneveld, 2019, Monitor 2019, The Regional Food Chain).

RIS3

Research and Innovation Strategy for Smart Specialisation. A European policy strategy that aims to have regions discover their own competitive strength through a bottom-up approach that takes into account their own history and local context. The emphasis is on R&D and innovation from collaborating parties: companies from different sectors, governments, universities and research centres and residents from the area.

Smart Specialization

See ➜ RIS3

Stadland Groningen-Assen

With this term we indicate the working area of the Regiocoöperatie. It concerns the region with the following perimeter: in the south to the city of Assen and the rural area around it, in the north to the Wadden coast, in the west to Drachten and in the east to the German border (see also the map elsewhere in this book).

System innovation

See ➜ Innovation

System levels

Individuals, cities and towns, regions, countries, Europe and the whole world are different system levels. Developments at one system level often lead to reactions at other system levels.

Tame problems

Manageable problems; easy to define and break down into manageable chunks and solve where experts can be brought in when specific knowledge is needed.

Top-down

See ➜ Bottom-up

Triple helix

The term 'triple helix' refers to the collaboration between the market, knowledge institutions and government. Because each party has its own approach and brings specific expertise and networks to the table, cooperation can generate a lot of extra value. For a region, cooperation between parties must lead to lasting development, so that the region can flourish economically, socially, ecologically and culturally.

In the 'quadruple helix' cooperation is enriched by the arrival of a fourth party. Some refer to "the citizen" as the fourth partner. However, we follow the definition of Carayannis (2009, 2012), who introduced the frameworks for the quadruple (and even quintuple) helix. In doing so, he makes it clear that innovation is only successful if it lands in society and is applied. With 'quadruple' he emphasizes 'civil society' as the party that leads the discourse on the innovation question or need. With 'quintuple' he refers to environmental and sustainability aspects that should never be compromised by innovation processes.

Wicked problems

Complex issues in which multiple problems are connected, at micro and macro levels. Regional cooperation can be very important in tackling such challenges.

LIST OF ABBREVIATIONS

DCO	Duurzaam Cooperatief Ondernemerschap (Professorship Sustainable Cooperative Entrepreneurship)
CEM	Cluster Emergence Model
CoE	Centre of Expertise
ERA	European Research Area
ERE	European Education Area
ERI	European Innovation Area
ICA	International Co-operative Alliance
Interreg	Interregional (European Collaborative Programmes supporting interregional developments)
IWP	Innovation Workplaces
LLO	Lifelong Learning
NCR	National Cooperative Council
OVO	Onderwijs, Voorlichting & Onderzoek (Education, Information provision & Research)
RAAK	Regional Action and Attention to Knowledge on circular economy (Dutch programme)
RIS	Regional Innovation Systems
RIS3	Research and Innovation Strategies for Smart Specialisation
SGD	Sustainable Development Goals (United Nations)
SNN	Samenwerkingsverband Noord-Nederland (Northern Netherlands Alliance)
RUG	Rijksuniversiteit Groningen (University of Groningen)
VET	Vocational Education and Training (Institutes)

The authors would like to thank the following persons

Klaske Assink
Diederich Bakker
Hans Bergsma
Anja Bos
Margriet Brouwer
Joke Bruining
Menno Connor
Nick Degens
Egbert Dommerholt
Rudolf Doornkamp
Geja Duiker
Gerda Elema
Michèle Garnier
Karen Geerts
Dzifa Gomashie
Jacqueline Gomashie
Alexander Grit
Maarten Groeneveld
Albert Haan
Rutger van Hamersvelt
Lauriane Jambu
Saul de Jongh
Liesbeth Jorritsma
Roland Klarenbeek
Marcel Koenis
Marcel van der Kooi
Harm van Lieshout
Guillaume Maat
Dorothea van der Meulen
Lies Oldenhof
Karien Oomkes
Louisa Penton
Jeroen Pronk
Liese de Roo
Annabelle van der Scheer
Hester Slager-Nieuwsma
Kim Stobbe
Hugo Velthuijsen
Jose Eggink
Luciën Wink

Photographers: Maud Duijn,
Miran Abraham, Stijn Doors &
Luuk Steerman

This publication was made possible by contributions and collaborations of the projects, organizations, networks and funding agencies listed:

Hanzehogeschool Groningen
University of Applied Sciences

unive

Rabobank

InnoHEIs
Interreg Europe
European Union
European Regional
Development Fund

TraCS3
Interreg Europe
European Union
European Regional
Development Fund

RIGHT
RIGHT SKILLS FOR THE RIGHT FUTURE
Interreg
North Sea Region
RIGHT
EUROPEAN UNION