

Regional impact

University of Groningen/Campus Fryslân



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1 INTRODUCTION AND READER'S GUIDE

Motivation and aim

The focus of this report is a study into the regional impact of the University of Groningen/Campus Fryslân's (UG/CF) research work and other activities. UG/CF was launched in 2016. It comprises the Global Responsibility & Leadership Bachelor's programme and various Master's programmes. The scientific research carried out within UG/CF takes place within its various chairs and research centres - known as the 'Frisian Flagships'.

Coordination of UG/CF research		
Frisian Flagships	Chairs (professorship)	Research Centres
<ul style="list-style-type: none">• Governance• Sustainable Economy• Culture, Language & Technology• Health & Food	<ul style="list-style-type: none">• Global and Local Governance• Governance and Innovation• Sustainable Entrepreneurship in a Circular Economy	<ul style="list-style-type: none">• Data Research Centre (DRC)• Centre for Sustainable Entrepreneurship (CSE)• Centre for Internationalisation of Education (in association with NHL Stenden University of Applied Sciences)• Research Institute (research staff)• Graduate School (PhD projects, PhD students)

The Province of Fryslân and the Municipality of Leeuwarden are funding the development of UG/CF. One general long-term objective cited in connection with the decision (in 2015) concerning UG/CF was to strengthen an academic climate (sustainable academic climate) within the province. In addition to the objectives regarding degree programmes, this involves enhancing the economic value of university education, and of higher education in general, in Friesland.¹ This development of the province's academic climate is aimed at boosting economic structural enhancements, as well as Friesland's capacity for innovation.

The Province of Fryslân and the Municipality of Leeuwarden require clarification about the current situation regarding UG/CF's structure and regional impact.² This exploration of regional impact involves an analysis of the impacts of the UG/CF research work and other activities in the first few years of its existence, and of its potential over the upcoming years.³ This concerns the fruits and the impacts of the staff's research efforts, and those of students and PhD students (in Living Lab projects and final-year projects), as well as public events (such as Open Days, symposia, Studium Generale, and activities aimed at strengthening the academic climate). Thus, it concerns the significance of UG/CF's research work and other activities in terms of achieving the region's social and economic aspirations.⁴

In a broad sense, the impacts of the research activities also concern impacts on the business climate and on strengthening the smooth running of the economy (including

¹ The aim is to enhance the '*wearde fan it heger and akademysk ûnderwiis yn ús provinsje út ekonomysk perspektyf wei*' (the economic value of university education, and of higher education in general, in Friesland; Provincial Council proposal of 16 December 2015, p. 2).

² This concerns a study designed to provide input for the mid-term review halfway through the funding period (2016-2022).

³ The study will not explore the situation regarding the study programme and student numbers.

⁴ Here, the term 'region' always refers to Friesland in general and to the Municipality of Leeuwarden in particular.

that of the regional economy). In this context, the provincial and municipal authorities also require clarification concerning the extent to which research themes and research activities are in line with the strategic regional course that has been instigated. This concerns aspects such as the commitment to specific regional priority areas.

Research approach

In this study, the impact of research work and other activities has been assessed on the basis of factors such as the goals and principles identified using policy-based frameworks. UG/CF's economic goals do not exist in isolation. They are part of the framework of the Fryslân Knowledge Agenda and the Fryslân Higher Education Agreement (HOAF).⁵ In this framework, the investment in bodies such as Wetsus (the European centre of excellence for sustainable water technology), Dairy Campus, Fryske Akademy, Wadden Academy and the Drachten Innovation Cluster are also helping to strengthen the academic climate.

In addition to the general policy frameworks, the presence of UG/CF is also expected to trigger a number of more tangible economic impacts:⁶

- a stronger image of Leeuwarden as a national (and international) City of Knowledge and Education
- more innovation by the business community and more start-ups
- more highly educated individuals in the workforce
- extra direct spending⁷

In a broad sense, the impacts of research activities concern strengthening the smooth running of the economy (including the regional economy). From an economics (or welfare economics) perspective, this would concern the increasing importance of the supply of highly educated individuals in a regional labour market and of good living conditions and quality of life. Strengthening the smooth running of the economy (including that of the regional economy) also includes an efficiently operating labour market (with sufficient numbers of highly educated personnel).⁸ Moreover, strengthening the smooth running of the economy (including that of the regional economy) also includes strengthening the economic structure by means of a greater focus on internationally oriented sectors and on promising priority areas of the regional economy. The dissemination of knowledge (knowledge circulation) and innovation are also important.

This approach has been used to identify specific indicators, which have been included in the study.⁹ In summary, this involves an understanding of:

- the contribution (via networks and collaborative ventures) to strengthening knowledge circulation and the Frisian knowledge infrastructure (which spans all regional knowledge institutes and partnerships in the areas of teaching and research)
- ties with regional and social themes, and to the regional strategic agenda

⁵ Fryslân Higher Education Agreement. Towards an innovative and learning region. 2016. Province of Fryslân (2016), Fryslân Knowledge Agenda 2015-2025, and Province of Fryslân (2019), Updated Fryslân Knowledge Agenda 2019-2025. Leeuwarden.

⁶ Provincial Council proposal of 16 December 2015, p. 8.

⁷ This study was not designed to explore the impacts of spending. This is expected to involve spending by students and staff amounting to €12.5 million per year, assuming that student numbers hit the target of 1,000 per year in around 2023 (Province of Fryslân (2015), FAQ: 25 Most frequently asked questions about University of Groningen/Campus Fryslân, Leeuwarden, Question 8, p. 3).

⁸ These elements are listed in the Fryslân Knowledge Agenda.

⁹ See Appendix I.

- strengthening the business climate, the economic structure and the labour market, as well as the academic climate and the ‘student city’ image

The study will not explore the situation regarding the study programmes and student numbers.

Research questions

The study’s aim is to paint a picture of the contribution to the knowledge infrastructure and of the added value of participating in networks and activities. It also concerns the dissemination of the results obtained from scientific research, in the form of knowledge circulation. The study’s key question is:

To what extent has the further development of UG/CF - at the halfway point of the funding period - helped to achieve the strategic goals that were set when it was launched, especially in terms of strengthening regional knowledge infrastructure?

Research questions

- 1) How has UG/CF developed, in the sense of its participation in – and contribution to – the regional knowledge infrastructure (networks and collaborative projects) and the dissemination of knowledge?
- 2) How, and to what extent, do UG/CF’s research activities and selected research themes (Frisian Flagships) tie in with the regional strategy, in:
 - a) the *Kennisagenda Fryslân* (Knowledge agenda Friesland);
 - b) innovation policy (as carried out in the *Innovatieplatform* – Innovation platform – , *Innovatiecluster Drachten* – Innovation cluster Drachten – and the *campussenbeleid Leeuwarden* – campus policy Municipality of Leeuwarden
 - c) other strategic policy.
- 3) How, and to what extent, do UG/CF’s research activities and chosen research themes (Frisian Flagships) tie in with the region’s economic and social developments (both desired and actual)?
- 4) How, and to what extent, has UG/CF’s development helped:
 - a) strengthen the regional economic structure?
 - b) strengthen the regional knowledge infrastructure and knowledge circulation?
 - c) the smooth running of the regional labour market?
 - d) strengthen the business climate, the academic climate and living climate?
 - e) strengthen knowledge (and knowledge networks) with regard to social themes in the areas of governance, the social domain and sustainability?
- 5) What is the potential for the upcoming years, and which factors will prompt or hinder the development of the regional knowledge infrastructure (networks and collaborative projects) and the dissemination of knowledge?

The study’s approach

The operationalization of indicators

In an initial phase of the study, the indicators of the fruits and impact of the research work and other activities were further operationalized.¹⁰ In addition, and where

¹⁰ See explanatory note in Appendix I.

possible, attempts have been made to tie in with objectively measurable indicators that are in line with what is known (based on a broad economics - or welfare economics - perspective) about the factors that enhance the smooth running of an economy (or regional economy).

Document analysis

The study consisted of document analyses and interviews. Document analysis involved an inventory and analysis based on annual reports, progress reports and other relevant documents.

Interviews

The interviews involved taking an inventory of UG/CF's contribution, both factually and in terms of the opinions of those involved. The seventeen individuals interviewed were employees of external parties, such as businesses and institutions that are, in some way, involved in UG/CF's research work and other activities.¹¹ This group was selected because it is best able to provide detailed information about the way in which the research work and other activities have been developed and carried out. A deliberate effort was made to select interviewees from a range of sectors and backgrounds, and to achieve a reasonable representation of private as well as public (and semi-public) organizations. The interviews gathered qualitative information that, wherever possible, ties in with the objectively measurable indicators drawn up for this study. In this way, information gleaned from the interviews was rendered as objective as possible. Some of the questions used in these interviews were open, while others were semi-structured.

In addition to external parties, a number of UG/CF staff were interviewed. These interviews were mainly designed to gather factual information about the structure of UG/CF. They also served to weigh the results of the interviews with external parties.

Study period

The study period was from 2016 to early 2020. Given that UG/CF has only been in existence for a relatively short period of time, its regional impact - in terms of economic and social goals - will not always be tangible (measurable).

University Campus Roosevelt (Middelburg) benchmark

For the purposes of comparison, the study explored the development of University Campus Roosevelt and the current state of affairs there. In 2004, this institution established a substantially comparable Bachelor's degree programme. Zeeland and Middelburg are, to a certain extent, very comparable to Friesland and Leeuwarden, respectively. These similarities include a location at the periphery of the Netherlands, a largely traditional economic structure, and the absence (until recently) of a university campus.

Reader's guide

In the following chapters the contribution to the Frisian knowledge infrastructure (Chapter 2), the connection with regional and social themes (Chapter 3) and the economic goals in terms of enhancement of the business climate, the economic structure and the academic climate (Chapter 4) are shown. In each chapter the findings are given on the basis of desk research and the interviews. In the text notations are given on which findings are on the basis of desk research and which ones are on the basis of the interviews. Chapter 5 regards the case of the University College Roosevelt and presents a comparison with the development of UG/CF. Chapter 6 contains the conclusions and recommendations.

In the appendices detailed information is given on the (choice of) indicators and the interviewees.

¹¹ See the appendices for a list of the interviewees.

2 CONTRIBUTION TO FRISIAN KNOWLEDGE INFRASTRUCTURE

2.1 Development of networks and collaborative projects

In this study, the Frisian knowledge infrastructure is considered to span all regional knowledge institutes and partnerships in the areas of teaching and research. Within this spectrum of parties, the regional focus concerns collaborative ventures between knowledge institutions, knowledge institutes and businesses.¹² This study identified UG/CF's contribution to the knowledge infrastructure by exploring the number and nature of networks and collaborative projects in which it is involved.

Number of networks/collaborative projects

Table 2.1 lists the networks and collaborative projects in which UG/CF is involved. The table shows that UG/CF participates in a large number of networks and collaborative projects spanning a broad spectrum of topics. Thus, its collaborative ventures are spread far and wide throughout the region.

The three chairs and the four Frisian Flagships have initiated a range of collaborative projects and partnerships in the area of research. This cooperation also extends to a number of other areas, such as Leeuwarden Student City and the Secondary-Higher Education (VO-HO) Alignment Network. Much of its involvement in networks/collaborative projects dates from 2017 or later, following UG/CF's initial start-up phase.

In principle, UG/CF engages in collaborative ventures with all knowledge partners in the region, ranging from universities of applied sciences to Tresoar and the Fryske Akademy. The collaborative ventures with universities of applied sciences are mainly in the areas of governance and cyber safety (Thorbecke Academy), language (Fryske Akademy) and nutrition (Van Hall Larenstein University of Applied Sciences). Contacts with the universities of applied sciences in the area of Sustainable Economy are still in the developmental phase. There are formal contacts with the Circular Plastics research group at NHL Stenden University of Applied Sciences, as well as various collaborative ventures with this institution's teaching staff.¹³ Collaborative ventures with other educational institutions include various activities for school pupils and students.¹⁴

¹² Fryslân Knowledge Agenda 2019-2025, p. 25.

¹³ One of the lecturers is on the staff of both UG/CF and the NHL Stenden University of Applied Sciences. Also, a lecturer at the latter institution is writing a dissertation under the joint supervision of professors at UG/CF and NHL Stenden. One of the lecturers is also a member of the teaching staff at the Hanze University of Applied Sciences Groningen.

¹⁴ Collaborative with other educational institutions:

- Master's track Tourism Geography and Planning School NHL Stenden University of Applied Sciences
- Master's track in Governance and Law in Digital Society, in collaboration with the NHL Stenden University of Applied Sciences
- Master's programme in Sustainable Entrepreneurship, developed by the Centre for Sustainable Entrepreneurship in collaboration with various regional partners
- Potential Master's in Climate Adaptation Governance, in collaboration with the Global Centre on Adaptation
- Master's track in Multilingualism, in collaboration with the NHL Stenden University of Applied Sciences
- The Multilingual Practices: Tackling Challenges and Creating Opportunities MOOC, in collaboration with the University of Groningen's Minorities & Multilingualism programme, and the Fryske Akademy
- The first year of the University of Groningen's Law programme is also offered at Leeuwarden

Table 2.1: Collaborative ventures involving networks, research projects and other activities

Activity	Description	Development/current situation	From	Collaborative ventures with ...
Global and Local Governance	Global and Local Governance is one of the chairs that make up the Frisian Flagship of Governance. This chair covers political science and public administration issues related to areas such as regional policy and governance, regional identity, and the legitimacy of governance and politics. It has a regional (comparative) focus, with the Frisian region as the 'basis'. However, it also focuses on the relationships between regions and national governments, in the Netherlands and elsewhere.	PhD projects and other research projects are carried out under the purview of the chair of Global and Local Governance. There are collaborative ventures with the NHL Stenden University of Applied Sciences (in particular, the Thorbecke Academy). One collaborative venture with the Thorbecke Academy involves the <i>Noordelijke Academie voor Openbaar Bestuur</i> (Northern Academy for Public Administration). The chair is involved in the Blue Delta Initiative. The chair is regularly approached by public organizations in Friesland, with questions about governance and politics. This leads to advice, research, lectures, webinars and degree programmes (learning pathway) for parties in Friesland and elsewhere. Other activities include helping to set up a Master's degree programme in Jordan (through the UNDP) and exchanges with a university in New Zealand. The chair contributes to the regional and national debate about regional differences in the Netherlands.	2017	<ul style="list-style-type: none"> - Municipalities of Súdwest-Fryslân, Heerenveen, Waadhoeke, Leeuwarden - Province of Fryslân - FUMO (the Frisian Environment Implementation Service) - Wetterskip Fryslân (Water Board) - Wadden Fund - Frisian Social and Cultural Planning Office - NHL Stenden University of Applied Sciences/Noordelijke Academie voor Openbaar Bestuur (Northern Academy for Public Administration) - Political youth organizations of Friesland - Waterschap Zuiderzeeland (Water Board) - The Province of Zeeland - Other national partners* - United Nations Development Program (UNDP) - Ministry of Finance Finland - IPAC (Canada) - Universities outside the Netherlands**
Governance and Innovation Data Research Centre (DRC)	Governance and Innovation is one of the chairs that make up the Frisian Flagship of Governance. The chair's focus is the impact of digitization on society. This involves an interdisciplinary approach based on expertise in IT, data science, ethics and law. The Data Research Centre's focus is data science research at the interface of society and technology. These are cross-sectoral themes in the area of the digital society. They include security, crime, human rights, tourism, climate change and biodiversity.	PhD projects and other research projects are carried out under the purview of the chair of Governance and Innovation. Meetings are held in collaboration with partners from home and abroad. Within the framework of an international Horizon 2020 consortium, work is in progress on the Cutting Crime Impact project. One collaborative venture – with Osaka University – addresses the theme of climate change and digital campaigning. Others involve various national and international partners in the area of human rights and digitization. The Life IP project involves collaborative ventures with regional, national and international partners in the area of nature and biodiversity. At the request of the Municipality of Leeuwarden and the Province of Fryslân, the plans for a data lab in Friesland have been specified in detail. In 2019, this led to DataFryslân, which is housed in the university building.*** The Dean of Faculty of UG/CF is a member of the steering committee. A project for school pupils (at senior general secondary education level and secondary vocational education level) was carried out in collaboration with the Municipality of Tytsjerksteradiel.	2017	<ul style="list-style-type: none"> - DataFryslân (Province of Fryslân, the municipalities of Smallerland, Leeuwarden and Súdwest-Fryslân, the Frisian Social and Cultural Planning Office, Wetterskip Fryslân (Frisian Water Board), NHL Stenden University of Applied Sciences)*** - Municipality of Tytsjerksteradiel - Cyber Safety Research Group (NHL Stenden University of Applied Sciences) - Veiligheidsregio Fryslân (Frisian Security region) - Partners in Minor Data Wise (Philips Drachten, DataFryslân) - The Hague Humanity Lab - Osaka University - National and international partners in the Cutting Crime project****

* National Programme Regional Energy Strategies, the Directorate-General for Public Works and Water Management, Ministries (Agriculture, Nature and Fisheries/Interior and Kingdom Relations), Democracy in Action Programme, ICTU (IT), Social and Cultural Planning Office, Montesquieu Institute, The Young Academy, Council for Public Administration, Academy for Legislation, Dutch School for Public Administration, The Hague Academy for Local Governance, Berenschot, Association of Universities in the Netherlands, Blue Delta Initiative, Association of Councillors, the Aldermen Association, Dutch Water Authorities, Association of Mayors, Association of Netherlands Municipalities, Association of Municipal Secretaries, Association for Public Administration, Right to Challenge Foundation.

** Massey University (NZ), Ghent University, KU Leuven, University of Limerick, Uppsala University, Simon Fraser University, University of Newcastle, Stockholm School of Economics, University of Manchester.

*** DataFryslân is a collaborative venture between the government and knowledge institutions. Its aim is to boost data-driven research in the region.

**** University of Salford Manchester, DSP-groep, University of Groningen, Police, Greater Manchester Police, Estonian Police and Border Guard Board, Landeskriminalamt Niedersachsen, Policia Municipal Lisboa, Generalitat Catalunya, DPT-Institute for Applied Prevention Research, European Forum for Urban Security, LOBA.

(continued) Activity	Description	Development/current situation	From	Collaborative ventures with ...
Sustainable Economy Centre for Sustainable Entrepreneurship (CSE)	Sustainable Economy is the chair that shares its name with the Frisian Flagship to which it belongs. It is housed within the Centre for Sustainable Entrepreneurship. The Centre for Sustainable Entrepreneurship's goal is to increase scientific knowledge about sustainable entrepreneurship. At the Centre for Sustainable Entrepreneurship, it's all about teaching and research area of valorization and entrepreneurship in aid of the circular economy. The topics are: sustainable business models and innovation, social entrepreneurship, systems change and circular business models, cultural heritage, interdisciplinary environmental behaviour, social psychology, and sustainable teaching and leadership.	PhD projects and other research projects are carried out under the purview of the chair of Sustainable Entrepreneurship in a Circular Economy. The Centre for Sustainable Entrepreneurship is a co-founder of – and participant in – the Circular Friesland Association. A project has been launched, together with Wageningen University & Research (WUR) (partly funded by the Netherlands Organisation for Scientific Research), which involves research into circular agriculture in the northern region of the Netherlands. A collaborative venture with the Global Centre on Adaptation is exploring the theme of Climate Adaptation Governance. There are regular lectures by guest speakers, and supervision is provided for external PhD projects. The Circular Minds Conference was held in 2019. The Centre for Sustainable Entrepreneurship stages the Circular Eleven Cities Tour in cooperation with businesses/government bodies. From 2019 onwards, as part of the extension school, sustainable entrepreneurship workshops are being held for entrepreneurs and managers. Furthermore, in 2019, in connection with efforts to encourage entrepreneurship, the Start-up Academy was launched in collaboration with the Fryslân Innovation Pact (IPF) and Strong Frisian Entrepreneurship (SFO). The Start-up Academy provides guidance to students who want to start a business. The students develop sustainable business cases. For the purposes of these student's final assignments, contacts have been established with businesses in the region.	2016	<ul style="list-style-type: none"> - Municipalities of Leeuwarden, Ameland, Súdwest-Fryslân, Smallingerland, Waadhoeke - Province of Fryslân - Elkien housing association - Dutch Centre for Intangible Cultural Heritage - Strong Frisian Entrepreneurship (SFO)/Fryslân Innovation Pact - Incubator - Engagement Board* - Circular Plastics (NHL Stenden University of Applied Sciences) - Van Hall Larenstein University of Applied Sciences - Friesland College (an expertise platform with a research component) - Wadden Sea World Heritage Site - Wadden Academy - Global Centre on Adaptation - House of Design (Groningen) - Stichting Beheer Diaconale Goederen (Diaconal Goods Management Foundation) - Sense of Place - Holwerd aan Zee - Havank Neighbourhood Association Leeuwarden - Veenhuizen Museum - Frederiksoord Museum - National partners** - More than 50 regional businesses***
Culture, Language & Technology	Culture, Language & Technology is one of UG/CF's Frisian Flagships. This flagship concerns issues related to the Frisian language, history and culture. It also involves technological developments (such as voice technology) in relation to language, history and culture.	PhD projects and other research projects are carried out under the purview of the Flagship. One collaborative venture led to the COLING conference that took place in Leeuwarden. Various collaborative ventures led to the development of the Multilingual Practices: Tackling Challenges and Creating Opportunities MOOC. There is also the Center for Cultural and Linguistic Continuity, which engages in collaborative ventures with international partners. In partnership with the Fryske Akademy, the Multilingualism Laboratory Network (MLN) is being established. The goal is to create an academic community of multilingualism research experts in the northern region of the Netherlands, with a focus on the Frisian case (one of the legacies of Leeuwarden-Friesland 2018). There are collaborative ventures, in the shape of international research projects, such as the Horizon2020 COLING project.	2017	<ul style="list-style-type: none"> - NHL Stenden University of Applied Sciences - Fryske Akademy - University Medical Center Groningen (UMCG) - Hanze University of Applied Sciences Groningen - Faculty of Arts of the University of Groningen - Antea - Leiden University - Eindhoven University of Technology - Vrije Universiteit Amsterdam - KU Leuven - RWTH Aachen University - University of Trento - Osnabrück University of Applied Sciences

* De Pleats Burgum, Omrin, Elkien, Ecostyle, Vebego (care), SKSG (childcare), Circular Friesland Association, De Hoven (housing and home care), University of Groningen/Science and Engineering.

** Wageningen University & Research (WUR), Hanze University of Applied Sciences Groningen, Biobased Groningen Knowledge Centre, Noorden Duurzaam (association for sustainable development in the North of the Netherlands), Ministry of Agriculture, Nature and Food Quality.

*** Alde Feanen - Rental and Mediation, Brainfuel, B&B De Warren in Suwald, B&B Stateheide in NoardBurgum, B&B Welgelegen in Workum, Experience Lauwersoog & Waddenpaviljoen De Noorman, De Diek'n Farm, Dijkstra Draisma construction group, Caparis, De Boegschroef, Dijkhuis, Frisian Design Factory, DMT Environmental Technology, Dzyzzion, Ecostyle, Ekwadmaat and Entropometrics Groningen, Evonik Industries, Flang in de Pan, FMO.GEEF, Hawar Institute of Textiles, Herbergh de Parel in Eastermar (restaurant and hotel), Hotel Jans in Rijs, Hotel Wymerts in Workum, Hotel Zeezicht in Harlingen, ING Leeuwarden, Royal Koopmans, Iron Roots, IT Erfskip Leeuwarden, Klein Vaarwater, NICE (Drenthe), Nivo Noord, Omrin, Pension Op 'e Koai in Jirnsum, Philips, Unilever, Plastic Energy Provind (Zwolle), Puur Terschelling, Rabobank, Restaurant 't KoaikersHuus, Royal HaskoningDHV, Rudbecks Ost & Deli, Santanera, Strandskaden, Terschelling Circular Design, Texperium, Thermomix, Triodos Bank, Vanhulley / Mud Jeans, Wadden Sea Travel, Mudflat walking Pieterburen, Wild at Art Design.

(continued) Activity	Description	Development/current situation	From	Collaborative ventures with ...
				<ul style="list-style-type: none"> - Polish Academy of Sciences - National and international partners in the COLING project*
Health & Food	Health & Food is one of UG/CF's Frisian Flagships. It concerns prevention (including disease prevention) and care (including medical care), based on nutrition (and innovations in this field), as well as helping to facilitate healthy aging. In the Frisian context, this concerns aspects such as innovation in dairy products that promote good health.	PhD projects and other research projects are carried out under the purview of the Flagship. In recent years, collaborative ventures with the parties involved in this research effort have been extended. A Summer Symposium on Health & Food was held in 2017. A Master's degree programme is currently being developed.	2017	<ul style="list-style-type: none"> - Medical Centre Leeuwarden (MCL)/MCL Academy - University Medical Center Groningen - The Northern Netherlands Obesity Centre - Van Hall Larenstein University of Applied Sciences (research groups) - Food Application Centre for Technology (FACT) - Northern Netherlands Healthy Ageing Network (HANNN) - Aletta Jacobs School of Public Health (University of Groningen) - Limis
University College - Bachelor's degree programme in Global Responsibility & Leadership	Bachelor students are required to collaborate with external parties, in the context of various projects.	An initial round of Living Labs commenced in spring 2020. This involved approximately ten interdisciplinary projects, in which 2 nd -year students collaborated with various businesses and organizations in the region. (The second round is scheduled to take place in spring 2021) A Volunteer Fair was held in 2019. A project was carried out for the Waterschap Zuiderzeeland (Zuiderzeeland Water Board), which involved students from institutions of secondary vocational education and higher professional education.	2020	<ul style="list-style-type: none"> - Municipality of Leeuwarden - Wetterskip Fryslân (Frisian Water Board) - Waterschap Zuiderzeeland (Zuiderzeeland Water Board) - Global Centre on Adaptation - Elodea - It Erfskip & House of Design - Frisian Social and Cultural Planning Office - Friesland College - Amnesty International - Voluntary organizations in Leeuwarden/Friesland
Centre for Internationalisation of Education (CIE)	The Centre for Internationalisation of Education runs a PhD programme in the area of international diversity in education.	PhD projects are carried out. It is a collaborative venture between UG/CF and the NHL Stenden University of Applied Sciences.	2016	<ul style="list-style-type: none"> - NHL Stenden University of Applied Sciences/Centre for Internationalisation of Education
Fryslân Higher Education Agreement/Advisory Board	Network consultation of knowledge institutions in Friesland.	Since UG/CF was launched, the Advisory Board has consisted of the knowledge institutions involved in the Fryslân Higher Education Agreement (HOAF), the Municipality of Leeuwarden and the Province of Fryslân.	2016	<ul style="list-style-type: none"> - Partners in/signatories to the Fryslân Higher Education Agreement (HOAF) (regional parties, the University of Twente, and Wageningen University & Research [WUR])
Public events	From the very beginning, UG/CF has been actively involved in staging public events.	The public events staged by UG/CF (or staged jointly by UG/CF and other parties) include the Museum University, Studium Generale Leeuwarden, public awards (<i>Topwerkstukken</i> [Top Projects], LC Awards), lectures (including lunchtime lectures), Science Café, School Pupil Days, Children's University.	2016	<ul style="list-style-type: none"> - Tresoar - Fries Museum - The <i>Leeuwarder Courant</i> (newspaper) - Secondary schools and institutions of senior secondary vocational education - NHL Stenden University of Applied Sciences - Van Hall Larenstein University of Applied Sciences

* University of Warsaw, Adam Mickiewicz University in Poznan, Leiden University, Fryske Akademy, Latgolys Studentu Centrs, Gruppo di Azione Locale per lo Sviluppo dell'Area Greca Scarl, The Americas Research Network ARENET, Zacatecas Institute for Teaching and Research in Ethnology (IDIEZ), Smithsonian Institution, Yale University, University of North Carolina at Chapel Hill, University of Texas (Austin), UNAM.

(continued) Activity	Description	Development/current situation	From	Collaborative ventures with ...
Alignment network Secondary- Higher Education	Activities aimed at promoting the influx of school pupils into higher education.	Regular collaboration within the pre-existing Secondary Education/Higher Education Alignment Network.	2016	- Secondary schools and institutions of senior secondary vocational education - Van Hall Larenstein University of Applied Sciences - NHL Stenden University of Applied Sciences - University of Twente
Leeuwarden Student City campaign Collaboration regarding the study climate	Contribution to activities involving cooperation with the Leeuwarden Student City campaign.	UG/CF is involved in the activities staged by the Leeuwarden Student City campaign. It also holds events of its own to help promote an academic climate (study climate).	2016	- Tresoar - NHL Stenden University of Applied Sciences - Van Hall Larenstein University of Applied Sciences - Municipality of Leeuwarden - Leeuwarden Student City

Source: Policy Research Office and UG/CF documentation

UG/CF also participates in the Frisian Social and Cultural Planning Office's (FSP) Advisory Board.

There are also a number of cooperative ventures with public parties (such as local authorities, provincial authorities and the Veiligheidsregio [Security region]). UG/CF participates in the Fryslân Innovation Pact (IPF). It also founded - and participates in - the Circular Friesland Association (VCF), of which every local authority in Friesland is a member.

Contacts with regional businesses largely take place in the context of the research conducted by researchers and PhD students, and via undergraduate degree programme assignments and final-year projects in the area of Sustainable Economy. Collaborative ventures with businesses take the form of research projects,¹⁵ the Circular Eleven Cities Tour,¹⁶ and the staging of large-scale scientific conferences, for example.¹⁷ In the course of their final-year projects, students taking the Master's programme in Sustainable Entrepreneurship have extensive contact with businesses. In the 2018/2019 academic year, there were 16 such projects, and in the 2019-2020 academic year, there were 29. Sustainable Economy has launched a series of science lectures, which involve about 15 businesses each year. The Centre for Sustainable Entrepreneurship creates a formal context for contacts with businesses via bodies such as the Engagement Board, which can be seen as a key network for the CSE, in terms of contacts (a 'gateway') with the business community. The Engagement Board includes representatives of businesses that can be regarded as frontrunners in the area of sustainability, as well as the Circular Friesland Association (VCF), for example. In the area of Sustainable Economy, there are collaborative ventures with more than 50 regional businesses. In addition, UG/CF was one of the founders of the Circular Friesland Association.

Health & Food also maintains contacts with businesses, regarding research projects and innovation. Furthermore, students taking the Bachelor's in Global Responsibility &

¹⁵ This includes the joint research project with Elkien, the ProwadLink study that includes national and international businesses in the Wadden Sea area (forming a consortium of Dutch, German and Scandinavian researchers and policy officers), the joint research project with Wageningen University & Research (WUR) in the field of circular agriculture (with various sustainable Frisian agricultural businesses), and via the Circular Friesland Association.

¹⁶ The Circular Eleven Cities Tour has an average of 60-80 participants, and consistently includes eight sustainable businesses and frontrunners.

¹⁷ The New Business Models conference, which is staged by a member of the department's teaching staff, in which the researchers themselves highlight a special topic and facilitate the associated activities.

Leadership cooperate with external parties in the context of Living Lab projects (there were ten such projects in 2020).¹⁸

Due to the nature of the topics covered by *Governance* and by *Culture, Language & Technology*, there are fewer contacts with businesses in these areas.

In all areas of research, the collaborative ventures involve more than research alone. In addition to research, it also concerns the advice given to collaborative partners, courses, lectures and contributions to public debate. Governance, for example, involves requests from regional parties to ‘actively contribute ideas’ about strategic issues (or administrative issues). One example would be its involvement in the Environmental Vision pilot project, which was held in the municipality of Waadhoeke. Another would be its participation in the expert group associated with the provincial investigation into the Lelylijn.¹⁹ Other examples are the Circular Friesland Association and the Centre for Sustainable Entrepreneurship’s Engagement Board, where the parties involved regularly discuss practical matters relating to projects as well as broader strategic issues.

There are collaborative ventures in regional networks, as well as at national and international levels. The international contacts mainly concern collaboration in international research projects. In this way, UG/CF has built a bridge to international networks and knowledge.

Aside from its active engagement in specific projects, UG/CF has played a part in establishing organizations (or networking organizations) that involve a more overarching level of collaboration with regional knowledge partners. This mainly concerns the Data Research Centre (DRC) and the Centre for Sustainable Entrepreneurship. In addition, UG/CF was the project leader during the foundation of DataFryslân, and one of the founders of the Circular Friesland Association. The Centre for International Education was jointly founded with the NHL Stenden University of Applied Sciences. UG/CF’s Advisory Board itself constitutes a new network, as it includes the administrators of all knowledge institutions in the region, plus the Municipality of Leeuwarden and the Province of Fryslân. These new networks have further expanded and broadened the knowledge infrastructure in Friesland.

From the very start, UG/CF established ties with existing regional networks, in addition to these newly established networks. In this regard, UG/CF has clearly adopted an active stance towards the existing regional networks. Such collaborative ventures vary from contacts established in the context of research projects, to active contributions to the network. These collaborative ventures have widened the existing Frisian networks and, to a certain extent, given them extra depth. They include the following examples:

- involvement in the Blue Delta Initiative
- participation in the Fryslân Innovation Pact
- membership of the DataFryslân steering committee
- ties to parties in the Wadden Sea heritage site
- participation in the Multilingualism Laboratory Network
- ties to the Northern Netherlands Healthy Ageing Network (HANNN)
- collaborative venture with the Leeuwarden Student City campaign

¹⁸ The Living Lab projects are part of the second year of the Bachelor’s programme, so the 2020 projects were the first of their kind. The external parties involved in this round were mainly public organizations.

¹⁹ An exploratory survey of the options for a high-speed rail link with the Randstad conurbation, much like the long-awaited Zuiderzee line.

Input from interviews with external parties can reveal different networks' perceptions of UG/CF's role. The views expressed by interviewees showed that its role in networks is greatly appreciated. They also emphasized the importance of the part played by UG/CF in networking. The views expressed by interviewees showed that the contacts established via the networks and collaborative projects lead, in turn, to further contacts that are not directly related to the implementation of a given project. A few quotes from the interviews:

- *'Collaborative ventures with UG/CF strengthen and broaden existing networks by providing access to other international partners.'*
- *'It is particularly effective when UG/CF establishes ties with existing networks or intermediaries, thereby strengthening them and adding extra depth.'*
- *'The integration of UG/CF is certainly beneficial, as it effectively strengthens the knowledge infrastructure; however, it is also important to remember that "Rome wasn't built in a day".'*
- *'UG/CF opens the way, enabling others to establish ties with additional networks.'*
- *'Within the region, UG/CF forms a regional "bridgehead", as it were, with regard to the link with scientific research.'*
- *'It was a good idea to design UG/CF as a flexible organization with close ties to regional networks. In that sense, it's design is "ahead of the curve".'*

Nature of the networks/collaborative projects

Networks and collaborative projects tend to be mainly shaped by the way in which information exchange and knowledge transfer take place. This particularly concerns informal knowledge transfer (and the extent to which this occurs), as authors in the scientific literature generally see this as the key to innovation.²⁰ The interviews with external parties included questions concerning various characteristics of the nature of the contacts.²¹

The interviews with external parties show that the contacts vary in terms of frequency, from a few times a year to more intensive contacts. In most cases, the contacts are mainly about content and less about process-related matters. Without exception, the interviewees described the contacts as informal and easily accessible. Virtually every interviewee described their interactions with UG/CF staff as *'accessible'* and *'open'*. *'Short lines'* were the key consideration. The uncomplicated character of these interactions was reflected in statements made by the interviewees:

'Proximity - meeting one another - is important, and that is exactly what the Leeuwarden site offered.'

'Uncomplicated interactions and proximity are very important. As far as the business community is concerned, even "Groningen" is too far away.'

'I can contact the professor any time, via an app.'

Its uncomplicated character is reflected by the fact that, due to its central location, the Beursgebouw (the building that houses UG/CF) is regularly used for meetings by network partners or collaborative partners.

The interviewees felt that these were contacts *'between equals'* engaged in a network-like collaborative venture, rather than hierarchical, formal contacts. The views expressed during the interviews showed that this modus operandi is greatly

²⁰ See Appendix I.

²¹ During the interviews, some of the questions on this topic were open, while others were semi-structured.

appreciated. In addition, the views expressed during the interviews with external parties showed that UG/CF staff were considered to be very helpful, and that they were able to deal with a wide range of questions.

'The nature of collaboration in PhD projects is personal, content-focused, and brimming with enthusiasm.'

'Those involved are keen to be of assistance and to actively contribute ideas.'

Accordingly, the interview results indicate that the way in which networks and cooperation are implemented in practice has a positive impact in terms of generating new ideas and triggering innovation. This mainly concerns the importance of informal knowledge transfer, which can only be achieved by means of informal, easily accessible contacts.

To a certain extent, it can also be said that the informal, easily accessible nature of the contacts is in keeping with the prevalent interpersonal culture of Friesland (and the northern region of the Netherlands), which sets great store by cooperation based on trust. Indeed, Friesland is sometimes seen as a 'high-trust society' that is also, to some extent, a 'no nonsense' culture.²² The views expressed during the interviews with external parties indicated that, in this sense, UG/CF is certainly *not* perceived as the proverbial 'ivory tower' (an academic institute that views society from a remote 'lofty academic vantage point').

The interviews with its staff revealed that, from the very start, UG/CF has consciously adopted an open and amenable attitude towards regional partners (collaborative partners) and Frisian society as a whole. These interviewees stated that, since the inception of UG/CF, its staff have been instilled with the adage, *'Everything we do is for the benefit of the region'*.

2.2 Contribution to knowledge circulation

A second element of knowledge infrastructure concerns the contribution to knowledge circulation. Knowledge circulation or knowledge diffusion concerns disseminating knowledge and putting it to use. Knowledge circulation is important because the success of innovation is partly dependent on the speed and scope of knowledge dissemination. In this study, this was achieved by examining:

- the number of research projects carried out in collaboration with businesses and with other knowledge institutions
- research/R&D funding acquired from third parties
- knowledge diffusion by means of academic publications
- knowledge diffusion by means of events (public events)

The number of research projects in collaboration with businesses and knowledge institutions
Collaboration with other parties in research projects enables these projects to contribute to knowledge circulation. Table 2.2 lists the research projects that are currently underway at UG/CF.

²² In high-trust societies, relationships (interpersonal relationships) involve a high degree of trust. As a result, there is less need to base interactions on hierarchical, contractually specified rules (that are externally imposed). Instead, there is a greater emphasis on a certain degree of consensus (moral consensus).

Table 2.2: Research projects

	Title/topic	Project type*
Governance/Data Research Centre**		
1	The Politics of a Transition to a Circular Economy	PhD project
2	Regional disparities and identity politics: a socio-spatial analysis.	PhD project
3	Regional ecosystems Regions & Europe	PhD project
4	Regional Marine Governance: the governance of the seas in the North Sea and Caribbean regions	PhD project
5	The Politicization of Civil Servants in International Comparative Perspective	PhD project
6	Sustaining Heterogeneous Knowledge Infrastructures	PhD project
7	Knowledge Infrastructure for Climate Mitigation***	PhD project
8	Artificial Intelligence and International Relations***	PhD project
9	The Use of Big Data in Sustainable Tourism***	PhD project
10	Policing the Future? Assessing the Implementation of Big Data by UK Law Enforcement***	PhD project
11	Building a more reliable/responsible knowledge infrastructure for the natural cultural diversity to survive***	PhD project
12	Public Administration: <i>Beleid, Organisatie en Politiek (10^e editie)</i> (Policy, Organization and Politics, 10 th edition)	Research project
13	<i>Regionaal maatschappelijk onbehagen</i> (Regional social discontent)	Research project
14	<i>Regionale vertegenwoordiging</i> (Regional representation)	Research project
15	<i>De rol van het rijk bij interbestuurlijke samenwerking</i> (The role of central government in inter-administrative cooperation)	Research project
16	Cases: <i>Over voortijdig afgetreden bewindspersonen (2002-2020)</i> (Concerning ministers who resign prematurely [2002-2020])	Research project
17	The Politics of Public Management	Research project
18	Policy Consultancy in Comparative Perspective: Patterns, Nuances and Implications	Research project
19	<i>Doen, durven of de waarheid?</i> (Do, dare or the truth?) <i>Democratie in digitale tijden</i> (Democracy in digital times)	Research project
20	Cutting Crime Impact***	Research project
Sustainable Economy****		
1	Mission-driven entrepreneurship in ecosystems for sustainable systems change	PhD project
2	Transformation of existing businesses in sustainable enterprises	PhD project
3	Circular business models in social housing associations	PhD project
4	Sustainable opportunity and problem recognition	PhD project
5	Intention formation in sustainable entrepreneurship	PhD project
6	Sustainable hospitality and tourism	PhD project
7	How do social enterprises create social value?	PhD project
8	Sustainable entrepreneurship in the protected Wadden Sea region (Prowad Link project)	PhD project
9	Environmental transformational leadership and employee green behaviour within organizations	PhD project
10	Circular business models	PhD project
11	Dynamic capabilities and entrepreneurship in the construction industry	PhD project
12	Circular business models in agriculture: North Netherlands	PhD project
13	Sustainable Entrepreneurship in a Circular Economy	Research project
14	Sustainable Innovation and Business Models	Research project
15	Social Entrepreneurship	Research project
16	Cultural Heritage as Playground	Research project
17	Interdisciplinary Environmental Behaviour and Leadership	Research project
18	Systems Change and Circular Business Models	Research project
19	Social Psychology	Research project
Culture, Language & Technology		
1	Commonality and Worldliness: Literature, Language, and Community in Post-National Europe	PhD project
2	Untangling Linguistic Salience	PhD project
3	Communication Strategies in European Logistics	PhD project
4	Recognizing Parkinson's Disease from Multilingual Voice	PhD project
5	Text-to-Speech for Under-Resourced Languages	PhD project

6	Phoenix	Research project
7	ID3AS	Research project
8	Minority Languages, Major Opportunities (COLING)	Research project
9	Center for Research and Practice in Cultural Continuity	Research project
Health & Food		
1	Therapeutic potential and physiological function of infant bile acids in energy metabolism	PhD project
2	Personalized lifestyle intervention for recovery after critical illness	PhD project
3	Task Specific Dystonia in Skater's Cramp	PhD project
4	Reducing anastomotic leakage using laser speckle contrast imaging	PhD project
5	Vitamin D in asthma/COPD - Dietary supplements to improve treatment/outcome exacerbations	PhD project
6	Nutrition and outcome after bariatric surgery: weight reduction, body composition and metabolism	PhD project
7	Lapvas Imaging	Research project
8	Nutrition and Asthma: dietary intake in asthma subtypes and the relation with asthma outcomes	Research project
9	Diagnostic and therapeutic value of unusual bile acids of newborns	Research project
Centre for Internationalisation of Education (CIE)*****		
1	Assessing how faculty-led short-term study-abroad programmes enable or block citizenship	PhD project
2	Assessing intercultural competence outcomes for international business	PhD project
3	Social and academic integration of Chinese, South Korean, and Indian international students	PhD project
4	Impact of a study abroad during teacher education on professional behaviour after graduation	PhD project
5	Response of higher education institutes to policy about transnational education in the Netherlands	PhD project
6	Curriculum analysis for developing student teachers' intercultural competence	PhD project
7	Internationalization of the disciplines: Differences in conceptualization and implementation	PhD project
8	International and intercultural learning: Emerging teaching practices in Latin America	PhD project
9	Migration patterns in international higher education: Determinants of student mobility and migration	PhD project

* A PhD project can be carried out by a PhD student, a member of staff or by an 'external' PhD student. External PhD students are not on the university payroll, instead they usually work on their PhD project alongside a paid job. This research is not funded through the university, but by another external party. The first external PhD student was awarded their PhD in 2019. Any projects that do not involve a PhD project are referred to here as 'Research projects', which are usually carried out by a senior researcher.

** At Governance, this partly concerns the professor's 'book projects'.

*** Data Research Centre.

**** Professor G. de Jong is also involved in the 'Business models in circular agriculture' PhD project, in the role of primary supervisor, and in the Netherlands Organisation for Scientific Research's Can-Do-It consortium.

***** Only PhD projects that are carried out within the Centre for International Education and supervised at Leeuwarden.

Source: Policy Research Office, UG/CF documentation, Friesland Committee (July 2020)

Just under 60 research projects, in the domains covered by the four Frisian Flagships, are being carried out at UG/CF. More than half of these are PhD projects.²³ In addition to the Flagship projects, nearly 10 PhD projects are being carried out within the Centre for International Education.²⁴

Most projects involve collaboration with other knowledge institutions. Some of the projects involve collaboration with businesses or other organizations, such as a housing association (Elkien) and a hospital (Medical Centre Leeuwarden). About 40 of these projects focus either on comparisons between regions and/or on topics that involve collaboration with a regional party. Almost 20 projects involve international cooperation with collaborative partners in other countries (usually knowledge institutions). In this way, some of the projects are clearly guaranteed to involve both regional and international links.

²³ These usually involve internal PhD students. In addition, there are a few external PhD students. External PhD students are not on the university payroll, instead they usually work on their PhD project alongside a paid job. This research is not funded through the university, but by another external party.

²⁴ These are PhD projects that are carried out within the Centre for International Education but which are supervised at Leeuwarden.

There are a large number of projects within both Governance and Sustainable Economy, in particular. In Governance, this partly concerns the professor's 'book projects'. Data Research Centre projects also come under Governance. One reason for the relatively large number of projects in Sustainable Economy is that the projects in that field started earlier than those of the other chairs and Flagships. This made it possible to build on the networks and contacts maintained by the staff of this Flagship before UG/CF was launched. There are fewer projects in the fields of Culture, Language & Technology and Health & Food (in total, these Flagships involve about ten projects) or projects that are still largely under development.

The interviews with external parties revealed various points of interest concerning UG/CF's role in collaborative research projects. The interviews showed that collaboration in specific research projects has clear added value. The interviewees attributed this to the academic-level input, which augments projects that 'normally' focus mainly on applied questions and solutions. Further added value was associated with the ability to examine issues in a different way (an academic way). The interviewees considered the added value of the link between the pure and applied levels to be particularly important:

'The PhD project enhances the acquisition of knowledge related to this theme. It delivers added value by providing more in-depth knowledge (validated knowledge).'

'One beneficial side-effect identified by all of the participants was that this encourages people to actively contribute ideas. It enhances mental acuity.'

'UG/CF's studies are more fundamental in nature. That provides building blocks for an ecosystem consisting of different "layers".'

Research/R&D funding acquired from third parties

UG/CF operates on the principle that research centres have an important part to play in acquiring external funding for research. The various research domains have acquired external funding for their projects. It could be said that, without UG/CF, the region would not have attracted this external funding. About 15 externally funded projects, worth a total of almost €1.6 million, were launched in the period from 2016 to mid-2020. Some of the projects will be implemented in the upcoming years.²⁵

Examples acquired Research/R&D-funding

- ProwadLink-project (Interreg)
- project Cutting Crime Impact (Horizon2020)
- two PhD research projects financed by housing association Elkien
- co-organization of the *Circulaire 11-stedentocht* (Circular 11-cities tour) (subsidy)
- monitor *Circulaire Economie Friesland* (Circular Economy Friesland)
- monitor Sustainable Entrepreneurship Nederland (Netherlands)
- H2020 FET-Open "Phoenix"
- Interreg project "ID3AS"
- Marie Skłodowska-Curie Research and Innovation Staff Exchange for "CoLing"
- Polish Science Foundation TEAM

Source: statement by RUG/CF, RUG/CF, Voortgangsrapportage 1/5-1/12 2017 en Voortgangsrapportage 1/12/2017-1/7/2018.

²⁵ Source: statement by UG/CF.

Knowledge diffusion by means of academic publications

Since UG/CF was launched (up to and including February 2020), 174 papers have been published in academic journals. Items have also been published in professional journals (16) and in the popular press (11).²⁶

Knowledge diffusion by means of events (public events)

Table 2.3 lists public and informal knowledge diffusion activities (lectures and other public events). Since the start of 2016, UG/CF has been staging (and taking part in) a wide range of public events aimed at various target groups. The number of public events has now grown. Extra events were held in 2019 in connection with the opening of the Beursgebouw building. Due to the COVID-19 crisis, there will only be a limited number of public events in 2020.

Table 2.3: Public events 2016-2019*

Year	Description	Frequency	Outreach
2016	Science Café	5x	Each event attracts 45 to 65 participants
	Museum University, with public lectures	4x	Each event attracts 40 to 60 participants
	Studium Generale Leeuwarden	3x	N.B.
	Prize for the best final-year thesis in secondary vocational education, higher professional education, and university education (LC Awards) (together with the <i>Leeuwarder Courant</i> newspaper)	1x	Students
	Prize for the best profile assignments in secondary education (together with the <i>Leeuwarder Courant</i> newspaper)	1x	School pupils
	School pupil afternoon (4th and 5th years, at pre-university education level) and a Children's University	1x	School pupils
	Performance by the Dutch Student Orchestra	1x	Approximately 300
	Publications in regional and national media**	<i>regularly</i>	General audience
2017	Science Café	5x	Each event attracts 45 to 65 participants
	Museum University, with public lectures	4x	Each event attracts 40 to 60 participants
	Studium Generale Leeuwarden, public lectures	5x	General audience, partly students; each event attracts between 50 and 200 participants
	Prize for the best final-year theses in secondary vocational education, higher professional education, and university education (LC Awards)	1x	200-250 people physically present + live stream (200 to 1,000 virtual participants)
	Prize for the best profile assignments in secondary education	1x	200-250 people physically present + live stream (200 to 1,000 virtual participants)
	Events for school pupils: School pupil afternoon (for 5th-year pupils at pre-university education level) and a Children's University, and Leeuwarder Lyceum workshop	2x	120 school pupils
	Launch of the Multilingual Practices: Tackling Challenges and Creating Opportunities MOOC	1x	3,000 people from countries such as Greece, America, Spain and South Africa.
	Campus Fryslân Science Prize (for young academics; research related to Friesland that has a national or international impact: global challenges, local solutions); first awarded in 2017	1x	21
	Performance by the Dutch Student Orchestra	1x	Approximately 300
	Gemma Frisius lecture/official opening of the academic year	1x	80 interested parties
	Publications in regional and national media**	<i>regularly</i>	General audience
2018	Science Café	5x	Each event attracts 45 to 65 participants
	Stages Museum University, with public lectures, in collaboration with Tresoar and the Fries Museum	4x	Each event attracts 40 to 60 participants

²⁶ Source: Province of Fryslân (2020), Appendix 1 Report on the Structure of Campus Fryslân, in accordance with Appendix III: Monitoring framework University of Groningen/Campus Fryslân Spring 2020 (reference date 1 March 2020).

	Studium Generale Leeuwarden, lunchtime lectures	12x	Each event attracts between 35 and 100 participants
	Prize for the best final-year theses in secondary vocational education, higher professional education, and university education (LC Awards)	1x	200-250 people physically present + live stream (200 to 1,000 virtual participants)
	Prize for the best profile assignments in secondary education	1x	200-250 people physically present + live stream (200 to 1,000 virtual participants)
	Performance by the Dutch Student Orchestra	1x	Approximately 300
	Gemma Frisius lecture/official opening of the academic year	1x	160 interested parties
	Publications in media (regional media)	Monthly	General audience
	Meet the Campus event, where the public can get to know the Campus by taking part in workshops	1x	150 people
	Web class	2x	61
	Taking part in Science Weekend	1x	54
	COLING MSCA-RISE kick-off meeting (3-day international event with a visit to Frisian schools and cultural events)	N.B.	N.B.
	Publications in regional and national media**	regularly	General audience
	Events for school pupils: – day for all 3rd-year, pre-university education level school pupils at CSG Comenius (Christian comprehensive school) – information afternoon for teaching professionals (pre-university education level) – X-Honeurs Festival (NHL Stenden University of Applied Sciences): Centre for Sustainable Entrepreneurship workshop – professional associate afternoon for school counsellors – research days	n/a	230 school pupils took part in the research days
2019	Science Café	5x	246
	Stages Museum University, with public lectures, in collaboration with Tresoar and the Fries Museum	4x	158
	Studium Generale Leeuwarden	8x	534
	Prize for the best final-year theses in secondary vocational education, higher professional education, and university education (LC Awards)	1x	200-250 people physically present + live stream (200 to 1,000 virtual participants)
	Prize for the best profile assignments in secondary education	1x	200-250 people physically present + live stream (200 to 1,000 virtual participants)
	Events for school pupils: – School Pupil Days (Campus Fryslân Experience) – Children's University	1x 1x	411 200
	Campus Fryslân Science Prize	1x	60
	Gemma Frisius lecture/official opening of the academic year	1x	189 + live stream
	Publications in media (regional media)	n/a	n/a
	Official opening of the Beursgebouw building: three-day programme featuring the Science Festival (including Voice Tech demonstration) and book publication	1x	Attracts 1,000 visitors (Science Festival)
	– Campus Fryslân Experience (school pupils)	1x	207
	University College students provide extra-curricular activities, some of which (such as lectures) are open to the public	1x	n/a
	Performance by the Dutch Student Orchestra	1x	Approximately 300
	Academic dates	4x	60
	Circular Eleven Cities Tour (in collaboration with the Province of Fryslân)	2x	108
	Web class (online series of lessons that can be followed by prospective students, giving them a substantive introduction to studying at UG/CF)	2x	64
	ICLaVE-10 International Workshop on Minority Languages (held jointly with University College London)	1x	N.B.
	Academic lectures Sustainable Entrepreneurship	Regularly	(Entrepreneurs/policymakers)
	Publications in regional and national media**	Regularly	General audience
	Citizen Climate Adaptation Award (in collaboration with Wetterskip Fryslân – the Frisian Water Board)	Every two years	General audience

* The COVID-19 crisis is having a major impact on the events scheduled for 2020.

** See UG/CF's progress reports ('Publiciteit rond Campus Fryslân' [Publicity relating to Campus Fryslân]) for a list of publications in various media.

Source: Policy Research Office and UG/CF documentation

Such public events make it possible to reach a varied group of residents, school pupils, students and others. Some events, such as the Science Café and various lectures, are designed for the general public. An active contribution is made to the public debate by means of publications in regional media. The chair of Global and Local Governance, in particular, regularly publishes material in both regional and national media. The Centre for Sustainable Entrepreneurship staged the Circular Eleven Cities Tour in 2019. The opening of the Beursgebouw building was a multi-day science festival designed for the general public.

In addition to general public events, UG/CF is actively involved in events for school pupils, and for students from other knowledge institutions. These include afternoon sessions (and information afternoons) for school pupils, workshops at schools and prizes for assignments. For instance, an Ethics and Data workshop was held for school pupils (at senior general secondary education level and secondary vocational education level) and teachers from Tytsjerksteradiel.²⁷

In summary, UG/CF has developed a large number of events and is active in terms of all knowledge-diffusion indicators. This includes a substantial number of research projects which have been set up in a short period of time. In addition, external research funding has been attracted to the region. Furthermore, there has been significant knowledge diffusion by means of academic publications and a large number of public events.

²⁷ In 2020.

3 TIES WITH THE REGION AND SOCIAL TRENDS

3.1 Ties with HOAF and the Fryslân Knowledge Agenda

Contribution to ‘hotspots’

One key aspect when formulating an opinion on the current situation of UG/CF’s research work and other activities is the extent to which these tie in with the Frisian ‘hotspots’. The assignment given to UG/CF at its inception specifically alluded to the ‘*further development and expansion of Master’s programmes for the Frisian hotspots*’.²⁸ UG/CF itself has formulated the aspiration of helping to strengthen the economy in general and - in particular - to support the regional agenda for regional ‘hotspots’ (in terms of the Fryslân Knowledge Agenda).²⁹ The monitoring framework for UG/CF includes the following ‘throughput indicator’: ‘*The degree of coverage between PhD projects and the Frisian “hotspots”*’.³⁰

At UG/CF’s inception, the ‘hotspots’ were defined in the 2015 Fryslân Knowledge Agenda. These were agri-food/dairy, the high-tech manufacturing industry, water technology, tourism and recreation, serious gaming, the maritime sector, sustainability, quality of life and security.³¹ The 2016 Fryslân Higher Education Agreement (HOAF) mentions broadly comparable economic themes (agri-food, high-tech manufacturing industry, tourism, multilingualism, sustainability/quality of life, and law & governance/security).³²

The Knowledge Agenda has now been updated. The updated Fryslân Knowledge Agenda largely concerns the same ‘hotspots’:³³

- **Priority areas:** Agri-food, Water Technology, HTSM (High Tech Systems and Materials), Hospitality
- **Market niches:** Multilingualism, Maritime sector, Cyber Safety
- **Promising experiments:** Sustainable construction, Healthcare innovation, Vitality healthy, Culture/legacy 2018

When UG/CF’s goals (in terms of its contribution to ‘hotspots’) were framed, no specific mention was made of the required scope of its contribution to ‘hotspots’ (or to particular ‘hotspots’), nor whether it was required to contribute to *all* ‘hotspots’.³⁴ This makes it difficult to assess its contribution to these ‘hotspots’. One of this study’s goals was to assess the extent of ties with the Fryslân Knowledge Agenda. This mainly involved identifying research work and other activities that link up with the regional themes. The study adopted these updated ‘hotspots’ as basic principles because they represent the most recent focal points in regional economic policy.

²⁸ See the Provincial Council, *Voorstel* University of Groningen/Campus Fryslân (Proposal regarding University of Groningen/Campus Fryslân), 16 December 2015.

²⁹ University of Groningen/Campus Fryslân (2015), *A faculty in the making. World class in the region. Development plan*. Leeuwarden.

³⁰ Province of Fryslân (2015), *Monitoring framework University of Groningen/Campus Fryslân*. Leeuwarden. See also the appendices.

³¹ Province of Fryslân (2015), *Fryslân Knowledge Agenda 2015-2025*. Leeuwarden.

³² *Fryslân Higher Education Agreement. Towards an innovative and learning region*, Leeuwarden, 2016. The Fryslân Higher Education Agreement stipulates that the Master’s degree programmes and PhD projects must contribute skills and knowledge that match the strengths and opportunities offered by the Frisian business community and Friesland’s characteristic features (Article 2.2).

³³ Province of Fryslân (2019), *Updated Fryslân Knowledge Agenda*. Leeuwarden.

³⁴ In this context, no standard has been specified, nor has it been indicated that research work and other activities are prohibited from tying in with other themes.

As previously stated, the thematic structure of UG/CF's research activities reflects the Frisian Flagships' lines. It can be concluded that these Flagships encompass almost all of the themes identified in the updated Fryslân Knowledge Agenda (Table 3.1). The degree programmes also tie in with the topics listed in the Knowledge Agenda. It should be noted that the Governance Flagship also ties in with the law & governance/security theme from the 2015 Knowledge Agenda. The Sustainable Economy/Centre for Sustainable Entrepreneurship; Culture, Language & Technology; and Health & Food Flagships tie in well with the sustainability/quality of life theme from the 2015 Knowledge Agenda.

Table 3.1: Ties to topics listed in the Fryslân Knowledge Agenda*

Activity	Topics listed in the Fryslân Knowledge Agenda (Frisian 'hotspots')										
	Priority areas				Market niches			Promising experiments/ Living Labs			
	Agri-food	Water technology**	High Tech Systems and Materials***	Hospitality	Multilingualism	Maritime sector	Cyber Safety	Sustainable construction	Healthcare innovation	Vitally healthy	2018 Culture/Legacy
Governance/Data Research Centre (DRC) and DataFryslân			(X)***				X				
Sustainable Economy/Centre for Sustainable Entrepreneurship	X	(X)**		X		X		X			
Culture, Language & Technology					X						X
Health & Food	X								X	X	
Centre for Internationalisation of Education (CIE)					X						
Degree programmes****		(X)**		X	X		X				

* The table indicates the theme to which a given Flagship or degree programme is linked (in substantive terms), based on research activities (research projects) or on the contents of a degree programme.

** Especially water-related issues involving climate adaptation. The Master's programme in Water Technology is a joint degree programme taught at Wetsus (the European centre of excellence for sustainable water technology).

*** According to UG/CF's 2017 Annual Report, the High Tech Systems and Materials (HTSM) domain has been included in the Data Research theme. However, this has not yet led to specific substantive links in research projects.

**** Master's degree programmes.

Source: Policy Research Office and UG/CF documentation

Water Technology and High Tech Systems and Materials are the only domains to be less clearly reflected in the teaching or research associated with one of the Flagships.

Within the region, Wetsus (the European centre of excellence for sustainable water technology) has been tasked with water technology. Ties have been established with Wetsus, within the network of knowledge institutions. Within UG/CF, the theme of water is reflected by projects - carried out in collaboration with Wetterskip Fryslân (Frisian Water Board) - in the area of climate adaptation.

The topic of High Tech Systems and Materials is mainly technical in nature. In terms of fields of knowledge, it involves physics, chemistry, mechanical engineering and - increasingly - information technology, sensor technology and big data.³⁵ In Friesland, the businesses associated with the Drachten Innovation Cluster are particularly active in this area. The Data Research Centre focuses primarily on the relationship between digitization and social and organizational issues. The Data Research Centre has contacts

³⁵ This includes remote sensing for the purposes of predictive maintenance, with the aid of sensor technology and big data analysis.

with the Drachten Innovation Cluster. A Big Data course has been presented, and UG/CF has helped to ensure that part of the Master's track in Mechanical Engineering Smart Factories (offered by the University of Groningen's Faculty of Science and Engineering) can be followed at the Drachten Innovation Cluster. Incidentally, with respect to the topic of High Tech Systems and Materials, the Faculty of Science and Engineering already has ties with the Drachten Innovation Cluster.

One element of the Fryslân Higher Education Agreement is that UG/CF should include an open platform for university-based Master's degree programmes, which should contribute to a culture of knowledge circulation and co-creation.³⁶ Clearly, those activities that contribute to knowledge circulation, and especially to public events (see Section 2), embody the understanding (specified above) in the Fryslân Higher Education Agreement that, as an open platform, UG/CF will contribute to a culture of knowledge circulation and co-creation.

The interviews with external parties included questions on their views concerning the ties between UG/CF's activities (and research activities) and themes that are important to Friesland. All of the interviewees stated that they consider ties to Frisian themes to be important. Yet *none* of them felt that these should necessarily be restricted to the themes specified in the Knowledge Agenda. They indicated that there is a greater need for themes to be interpreted flexibly and for themes that are more overarching in nature.

The interviewees approved of the choice of substantially overarching themes such as Sustainable Economy, Governance and the Data Science field of expertise in the search for ties with specific regional issues.

- *'It was a good idea to choose more wide-ranging themes, such as sustainability.'*
- *'The theme of Data Science was a good choice, one that is very well suited to the new economy.'*

In essence, the interviewees expected UG/CF to supplement our knowledge of long-term transition challenges with a global reach that have (or could potentially have) a major impact on the region. The basic idea is that knowledge institutions such as UG/CF are ideally placed to make an effective contribution to the development of knowledge and ideas concerning the major strategic issues facing the region. The interviewees felt that, in the search for specific research themes, the net should be cast as widely as possible. The specific themes cited in this context include climate issues, the circular economy, the ties between cities and the countryside, and biodiversity (in Sustainable Economy and Governance), as well as mental health (e.g. issues associated with loneliness, depression and dementia; in Health & Food). The following views were expressed by the interviewees:

- *'UG/CF must play a part in placing long-term issues on the agenda and in identifying strategies that are consistent with these issues.'*
- *'It should address overarching themes. The themes must emerge from a broad-based view and approach, and must be in keeping with the region.'*
- *'In terms of social themes, UG/CF can make an effective contribution to the debate about sustainable transitions. That takes time, and the ability to stay the course.'*
- *'It is a good idea to select meta-themes that intersect with several different sectors and disciplines.'*

³⁶ Article 3.3 of the Fryslân Higher Education Agreement.

Incidentally, the principle of global challenges and local solutions also ties in with the Fryslân Knowledge Agenda, where the global goals serve as basic principles upon which to formulate priority areas, market niches and promising experiments.

UG/CF's degree programmes were also mentioned in the interviews with external parties. In general, the interviewees felt that the degree programmes were very much in keeping with Frisian themes. Following on from their positive assessment of the wide-ranging, overarching themes, the interviewees supported the concept of a second Bachelor's degree programme in the data science field. According to the interviewees, this would tie in with a major transition towards the digitization of society. It may also tie in with issues that are uppermost in the minds of regional parties.

The interviewees felt that a focus on the region remains as important as ever. Two aspects emerged from the interviews. One concerned the ties to 'all things Frisian' and the other was the added value, compared to the levels of secondary vocational education and higher professional education. According to the interviewees, it should be all about the region and about the specifically Frisian contribution to these themes. They also approved of the ties that are being established with the knowledge and organizations that are already present in the region.

'In that connection, the approach through the link between global (challenges) and local (solutions) makes a lot of sense. Indeed, this will be especially effective if the local solutions can be tied in with Frisian themes and with a Frisian approach.'
'The selected themes must be in keeping with Friesland.'

The second aspect concerns the added value of links with secondary vocational education and higher professional education. According to the interviewees, Friesland has traditionally focused on applications at secondary vocational education/higher professional education level. However, long-term transitions also require university level 'deliberations' concerning potential solutions. To this end, we need to establish ties between institutions of secondary vocational education, institutions of higher professional education and universities. According to the interviewees, a university campus can supplement the regions' existing resources with academic reasoning and a certain level of reflective ability. The interviewees felt that the added value of such a campus could only be achieved by tangible links being established between the different levels.

'It is important for there to be a link between pure and applied research.'

Contribution to Living Labs

Experimentation and the use of Living Labs are key elements of the updated 2019 Knowledge Agenda. Indeed, there is a newly formulated goal of making Friesland a Living Lab region.³⁷ In particular, the final-year projects of the Master's programme in Sustainable Entrepreneurship and the Living Lab projects within the Bachelor's programme in Global Responsibility & Leadership are entirely consistent with the aim of making Friesland a Living Lab region (Table 3.2). The approach taken by these projects often concerns the transition to sustainability, with a focus on governance and economic aspects. One of these projects involved a multilevel approach, as part of a collaborative venture with students from institutions of secondary vocational education and higher professional education.

³⁷ Living Labs are collaborative ventures between educational institutions, entrepreneurs, government bodies and social parties/residents. These participants engage in real-life experiments to identify potential solutions that can be tested (directly or indirectly) in practice. In Living Labs, the emphasis is on co-creation (Rathenau Instituut, 2017, *Living Labs in the Netherlands. From open test facility to Living Lab*. The Hague). See www.frieseecosysteem.frl, for example.

Table 3.2: Living Lab projects within the Bachelor’s programme in Global Responsibility & Leadership (2020)

1	Sustainable urban development, urban governance, SDG monitoring and evaluation
2	Adapting to Climate Change: Supporting Global Action
3	Climate change adaptation, climate governance, sustainable development
4	Curriculum development in vocational education: transforming education and organization
5	Capitalize on Civil Society
6	One size does not fit all: designing local waste-separation policies for deprived neighbourhoods
7	Strategies to increase motivation to buy local and sustainable products
8	Climate resilient food production in Friesland
9	Climate Adaptation in Frisian Water Governance
10	Serious game for promoting cultural change with regard to water waste among students attending institutions of secondary vocational education

Source: Policy Research Office and UG/CF documentation

3.2 Contribution to interdisciplinarity/cross-disciplinarity

Interdisciplinarity/cross-disciplinarity

Interdisciplinarity or cross-disciplinarity are considered to be key factors in delivering renewal (‘new combinations’) and innovation. Accordingly, it may also be useful to explore the extent to which UG/CF contributes to interdisciplinarity/cross-disciplinarity. In this study, this was achieved by examining the collaborative partners in the various research projects and research themes. This gives us a picture of the extent to which parties *from other sectors* are involved in UG/CF networks and collaborative projects. Interdisciplinarity/cross-disciplinarity is expressed in terms of the involvement of different sectors (see Table 3.3).

Table 3.3: Collaborative partners per sector*

Sector	Collaborative ventures with ...
Government/public sector	Frisian municipalities, the Province of Fryslân, Wetterskip Fryslân (Frisian Water Board), the Security region, FUMO (the Frisian Environment Implementation Service), SKSG childcare (via the Engagement Board)
Care	University Medical Center Groningen, Medical Centre Leeuwarden, Northern Netherlands Healthy Ageing Network, Limis, De Hoven (housing and home care; via the Engagement Board), Northern Netherlands Obesity Centre
Construction/real estate**	Elkien housing association
Nutrition	Medical Centre Leeuwarden (MCL), FrieslandCampina (via MCL Academy)
Industry	Omrin, Ecostyle (via Engagement Board), ZiuZ
Tourism/hospitality	Business network (via NHL Stenden University of Applied Sciences, European Tourism Futures Institute)
Circular businesses***	Regional businesses (via bodies such as the Circular Friesland Association)
Data****	Frisian municipalities, the Province of Fryslân, Wetterskip Fryslân (Frisian Water Board), Drachten Innovation Cluster
General/innovation-oriented	Regional SMEs (general), Fryslân Innovation Pact, Strong Frisian Entrepreneurship

* This does not include collaborative partners from the fields of teaching and research.

** Housing associations come under the Standard Business Index (SBI) category of ‘Renting and buying and selling of real estate’.

*** Circular businesses do not constitute a separate business sector, as such; the term refers to companies that are, to some extent, involved in circularity/sustainable entrepreneurship.

**** Data does not constitute a separate business sector; however, it has been included here as a cross-sectoral theme.

Source: Policy Research Office and UG/CF documentation

Selecting the right overarching themes strengthens interdisciplinarity or cross-disciplinarity. This mainly concerns Governance, Data Science and *Sustainable Economy*, which, by definition, are cross-sectoral to a certain extent. Given the nature of the theme, the Data Research Centre’s work usually involves projects that are cross-

sectoral and interdisciplinary in nature. The Centre for Sustainable Entrepreneurship’s modus operandi is based on the principles of interdisciplinarity/cross-disciplinarity. In addition, UG/CF’s relatively small scale is an advantage, making it relatively easy to set up peer-to-peer contacts and to manage the exchange of information between themes.

3.3 Ties with social issues and trends

Another aspect of the views expressed about UG/CF’s research activities concerned the activities’ ties with social issues and trends. This study was designed to address this aspect in terms of the United Nations’ Sustainable Development Goals (SDGs), based on the assumption that these goals reflect key global trends.

A scan of UG/CF’s research topics and research themes, plus the topics reflected in its activities, reveals ties to a large number of SDGs. The most evident links concern the following SDGs (nine in total; Table 3.4). To a large extent, this involves sustainability-related topics. The social domain is reflected in projects in the area of Health & Food, especially where prevention is involved. Some of the Living Lab projects concern citizens’ initiatives.

Table 3.4: Ties with SDGs

Sustainable Development Goal (SDG)	UG/CF (see Tables 2.1 and 2.3)
End hunger, achieve food security and improved nutrition, and promote sustainable agriculture (No. 2)	Sustainable or circular agriculture is one of the topics within Sustainable Economy
Ensure healthy lives and promote well-being for all at all ages (No. 3)	Various projects under Health & Food
Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (No. 4)	Projects covered by the Centre for Internationalisation of Education
Ensure access to affordable, reliable, sustainable and modern energy for all (No. 7)	These goals are covered by some Sustainable Economy projects
Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all (No. 8)	
Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss (No. 15)	
Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation (No. 9)	This is in line with the general aim of contributing to innovation
Make cities and human settlements inclusive, safe, resilient and sustainable (No. 11)	This can include various topics that are covered by Governance, Data Science and Sustainable Economy
Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels (No. 16)	This can include various topics that are covered by Governance and Data Science

* There are a total of 17 SDGs; see www.sdgnerland.nl (and <https://sdgs.un.org/goals>).

Source: Policy Research Office and UG/CF documentation

In this connection, when analysing ties with regional themes, the views expressed in the interviews showed that external parties attach great importance to ties with long-term strategic issues. In the context of social themes, specific mention was made of sustainability and social issues (inclusivity). When asked for their views about long-term strategic issues, the interviewees said that UG/CF has an important part to play.

- ‘UG/CF can play a leading part in shifting the focus to the SDGs.’

- *'It should actually be all about the SDGs.'*
- *'Sustainability and circularity also address the social side. It's also about the inclusive society.'*

A number of interviewees felt that students could potentially play a part in social issues. One option, for example, would be to get students to participate in social projects in local neighbourhoods. According to this vision, involving students in social issues, for example, can contribute to solutions in the social domain, while also providing a 'formative' and distinctive dimension to studying at Leeuwarden.

4 STRENGTHENING THE CITY AND THE REGION

4.1 Impacts on living conditions and quality of life

The literature on regional economics emphasizes that good teaching facilities are of key importance to a region's business climate. This is about the region's appeal to residents, businesses and visitors. According to this rationale, a university campus contributes to a wide range of educational programmes, attractive living conditions and a better image. As yet, no studies have been carried out into the impact of establishing UG/CF, in terms of image or perceptions regarding the business climate. Accordingly, this study restricts itself to the views expressed in the interviews with external parties concerning the impacts (or potential impacts) on the business climate.

The interviewees consistently stated that the arrival of UG/CF has had a positive impact on the region's business climate. Many of them also pointed out that UG/CF is a great addition to the city's secondary vocational education programmes and higher professional education programmes. In this way, it completes the educational provision on offer. The views expressed during the interviews showed that the key consideration here is that the region must 'project' the fact that it also has university-level teaching and research facilities. This involves an impact on the image of Leeuwarden and the Province of Fryslân.

- *'The arrival of the University of Groningen (UG) has enriched Leeuwarden. It has also expanded the region's horizons. Friesland has made its mark in the university world.'*
- *'In the past, Leeuwarden was definitely a city that leaned towards higher professional education. The university generates a greater vibe.'*
- *'Businesses appreciate being in a region that they know to have a wide range of educational provision, and where scientific research is also carried out.'*
- *'The Beursgebouw building and the open activities it hosts represent a positive statement for the region: you are demonstrating that you are also a knowledge region.'*

The views expressed in most interviews emphasized the key importance of ties to international knowledge and international networks in terms of the business climate. This enhances the international dimension of teaching and research in Friesland. UG/CF's role is considered to be a key factor in this regard. There is a general feeling that networks benefit from the contributions made by international students and researchers.

- *'International ties are important: local meets global.'*
- *'The arrival of UG/CF has made Leeuwarden more international.'*
- *'UG/CF's teaching and research activities bring in national and international knowledge and contacts, which are beneficial for the region.'*
- *'For Friesland, its international nature opens a window on the world. That's really important.'*

4.2 Impacts on the academic climate

This study adopted a pragmatic approach that would enable it to draw meaningful conclusions concerning UG/CF's contribution to the region's academic climate. Wherever possible, ties are established with tangible actions (or policy actions) designed to enhance the academic climate (study climate) within the city of

Leeuwarden. In this connection, a major consideration is that the parties involved must actually be in a position to influence those actions.³⁸ This mainly concerns the contributions to activities carried out in the context of the partnership between the Municipality of Leeuwarden, Leeuwarden Student City, Tresoar and UG/CF. In the cooperation agreements, these activities are clustered around a number of key points or focal areas. This study explored UG/CF's performance in terms of those key points or focal areas (Table 4.1).³⁹

Table 4.1: Collaborative venture to strengthen the academic climate

Key points (focal areas) of the collaboration agreements	UG/CF's activities
Activities associated with student life (entertainment, culture, sport), including specific activities for international students, as well as study workspaces and student entrepreneurship.	UG/CF stages activities for its own students. In the area of culture, there have been a number of performances by the Dutch Student Orchestra. The Beursgebouw building provides a number of study areas. In collaboration with Tresoar, study workspaces have been created in the centre of Leeuwarden. Tresoar also functions as a Leeuwarden university library, cooperating directly with the University of Groningen's library in Groningen.
Activities aimed at familiarizing people with science and at generating enthusiasm for science and university education (such as lectures, debates, prizes for assignments, activities for school pupils).	In collaboration with other parties, UG/CF engages in all kinds of public events, such as the Museum University, Studium Generale Leeuwarden, public awards (Top Projects, LC Awards), lectures (including lunchtime lectures), Science Café, School Pupil Days and the Children's University. In this way, UG/CF ensures that school pupils, as well as students in secondary vocational education and higher professional education (together with the general public), are introduced to academic culture and to scientific research.
The programming of events, festivals, and introductory programmes.	UG/CF designs its own introductory programmes for Bachelor's and Master's students, in collaboration with Leeuwarden Student City.
Strengthening the presence of the universities in Leeuwarden by supporting or staging academic events and ceremonies.*	UG/CF stages academic events and ceremonies in the city, such as the official Opening of the Academic Year.
Activities designed with the city's image in mind, whose target group consists of prospective students from the Netherlands and elsewhere. The idea is that the establishment of UG/CF will make Leeuwarden something of a fixed item in the university's marketing strategy.	The marketing of UG/CF degree programmes in Leeuwarden is part of the University of Groningen's general marketing activities.** In terms of information for prospective students, UG/CF is a distinct and recognizable part of the University of Groningen's website. UG/CF also sends representatives to the Information Days in Groningen. This enables UG/CF to 'ride in the slipstream' of the University of Groningen's reputation.

* The plural form 'universities' is used here to reflect the presence of degree programmes in Leeuwarden provided by universities other than UG/CF.

** UG/CF carries out its own marketing activities aimed at specific target groups and focus countries. Marketing involves both physical and virtual information activities.

Source: Policy Research Office, Leeuwarden Student City, *Explanatory note concerning the 2019 Partnership programme*.

The table shows that UG/CF has developed activities in all focal areas, thus helping to create an academic climate (study climate), as agreed in the collaboration agreements.

One important aspect of the study climate, aside from the above-mentioned key points, is the matter of student accommodation.⁴⁰ In general, good-quality, affordable student accommodation is seen as a significant factor in determining students' (or prospective students') choices of location. It also makes a city an attractive place in which to study. In addition, students living in urban surroundings breathe life into the

³⁸ See explanatory note in Appendix II.

³⁹ Leeuwarden Student City, *Explanatory note concerning the 2019 Partnership programme*.

⁴⁰ The availability of plenty of part-time jobs can also be a significant factor for students.

city. Clearly, the arrival of UG/CF has lent additional impetus to the construction of student accommodation in the city centre.⁴¹

Another element of the academic climate relates to the city's image as a student city. This aspect was mentioned several times in the interviews with external parties. The main point here is that the arrival of UG/CF may change Leeuwarden's image as a '*city typified by higher professional education*'. It would also strengthen Leeuwarden's reputation as a student city.

The interviewees expressed the following views concerning Leeuwarden's appeal as a student city, such as:

- '*The additional presence of a university will work wonders for the city's image. A university creates a special vibe*'.
- '*It is important for the city to "embrace" the students. The key factors in this regard include providing work and good-quality student accommodation. As a relatively small student city, Leeuwarden needs to stand out from the rest (or have the courage to do so) in terms of accommodation and work.*'
- '*The development of an academic climate is a gradual process that requires long-term commitment.*'

4.3 Strengthening the economic structure

Strengthening the smooth running of the economy (including the regional economy) includes strengthening the economic structure by means of a greater focus on internationally oriented sectors, entrepreneurship and innovation.⁴²

International stance

In addition to staff from abroad, UG/CF regularly hosts guest lecturers from other countries. A large proportion of its students are also from *outside the Netherlands*. International collaboration mainly involves collaborative ventures, in the form of research projects with partners in other countries (usually knowledge institutions).⁴³ Some of the research projects are international projects.⁴⁴ The projects contribute directly to the international stance of the collaborative partners involved (including regional partners).

Entrepreneurship

The Start-Up Academy, an activity specifically aimed at promoting entrepreneurship, was launched in 2019. This is a track that students can follow in parallel to their Master's degree. It offers them guidance in starting up their own company. The Start-Up Academy is a collaborative venture involving Sustainable Economy, the Fryslân Innovation Pact and the Strong Frisian Entrepreneurship project.

⁴¹ Especially in the former Aegon building (Markt 058).

⁴² The establishment of UG/CF has also had a beneficial economic impact on accommodation providers, the hospitality industry, etc., due to the money spent by its staff and students. Regarding the scope of this impact, no up-to-date figures are available.

⁴³ See Table 2.1.

⁴⁴ See Subsection 2.2.

Innovation

A number of research projects focus strongly on innovation, i.e. the implementation of new products or services. The medical-technological research being carried out by the Frisian businesses Limis and ZiuZ is a particularly good example.

Hopon, Krang and Pullplast are three start-ups that have emerged from the Master's programme in Sustainable Entrepreneurship. Table 4.2 shows UG/CF's contribution to the start-ups, in the form of quotes from two of the students concerned and a contribution from one of the PhD students.

Table 4.2: The lessons learned by start-ups

Hopon	KRANG	Lapvas Imaging
'The fact that cooperation with Inqubator was "around the corner" to UG/CF Master's degree programme made it easy to connect. Both UG/CF and Inqubator create an inspirational environment. It offers access to people and businesses operating in the regional sustainability eco-system (Circular Fryslân, Ecostyle/Oosterwolde, Omrin, Wetsus, etc.). This includes regular guest lecturers from businesses. The opportunity to work with Inqubator opened up an even larger network.'	'First and foremost, the MSc in Sustainable Entrepreneurship enabled Mariska and Miron to meet one another. ;) Secondly, the Master's degree programme helped us to develop a new perspective that led to the recognition of a new opportunity. Both taught them to see the world through a different lens. Moreover, the Master's degree programme gave them a good head-start on what being an entrepreneur really entails. It taught them both leadership skills, as well as the 'hard' skills needed to run a business.'	'A Lapvas Imaging PhD candidate at the University of Groningen/Campus Fryslân visited the 2020 SPIE Photonics West conference, where he had the honour of presenting the first-in-human laparoscopic study involving Lapvas Imaging technology. He won the 2020 Translational Research Best Paper Award out of a total of 180 papers! This award recognized the high translational research character of the study, meaning it has the potential to change the current standard of care.'

Source: Policy Research Office, www.rug.nl/cf/campus-fryslan/bloggen/krang-17-07-2019 (June 2020), www.limis.org (July 2020)

4.4 Strengthening the labour market for highly educated jobseekers

Work to strengthen the economy (including the regional economy) relies on an efficiently operating labour market with sufficient numbers of highly educated personnel.⁴⁵ Thus, one aspect of the impact of UG/CF is its effect on the labour market for highly educated jobseekers.

It is already clear that, given the relatively small size of its programmes, UG/CF's direct impact - in terms of an increase in the supply of university graduates to the regional labour market - has been limited. In addition, with regard to both supply and demand, the labour market for highly educated jobseekers and PhD graduates is not limited to Friesland. Businesses and organizations mainly tend to recruit highly educated jobseekers at national (or even international) level. When searching for job opportunities, university graduates generally do not restrict themselves to their home region. In general, students from other countries also tend to cast their net more widely when it comes to post-graduation job prospects.⁴⁶

Accordingly, the *indirect* impact on the regional labour market is, in fact, more relevant. This concerns the appeal of a career at businesses and organizations in Friesland. It also involves a broad-based range of degree programmes (including university programmes), alongside other factors such as housing, cultural and

⁴⁵ See also the Fryslân Knowledge Agenda.

⁴⁶ Businesses and the graduates of vocational programmes tend to take a stronger regional stance.

recreational facilities, and mobility.⁴⁷ For academics, one attractive aspect of the job is the opportunity to collaborate (via the company or organization that employs them) on innovative projects that involve scientific research, or to continue to develop themselves by taking a university-level programme or course. Furthermore, in a tight labour market, it is important for businesses and organizations to try to interest students in a career in a specific sector or company at an early stage. To this end, it is important for them to provide internships, traineeships, etc. In essence, the presence of UG/CF helps to strengthen the HRM policies (and strategic HRM policies) of businesses and organizations in the region.

With regard to its impact on the labour market, the interviewees also pointed out the importance of UG/CF's indirect contribution to the labour market.

- *'It is important for businesses to have something to offer highly educated employees from their own region. Engaging in innovative research that creates ties with networks is a real advantage in this regard. It certainly boosts the region's appeal.'*
- *'For the purposes of internships and research projects involving students (or conducted by them), it is important to establish good connections with businesses.'*
- *'With a view to retaining people in the region, it is important to support and stimulate businesses and start-ups, partly by means of the educational institutions.'*
- *'It is important for young Frisian people to be able to consider their options in terms of university-level teaching and research, rather than continuing to focus purely on the applied level.'*
- *'Both UG/CF and the research conducted there play a very important part in "retaining" talented young staff members. It gives them additional scope for an exciting career. Accordingly, this an important aspect of strategic HRM policy.'*
- *'It's all about cultivating this region's image as a place where interesting things happen and where there are excellent career prospects.'*

⁴⁷ With reference to educational provision, this need not be limited to someone's own educational options. It can also extend to educational provision for their children, if they have any.

5 UNIVERSITY COLLEGE ROOSEVELT BENCHMARK

5.1 Design and development of UCR

The early days of UCR

University College Roosevelt (UCR), which was founded in 2004, was one of the first university colleges in the country. This university college is based on an Anglo-Saxon educational model, which was a fairly new concept in the Netherlands at the time.⁴⁸ There are now about ten university colleges in the Netherlands (Table 5.1).

Table 5.1: University colleges in the Netherlands*

University Colleges	University	Founded in	Programme
University College Utrecht	Utrecht University (UU)	1997	Liberal Arts and Sciences
University College Maastricht	UM	2002	Liberal Arts and Sciences
University College Roosevelt	UU	2004	Liberal Arts
Amsterdam University College	University of Amsterdam/Vrije Universiteit Amsterdam	2009	Liberal Arts and Sciences
Leiden University College The Hague/Leiden	RUL	2010	Liberal Arts and Sciences
University College Twente (ATLAS)	UT	2013	Technology and Liberal Arts & Sciences
Erasmus University College	EUR	2013	Liberal Arts and Sciences
University College Groningen	University of Groningen (UG)	2014	Liberal Arts and Sciences
University College Venlo	UM	2015	Health, Nutrition and Business
University College Tilburg	Tilburg University	2016	Liberal Arts and Sciences

* The student numbers at most colleges range from about 500 to 900. This corresponds to an annual student intake that varies from well over 150 to as many as 300. All university colleges have an international orientation, which is reflected by the large proportion of international students.

Source: University College websites (March 2020)

The UCR's foundation was prompted by concerns about the impact of population decline on education and the labour market. At the time, those involved felt that something needed to be done to make working in Zeeland a more attractive proposition. They also wanted to stem the exodus of young people from the region. The foundation of UCR was made possible, in part, by the convergence of a number of factors. These were the availability of funding (from central government, the provincial authorities and the municipal authorities), aspirations regarding the use of listed buildings in Middelburg and the administrative commitment that existed at the time. There was also a leader (in the person of Hans Adriaansens) who played an important part in getting the UCR off the ground.⁴⁹

For the first few years, student numbers at UCR did not live up to the projections. However, after three years or so, they were right on track. An important factor here was the first batch of graduates. They were able to tell people how great UCR was and, as they started out in their careers, to show them how good the job prospects really were. In the words of one of the interviewees who had been involved in UCR, *'this sort*

⁴⁸ Its original name was the Roosevelt Academy.

⁴⁹ Hans Adriaansens was an Utrecht University professor and the first Dean of the Roosevelt Academy.

of thing always involves a start-up period of 3-5 years'.⁵⁰ UCR has made communication a key focus.⁵¹ It now enrolls about 150-175 new students each year. The entire student body numbers around 500. There are currently about 2,000 alumni.

The design of UCR

From its very inception, UCR was designed to be a residential university college. Students live right on the University College's campus in accommodation that is situated close to the UCR buildings in the centre of Middelburg. UCR is part of Utrecht University, so students are awarded their Bachelor's degrees by that institution.⁵² UCR offers a three-year, full-time Bachelor's programme in the liberal arts and sciences that is taught entirely in English. The emphasis is on the liberal arts. UCR does not offer any Master's programmes. However, together with HZ University of Applied Sciences, UCR is currently exploring the option of developing - and getting involved in - a higher professional education Master's programme.

UCR's educational offering has been formulated around a number of sub-programmes:

1. Arts & Humanities - languages, culture, history and art
2. Science - Biomedical Science, Chemistry, Cognitive Science, Computer Science, Earth Science, Environmental Science, Life Science, Mathematics and Physics
3. Social Science - Anthropology, Economics, Human Geography, International Relations, Law, Political Science, Psychology, Sociology and Statistics

Starting in autumn 2020, an Engineering sub-programme will be added. This will address the topics of energy transition, climate change and food production.⁵³

There is a focus on personal development by means of social work placements (e.g. involving the academic workshops in care institutions for the elderly) and special programmes, such as music. Students can follow part of their course of study elsewhere through Utrecht University's exchange programme. Classes are taught by lecturers and professors who are also on the staff of Utrecht University.

UCR has always focused strongly on a number of distinctive aspects (unique selling points). In addition to a high-quality education, this involves a close-knit internal community (and a sense of community), small classes, a small-scale site, an international image and living on campus close to college buildings. UCR derives much of its unique look and feel from the unusual classic buildings in which it is housed. Motivation is just one of the factors that determines whether a student is admitted. UCR sets great store by high-quality student accommodation. Experience has shown that the foreign market (international students) considers elements such as a small scale, social cohesion and security to be especially important.⁵⁴ The institution's location, roughly at the periphery of the Netherlands, is not a major obstacle.⁵⁵ It is worth noting that UCR plays a limited part in continuous learning pathways - the number of students from Zeeland who enter the Bachelor's programme is limited to just a few each year.

⁵⁰ In the context of a comparison with UCR, three interviews were conducted with people who were directly involved with that institution.

⁵¹ For example, this also involved a TV programme broadcast in 2009 (an edition of the VPRO channel's *Tegenlicht* [Backlight] series).

⁵² Unlike UG/CF, UCR is a foundation rather than an 'eleventh faculty'.

⁵³ Back in 2019, a 'pioneer group' was started.

⁵⁴ If not for the students themselves, then certainly for their parents.

⁵⁵ UCR promotes itself internationally as being '*situated in the heart of the biggest natural and cultural delta of North-Western Europe*'.

Great importance is placed on student facilities, especially high-quality accommodation and plenty of activities for the students.⁵⁶ According to the interviewees, increasing competition (from other university colleges) means that *'it is more important than ever before to position yourself effectively'*.

Collaborative ventures

UCR engages in collaborative ventures with various parties in Zeeland and elsewhere. It collaborates with HZ University of Applied Sciences in the areas of teaching, student facilities and business operations. Together with healthcare organizations and HZ University of Applied Sciences, it holds 'academic workshops' for research by students in the healthcare system (and in the field of care for the elderly). Members of the Elliott Society collaborate with the university of applied sciences (and its students). UCR also collaborates with HZ University of Applied Sciences in areas such as IT.

It also engages in collaborative ventures with other knowledge institutions, including institutions of secondary vocational education (Scalda) and Belgian universities, in particular Ghent University and KU Leuven. In the upcoming years, the Roosevelt Centre for Excellence in Education (which is affiliated with UCR) will collaborate with all schools in the region to improve education in Zeeland and put it on the map. There are also contacts with NIOZ (the Royal Netherlands Institute for Marine Research), WMR (Wageningen Marine Research) and ZB (Planning Bureau and Library of Zeeland).⁵⁷ UCR is also a member of the Zeeland Scientific Council (together with other knowledge institutions and the Dow Chemical Company).

There are contacts with the business community regarding student research projects. UCR is also represented on the Economic Board of Zeeland. The business community is represented on the board of UCR, in the form of representatives of the *Zeeuwse Maatschappij voor Nijverheid en Handel* (the Zeeland Society for Industry and Trade).

Finally, there are regular contacts between UCR, the Municipality of Middelburg, and the Province of Zeeland.

City buzz and public debate

An interesting observation by the interviewees involved in the UCR was that local people initially had their doubts about the arrival of the college and whether it would succeed. The interviewees stated that the city has now 'embraced' the students.⁵⁸ This is partly due to the 'buzz' triggered by the presence of the students and by the activities that are partly held in the city by (and for) students.⁵⁹ UCR has also consciously opted to establish a link between its students and the wider region. This is achieved by various means, such as social research projects and internships (including the above-mentioned academic workshops). One of the interviewees put it as follows: *'UCR has become a permanent feature of Middelburg, and it enjoys excellent ties with the local social environment.'*

⁵⁶ Elliot is a student society in Middelburg which is run by the students themselves.

⁵⁷ The Royal Netherlands Institute for Marine Research and Wageningen Marine Research are both located in Yerseke. The Royal Netherlands Institute for Marine Research is part of the Netherlands Organisation for Scientific Research. It conducts research into open-ocean processes. Wageningen Marine Research (which is part of Wageningen University & Research [WUR]) conducts research (including applied research) into areas such as mussel farming.

⁵⁸ The relatively small size of Middelburg could also play a part in this. Here, 'relatively' refers both to the ratio of students to residents (500/42,000) and of the ratio between the population of Middelburg and that of Leeuwarden (42,000/93,000).

⁵⁹ The city of Middelburg has a population of about 42,000.

The interviewees also pointed out that UCR lecturers participate in the public debate at both regional and national levels. This is seen as a fine addition to the debate (at regional level as well) and as a role that is particularly well suited to UCR as a university institute whose expertise and ‘neutrality’ enable it to make a genuine contribution.

5.2 Research and economic themes

From its very inception, UCR was designed to focus primarily on teaching, rather than research. Another goal was to retain young people in the region; although, in the early days, economic goals were not a major consideration.

This is reflected by the fact that no PhD students are (as yet) associated with UCR, in the sense of in-house research programmes.⁶⁰ The only graduate school in the area is at the Roosevelt Institute for American Studies (which is affiliated with UCR). However, this institute (which is also located in Middelburg) only has a limited number of PhD students.⁶¹ The Roosevelt Institute for American Studies opened in 2017. It focuses on American history and transatlantic relations. The limited amount of research that does take place there has clear ties with regional issues.

In recent years, however, the situation has changed. This change was prompted by a shift of focus in regional economic policy. That shift was triggered in 2014, by several reports from the Zeeland Scientific Council. Next came the 2016 report by the Balkenende Committee, on economic structural enhancements and administrative resolve.⁶² The establishment of Campus Zeeland was just one of the developments triggered by these reports.⁶³ Campus Zeeland is a network of knowledge institutions, businesses and government bodies aimed at boosting the competitive strength of businesses in Zeeland and offering solutions to social challenges.⁶⁴ The creation of an effective teaching and research structure is one way to achieve this.⁶⁵ In addition, a number of economic themes that are of key importance for Zeeland are highlighted:

- water (water availability, water quality and water safety)
- energy (wind, blue energy)
- food

This has resulted in a greater focus on the economic dimension in education. This applies to secondary vocational education, higher professional education and university

⁶⁰ The research conducted by lecturers is primarily subject to Utrecht University’s research programming. However, various European research projects are being carried out (including Interreg).

⁶¹ According to the website, there are four ‘doctoral students’ (www.roosevelt.nl [June 2020]).

⁶² Zeeland Scientific Council (2014), *De Slimme kracht van Zeeland* (The Smart Power of Zeeland). *ZEELAND HIGH ON THE AGENDA: Actieprogramma voor duurzame economische groei, regionale inbedding en bestuurlijke daadkracht* (Action programme for sustainable economic growth, regional embedding and administrative decisiveness). Advisory report issued by the Committee on Structural Enhancements and Employment in Zeeland (the Balkenende Committee), 2016. *Investing in an attractive business climate in Zeeland* *Zeeland high on the agenda 2.0*. Zeeland’s offer in response to the coalition agreement. January 2018. Zeeland Scientific Council (2019), *De Slimme kracht van Zeeland 2.0; Van woorden naar daden!* (The Smart Power of Zeeland 2.0; Deeds not words!). Middelburg.

⁶³ It also focuses specifically on government funding. In response to the latest coalition agreement, an investment stimulus package has been requested. A regional deal has been sealed, and negotiations have recently taken place concerning a compensation package for the cancellation of the Marine barracks move to Vlissingen.

⁶⁴ See www.campuszeeland.nl. Campus Zeeland addresses economic structural enhancements in the entire south-western delta region, including a collaborative venture with the Belgian region of Flanders (Cooperation Platform for Delta Issues).

⁶⁵ Campus Zeeland also features prominently in the provincial economic agenda. Province of Zeeland (2016), *2017-2021 Economic Agenda*. Middelburg.

education. It has now been decided that, in addition to the humanities, UCR will place greater emphasis on science, especially engineering/technology. This is based on the perceived need for technically qualified professionals who are also capable of engaging with social or organizational issues (a field of knowledge in which UCR is definitely able to play a part). The establishment of an Engineering Department at UCR can be seen as part of the implementation of the 'Zeeland high on the agenda 2.0' investment programme.

Campus Zeeland aims to achieve a greater focus on technology. One approach involves the Bèta Campus (Science Campus), in which Zeeland will become a 'Living Lab' for the economic themes. One major initiative in this context is the establishment of the Joint Research Centre, a collaborative venture involving UCR, HZ University of Applied Sciences and Scalda (a secondary vocational education institution). The Joint Research Centre is a laboratory in which the institutions involved will collaborate on research in the areas of water, energy, food and sustainable raw materials. The students concerned will be drawn from different educational levels (multilevel). They will collaborate with government bodies and the business community on research projects. The JRC is scheduled to be up and running by 2022.

In addition, efforts have recently been made to encourage PhD projects on regionally specific topics. The idea is that, in the future, this will evolve into a graduate school tailored to themes that resonate with Zeeland.

Economic impact through spending

Aside from its contribution to the knowledge infrastructure and to regional economic themes, there is something to be said about the economic impact of expenditure. In 2010, UGent carried out a study into the potential economic impact of expenditure. This amounted to approximately €13 million in 2010, and it is expected to reach as much as €15 million *per year*. This concerns expenditure by staff and students plus the knock-on effects (including indirect effects). This is estimated to involve 170-200 jobs.

5.3 UG/CF benchmark

The experience gained at UCR in Zeeland can be compared with the situation at UG/CF. Based on this, the following conclusions can be drawn.

All university colleges have a difficult start

The first conclusion is that UCR (and, in fact, all university colleges) had a difficult start in terms of student numbers. The lessons learned at UCR show that one or more cohorts of graduates are needed to highlight the appeal of a degree programme and the associated career prospects. This takes at least three to five years.

Distinctiveness is important

A second conclusion is that, in the competition with other degree programmes, it is vital to be distinctive. This distinctiveness should be reflected in a combination of quality, themes (including substantive themes) and, last but not least, high-quality student facilities. From the very start, UCR has focused strongly on a number of unique selling points, such as a close-knit internal community, small classes, a small-scale site, an international image and living on campus close to college buildings. These elements are also reflected in UG/CF's approach involving the university college. There are also some differences. UCR also focuses on personal development in programmes that feature music and social projects. What mainly sets UG/CF apart from the rest is its involvement with the Living Lab projects, which provide a direct link to businesses and

organizations. Finally, it should be noted that students (especially those from other countries) find Middelburg particularly appealing because it is a small, relatively safe city with a great deal of social cohesion. In general, the same can also be said of Leeuwarden.

UG/CF plays a much wider - part in educational provision within the region

One clear distinction between UCR and UG/CF is that the latter had a much broader design right from the start. From its very inception, in addition to the university college, it featured a Master's degree programme, a graduate school and a research institute. This meant that, from the very start, UG/CF had the opportunity to link teaching and research and to deliver a broader range of university-level educational provision within the region.

From the very beginning, UG/CF has had strong ties with regional themes

Another clear difference between UCR and UG/CF concerns their ties with regional themes. Until recently, UCR was primarily an educational institution featuring few ties with regional economic themes. This only changed recently, with UCR mainly following the developments of Campus Zeeland. UG/CF has taken the Frisian context into account from the very start, by means of its stance with regard to regional economic themes and innovation. Unlike UCR, its cooperation with other knowledge institutions and the government has been guaranteed from the start, in line with the regional Knowledge Agenda. As a result, UG/CF - in contrast to UCR - has enjoyed more robust and wide-ranging ties with the region from the very beginning.

UCR opts for organizational safeguards for a multilevel approach and the social domain

Both UCR and at UG/CF endeavour to achieve cooperation (at multiple levels) with secondary vocational education programmes and higher professional education programmes. At UCR, this cooperation takes the form of tangible 'academic workshop' structures (social missions). A plan was recently formulated to establish a joint technology laboratory. A number of UG/CF projects feature multilevel cooperation, although clear structural safeguards for this approach are still lacking, in the Living Lab projects, for example.⁶⁶

To some extent, the same is true of the social domain. At UCR, this is secured by a cooperative structure with a care institution in relation to the academic workshops. At UG/CF, on the other hand, this involves a 'less formal' project-based approach (e.g. with projects focusing on citizens' initiatives and on prevention in healthcare).

Solidarity with local people and those in the wider region is important

UCR has been able to establish a degree of solidarity between local people and its students. In Middelburg, this has to do with its students' visible presence in the city (which is partly due to UCR's central location), with the money that its students (and staff) spend at local businesses and with the social missions performed by its students. UCR also benefits from the fact that Middelburg is a relatively small city. This is one of the reasons why the city has 'embraced' the students. UG/CF carries out similar activities, such as those involving Living Labs and school projects. Its university building and residential facilities are also centrally situated.⁶⁷ UG/CF is significantly more active, in terms of public events. In particular, the uncomplicated character of these public events and the varied nature of their target groups helps to create a sense of solidarity with UG/CF.

⁶⁶ Inevitably, the impact of the COVID-19 measures on education will continue to be felt in 2020.

⁶⁷ Especially in Kanaalstraat and the Markt 058 building. All of the Bachelor's students (approx. 75 in all) live in Leeuwarden. An estimated two thirds of Master's students live in Leeuwarden.

6 SUMMARY AND CONCLUSIONS

The order of the following conclusions is based on the study's research questions. This is followed by a general discussion of - and reflection on - the findings.

Answering the research questions

How has UG/CF developed, in the sense of its participation in - and contribution to - the regional knowledge infrastructure (networks and collaborative projects) and the dissemination of knowledge?

- UG/CF participates in a large number of networks and collaborative projects, spanning a broad spectrum of topics. Despite their relatively modest staffing level, the three chairs and four Frisian Flagships have established a large number of collaborative projects in a relatively short space of time, based on UG/CF's research. There are collaborative ventures with other knowledge institutions, businesses and public organizations. This cooperation also extends to the field of education and a number of other areas, such as Leeuwarden Student City's promotional activities.
- In all areas of research, these collaborative ventures involve more than research alone. In addition to research, they also concern participating in (or helping to launch) networks and organizations, advising collaborative partners, courses, lectures and contributions to public debate.
- Aside from its collaborative ventures in research projects, UG/CF has played a part in establishing various organizations (or networking organizations). In establishing (or helping to establish) these new networks, UG/CF has extended and broadened Friesland's knowledge infrastructure. In addition, from the very start, UG/CF established ties with existing regional networks. UG/CF's active engagement with existing regional networks has given them additional breadth and depth.
- In principle, there are collaborative ventures with all knowledge partners in the region, such as the universities of applied sciences, Tresoar, the Wadden Academy and the Fryske Akademy. Thus, its collaborative ventures are spread far and wide throughout the region. Its contacts also extend beyond the region to the national and international levels, mainly in the form of international research projects. In this way, UG/CF has built bridges to international knowledge and international parties.
- Without exception, the partners in question described these contacts as informal, easily accessible and 'open'. Qualities such as these have a beneficial impact on the generation of new ideas and on innovation. To a certain extent, it can also be said that the informal, easily accessible nature of the contacts is in keeping with the prevalent interpersonal culture of Friesland (and the northern region of the Netherlands), which sets great store by cooperation based on trust. In that context, Friesland is seen as a 'high-trust society'.
- The interviews with external parties showed that cooperation in specific research projects has clear added value. This is due to the university-level input, which augments projects that 'normally' focus mainly on applied questions and solutions.

Further added value is associated with the ability to examine issues in a different (more academic) way.

- The various research domains have acquired external funding for their projects. Thus, it could be argued that without UG/CF the region would have missed out on this research funding.
- UG/CF engages in knowledge diffusion through both formal (scientific publications) and informal channels (such as public events). UG/CF stages (and takes part in) a wide range of public events aimed at a range of target groups. In particular, the uncomplicated character of these public events and the varied nature of their target groups mean that they are reaching a general audience. These events have been taking place since early 2016. Due to the COVID-19 crisis, there will only be a limited number of public events in 2020.
- The activities that contribute to knowledge circulation and especially to the public events embody the understanding in the Fryslân Higher Education Agreement that as an open platform UG/CF will contribute to a culture of knowledge circulation and co-creation.

How, and to what extent, do UG/CF's research activities and selected research themes (Frisian Flagships) tie in with the regional strategy?

- The Frisian Flagships jointly encompass virtually all of the themes referred to in the Fryslân Knowledge Agenda and other strategic policy documents. Water Technology and High Tech Systems and Materials are the only domains to be less clearly reflected in its teaching or research. Nevertheless, it does have some contacts and activities in these areas. Governance and Sustainable Economy have completed a relatively large number of research projects, while Culture, Language & Technology and Health & Food have projects that are still largely under development.
- The degree programmes tie in with the topics listed in the Fryslân Knowledge Agenda. In addition, Sustainable Entrepreneurship's practical assignments and the Living Lab projects within the Bachelor's programme in Global Responsibility & Leadership are entirely in line with the aim of making Friesland a Living Lab region.

How, and to what extent, do UG/CF's research activities and chosen research themes (Frisian Flagships) tie in with the region's economic and social developments (both desired and actual)?

- The interviews with external parties showed that tying in with Frisian themes is considered important. However, these do not necessarily have to be restricted to the themes listed in the Fryslân Knowledge Agenda. In essence, the interviewees expected UG/CF to supplement our knowledge of those long-term transition challenges which have (or could have) a major impact on the region. The interviewees approved of the choice of substantially overarching themes such as Sustainable Economy, Governance and Data Science in the search for ties with specific regional issues.
- In addition, a focus on the region remains as important as ever. Two aspects emerged from the interviews. One concerned the ties to 'all things Frisian' and the other was the added value, compared to the levels of secondary vocational education and higher professional education. This should address the specifically

Frisian contribution to these themes, while establishing ties with the expertise and organizations that are already present in the region. A university campus can bring academic reasoning and a certain level of reflective ability to the region.

- Interdisciplinarity or cross-disciplinarity are considered to be key factors in delivering renewal ('new combinations') and innovation. The distribution of themes across different sectors is just one manifestation of UG/CF's interdisciplinarity/cross-disciplinarity. UG/CF's modus operandi and its relatively small scale also help to facilitate its cross-sectoral and interdisciplinary approach.

How, and to what extent, has UG/CF's development helped to strengthen the regional economic structure, the business climate, the academic climate and the smooth running of the regional labour market? What contributions has it made to knowledge (and knowledge networks) with regard to social themes in the areas of governance, the social domain and sustainability?

- As yet, no studies have been carried out into UG/CF's tangible impacts on the business climate. Based on this evaluation, its potential is judged to be positive. Its ties with international expertise and international networks are a particularly important aspect.
- UG/CF has developed activities in all focal areas, thus helping to create an academic climate (study climate), as agreed in the collaboration agreements. The arrival of UG/CF has also given an impetus to student accommodation in the city centre.
- UG/CF is relatively new, so we cannot yet say whether or not it has had a tangible impact on the regional economic structure. However, we can list a number of aspects that, in theory, enhance the smooth running of the regional economy. These concern its focus on internationally oriented sectors, on entrepreneurship and on innovation. UG/CF is active in all three aspects. These include international contacts in research projects that came with UG/CF, encouraging entrepreneurship (e.g. by means of the Start-Up Academy) and tangible innovation resulting from a number of research projects, plus the Master's programme in Sustainable Entrepreneurship.
- With regard to social themes, UG/CF's choice of Flagships and chairs has created direct ties with issues pertaining to governance and sustainability. Issues in the social domain are addressed by means of projects involving citizens' initiatives, as well as prevention in healthcare, for example. Its research topics and research themes, plus the topics reflected in other activities, also tie in with some of the UN's Sustainable Development Goals (SDGs).

Reflection on the findings

UG/CF is making a solid and consistent contribution to the region's goals and knowledge infrastructure

This study's key question was: 'To what extent did the further development of UG/CF, halfway through the funding period, help to achieve the strategic goals that were set when it was launched, especially in terms of strengthening regional knowledge infrastructure?'

Based on the foregoing conclusions, the answer to this study's key question must be that UG/CF has made a solid and consistent contribution to the strategic goals and to strengthening the regional knowledge infrastructure. From the very start, UG/CF has established ties with Frisian themes by means of its own Frisian Flagships. To a large extent, it achieved this by constantly seeking to engage in collaborative ventures with regional partners and regional networks. At the level of tangible projects and activities, it constantly seeks ties with key issues in Frisian society. This involves the substantially overarching themes of Sustainable Economy, Governance and Data Science, as well as more specific themes associated with language, nutrition and health. This does not apply (or not entirely) to all themes. Relatively speaking, UG/CF's activities in themes such as language and the social domain are still a work in progress.

With regard to the regional knowledge infrastructure, we conclude that UG/CF has helped to give it additional breadth and depth. On the one hand, UG/CF has helped to launch new regional networks (and knowledge networks). On the other hand, it has not neglected the assets that were already in place throughout the region. In this context, it has established ties with many existing networks and with all regional knowledge partners.

UG/CF has a strong external focus on regional ties

By acting as they do, UG/CF and its staff focus strongly on ties with collaborative partners and on launching new activities and projects. In terms of the results they have achieved, some projects and activities have made more progress than others. This is because UG/CF was only established quite recently (in 2016). Furthermore, some of its activities and projects were not started until much later. Since its inception, UG/CF has had an organizational culture of its own. This is characterized by an open attitude towards regional partners (collaborative partners) and towards Frisian society as a whole: *'what we do is for the benefit of the entire region'*. In this sense, UG/CF is certainly not the proverbial academic 'ivory tower'.

As a university campus, UG/CF's role is strategic in nature, while also providing extra depth

One result (that mainly emerged from the interviews) concerns an aspirational vision of the role that a university campus such as UG/CF can, and should, play in Friesland. This aspirational vision concerns UG/CF's current and future contributions to the way in which people think and act with regard to long-term strategic goals. This is about social issues that are related to transitions, such as those involving sustainability.

A university campus's contribution mainly involves three lines.

1. The first line is interdisciplinarity/cross-disciplinarity. The idea behind this is that interdisciplinarity/cross-disciplinarity is particularly well placed to deliver innovative insights and solutions to social questions. Universities are especially well suited to this kind of role. An interdisciplinary/cross-disciplinary, cross-sectoral approach is an important part of UG/CF's modus operandi. This mainly concerns Governance, Data Science and Sustainable Economy which, by definition, are cross-sectoral to a certain extent.
2. The second line is internationalization. Here, the idea is that internationalization opens the door, as it were, to innovative knowledge, while also helping to ensure that regional parties adopt an open attitude. The key mission here is to help the regional business community to engage with international contacts and innovative knowledge as a means of delivering innovation.

3. A university campus is ideally suited to the task of examining social issues dispassionately and, to a certain extent, independently of existing interests (or partial interests). In this context, and to a greater extent than other regional parties, it can help by focusing on long-term issues and on the fundamental questions raised by social challenges. In this respect, universities can even set the agenda.

UG/CF, along with other Frisian knowledge institutes, is essential to the academic climate

Leeuwarden's academic climate has been defined as one of the more 'vibrant' elements of a college town. It has certainly been enhanced by the arrival of the University of Groningen's Bachelor's and Master's students, albeit in modest numbers. In a broader sense, the academic climate is also related to the region's appeal as a place in which to live and work. More specifically, the region's appeal can be enhanced by its image as a place where interesting and fascinating things are happening, as well as things that bode well for the future. In this connection, the presence in the region of UG/CF and knowledge institutes (such as Wetsus and the Energy Campus) is an essential prerequisite.

Key points for further development⁶⁸

Based on the study's findings, a number of key points for the further development of UG/CF can be formulated.

- Firstly, it takes time to embed strategies that are aimed at long-term transitions. It is important to adhere to the long-term strategic goals, to ensure that the ties are successful and to gain the maximum benefit from the impact of UG/CF. Furthermore, the regional parties involved must live up to their long-term commitments.
- Secondly, if UG/CF is to succeed, it must continue to embrace 'all things Frisian'. In addition, UG/CF must have added value specifically for Friesland. This added value must be a permanent and visible aspect of its teaching and research activities. It must also be structurally embedded in the collaborative ventures with Frisian businesses and organizations that were developed in the first few years after UG/CF's inception. UG/CF's impact will be especially effective if the local solutions can be tied in to Frisian themes and to a Frisian approach. The involvement (or continued involvement) of the region's business community is a key factor in this regard.
- Thirdly, the link between the pure and applied levels within the region is particularly important. This region has traditionally leaned towards secondary vocational education and higher professional education. It's about enabling all levels to benefit from university-level knowledge and contacts. The academic input mainly takes the form of an 'open door' that it provides to scientific knowledge (at national and international levels) and its ability to actively contribute ideas concerning strategic issues. UG/CF can succeed in establishing such ties by means

⁶⁸ This also answers the last research question: *What is the potential for the upcoming years, and which factors will prompt or hinder the development of the regional knowledge infrastructure (networks and collaborative projects) and the dissemination of knowledge?*

of its teaching activities and research projects and, in particular, through cooperation (at multiple levels) between institutions of secondary vocational education, institutions of higher professional education and universities.

- Fourthly, this study shows UG/CF's role is not restricted to university-level teaching and research alone. It also has important roles as a networker, a go-between and a regional liaison for knowledge institutions outside the region, including the University of Groningen in Groningen: *'it is much more than teaching and research alone'*. In that sense, UG/CF should not focus solely on implementing and defining its own research agenda. It also needs to address its ties with the region with regard to other activities. In this way, UG/CF will be able to truly embody the concept of the University of the North.

Appendix I: The operationalization of indicators

Standpoint based on a contribution to innovation and prosperity

The regional knowledge infrastructure is considered to span all regional knowledge institutes and partnerships in the areas of teaching and research (including university-level teaching and research). In Friesland, aside from the local knowledge institutions, this concerns the knowledge institutes of Wetsus, Water Campus, European Tourism Futures Institute, Tresoar, Fryske Akademy, Dairy Campus, the Drachten Innovation Cluster, the Energy Campus and the Health Campus. Within that spectrum of parties, the regional focus concerns collaborative ventures between knowledge institutions, knowledge institutes and businesses. The aim is to embed developments in a network, in the context of the triple helix.⁶⁹ The Province of Fryslân and the Municipality of Leeuwarden are actively contributing to this endeavour.

Knowledge circulation or knowledge diffusion concerns the dissemination and use of knowledge. Knowledge circulation is important because the success of innovation is partly dependent on the speed and scope of knowledge dissemination. From this standpoint, efficient and effective knowledge circulation systems will be a great aid to innovation. Regional economic policy focuses on innovation in the business community, on research and on valorization in a Living Lab region.⁷⁰ The dissemination of knowledge contributes to these areas.

One aspect that ties in with the knowledge infrastructure is the focus on crossovers and on interdisciplinarity/cross-disciplinarity.⁷¹ The importance of interdisciplinarity/cross-disciplinarity and crossovers is based on the general assumption that they contribute, to a relatively large extent, to innovation and, as a result, to economic prosperity (including that of the region). The principle here is that interdisciplinarity/cross-disciplinarity creates new relationships between knowledge and knowledge development. This, in turn, makes it more likely that new crossover technologies will emerge.⁷² The basic idea is that knowledge-intensive, cross-sectoral cooperation is key to the survival of industries (including Western industries) in the face of global competition.

Finally, there is the aspect of internationalization. Friesland needs to tap into international contacts as, when all is said and done, exports are an important factor in regional economic growth. The goal of policy is to strengthen what are known as propelling industries (internationally oriented growth sectors). Its networks and collaborative ventures are international in nature, and its activities feature a substantial degree of internationalization. This is yet another indicator of its robust contribution to the knowledge infrastructure.

Here, UG/CF's contribution to the regional knowledge infrastructure/knowledge circulation is translated in terms of the above-mentioned concepts. This contribution involves:

- Networking and collaborative ventures (in a triple helix context)
- Knowledge circulation
- Interdisciplinarity/cross-disciplinarity/crossovers
- Internationalization

⁶⁹ Fryslân Knowledge Agenda 2019-2025, p. 25.

⁷⁰ Incidentally, it's not just about innovation, it's also a question of boosting the absorption capacity and responsiveness of society as a whole. Fryslân Knowledge Agenda 2019-2025, p. 5.

⁷¹ Interdisciplinary cooperation involves collaborative ventures that span a range of disciplines. Accordingly, this requires an understanding (knowledge and expertise) of other disciplines, plus an open attitude. In cross-disciplinary collaboration, the boundaries between individual disciplines become blurred. Collaborative ventures of this kind are more integrated in nature. It requires those involved to truly transcend the boundaries between disciplines. Accordingly, these collaborative ventures demand a wide range of competences from the workers involved.

⁷² The importance of crossovers can be traced back to what the economist Schumpeter referred to as *Neue Kombinationen* (Schumpeter, 2006, *Theorie der Wirtschaftlichen Entwicklung*, Berlin, herausgabe, Duncker & Humblot).

Tangible indicators

Networks and collaborative ventures primarily relates to the number of networks and collaborative projects to which UG/CF contributes.

Its performance in terms of attracting more external research funding to the region also helps to strengthen the knowledge infrastructure. After all, this expands the knowledge infrastructure or increases the number of networks and collaborative projects, as it were. The assumption is that, without this contribution, there would be no additional funding and the relevant research would not take place (in the region). This information is well illustrated by various progress reports, annual reports, etc.

The effectiveness of networks and collaborative ventures is determined by the *nature* of the networks/collaborative projects in question. This mainly concerns the way in which information and ideas are conveyed via the network and the extent to which this occurs. This standpoint is in keeping with the idea that innovation is largely the result of information exchange and of informal knowledge transfer ('tacit knowledge') in particular.⁷³ To draw any meaningful conclusions about this, you need to view its networks and collaborative ventures in terms of aspects such as:⁷⁴

- Frequency of contacts
- Nature of information exchange (formal or informal, unilateral or multi-dimensional)
- Extent to which contacts are formal or informal

To some extent, this can be illustrated by various progress reports, annual reports, etc. However, it will also have to feature among the questions posed in the interviews.

Knowledge circulation can be translated as the sum of all those activities that boost the dissemination of knowledge. Its regional dimension mainly concerns the public and informal dissemination of knowledge by means of lectures, publications in media (including regional media) and other public events.⁷⁵ This information can be effectively illustrated by various progress reports, annual reports, etc.

With regard to the degree of *interdisciplinarity/cross-disciplinarity* and crossover technology, this is a matter of determining how parties from other sectors become involved in networks and collaborative projects and the extent to which this occurs. This information is illustrated by means of details concerning those involved in research projects and research programmes.⁷⁶

The *international nature* of the networks and collaborative projects is reflected by the number of networks and research projects that involve parties from other countries. Any students and researchers (PhD students) with an international background can also be included here. The information on this topic is illustrated by means of details concerning those involved in research projects and research programmes.

In summary, the main indicators of its contribution to the parameters of knowledge infrastructure and knowledge circulation are:

1. Networks/collaborative projects in which it participates:
 - o number of networks/collaborative projects
 - o research/R&D funding acquired from third parties
 - o nature of the networks/collaborative projects

⁷³ 'Tacit knowledge' is a term used to describe informal knowledge transfer. It is seen as an important prerequisite for effective knowledge circulation.

⁷⁴ Based on management literature about innovation processes. See, for example, Eric Lesser and L. Prusak (eds.) (2004), *Creating value with knowledge: insights from the IBM Institute for Business Value*. New York: Oxford University Press; and Celeste Meijs, H. Wassink and M. de Laat (2012), *Zicht op informele kennis: sociaal leerkapitaal van de organisatie in kaart gebracht* (Insight into informal knowledge: mapping the social learning capital of the organization). *O&O*, 2012 (5).

⁷⁵ Knowledge diffusion through formal channels, such as academic publications, is usually not specifically geared to a particular region. Rather, its target is the academic world, both at national and international level.

⁷⁶ Here, there is no detailed assessment of academic disciplines' interdisciplinarity/cross-disciplinarity.

2. Knowledge diffusion - the public and informal dissemination of knowledge by means of lectures, publications in media (including regional media) and other public events
3. How parties from other sectors become involved in networks and collaborative projects, and the extent to which this occurs
4. Networks and research projects that involve parties from other countries

No quantitative targets have been set for these indicators. Aside from the number of degree programmes and student numbers, the UG/CF 'project' has purely qualitative targets. This means that there is no pre-existing, specific standard against which its performance can be measured. Thus, performance testing is mainly a question of identifying the state of affairs for each indicator.

Based on the study's objective, a number of indicators have been specified. The diagram depicts the indicators and potential impacts.

Type of impact	Indicators
Strengthen the knowledge infrastructure/knowledge circulation	<ul style="list-style-type: none"> - (Participation in) networks/collaborative ventures (projects)* - (Crossover) innovation (projects/collaborative ventures) - Publications, lectures, public events and tacit knowledge*** - Research/R&D funding acquired from third parties
Strengthen the business climate	<ul style="list-style-type: none"> - Highly educated individuals in Frisian society - Appeal of living conditions and quality of life - Academic climate (appeal for students and other residents)
Strengthen the economic structure	<ul style="list-style-type: none"> - Strengthen promising, internationally oriented sectors - Interdisciplinarity/cross-disciplinarity (projects/collaborative ventures)** - Strengthen stance with regard to promising themes (Knowledge Agenda themes, digitization, sustainability)
Smoothly running labour market	<ul style="list-style-type: none"> - Bring supply (educational programmes) into line with demand (from regional businesses and organizations)
Social impacts	<ul style="list-style-type: none"> - Contribution to knowledge (or knowledge networks) aimed at social themes (governance, social domain, sustainability, etc.)

* Regional and national (and international) collaborative ventures and networks.

** Interdisciplinary cooperation involves collaborative ventures that span a range of disciplines. Accordingly, this requires an understanding (knowledge and expertise) of other disciplines, plus an open attitude. In cross-disciplinary collaboration, the boundaries between individual disciplines become blurred. Collaborative ventures of this kind are more integrated in nature. It requires those involved to truly transcend the boundaries between disciplines. Accordingly, these collaborative ventures demand a wide range of competences from the workers involved.

*** 'Tacit knowledge' is a term used to describe informal knowledge transfer. It is seen as an important prerequisite for effective knowledge circulation.

Long-term policy goals

The indicators are in line with the policy-based frameworks in the economic field. One of the goals cited in connection with the decision about UG/CF was enhancing the economic value of university education, and of higher education in general, in Friesland. The aim is to '*wearde fan it heger and akademysk ûnderwiis yn ús provinsje út ekonomysk perspektyf wei in fergrutsjen*' (enhance the economic value of university education, and of higher education in general, in Friesland; Provincial Council proposal of 16 December 2015, p. 2). This development of the province's academic climate is aimed at economic structural enhancements and boosting Friesland's capacity for innovation (Provincial Council proposal of 16 December 2015, p. 8).

In addition, a number of long-term goals (or aspirations) were listed. Among other things, a population with higher education qualifications tends to experience less incapacity for work, greater security, better public health and '*development opportunities for young people in the region*' (Province of Fryslân, 2015, FAQ: 25 Frequently asked questions about University of Groningen/Campus Fryslân. Leeuwarden. Question 8, p. 3). Over time, this also tends to reduce the social costs of public health, crime and unemployment. In addition, the local availability of

university degree programmes is expected to have various long-term impacts. For example, a population with higher education qualifications helps to boost productivity, social returns, employment, spending and the business climate (and its image). Furthermore, the concept of '*talent attracts talent*' is expected to have a beneficial long-term impact. Various other long-term social effects are mentioned, such as greater creativity, more cultural facilities and a better international profile.

Appendix II: Academic climate

The term ‘academic climate’ is somewhat ambiguous and has many different connotations. The concept of an ‘academic climate’ can be approached in various ways.

Policy goals

Strengthening the academic climate is a long-term strategy of the Province of Fryslân. The provincial authorities’ policy documents often equate the term ‘academic climate’ to academic (= university) teaching and research. The provincial authorities have already invested in scientific research, as have other parties (Wetsus, Dairy Campus, Fryske Akademy, etc.). However, prior to the arrival of UG/CF, there were no university-level programmes. From this standpoint, the increased range of university teaching and research on offer can, in itself, be seen as providing a boost to the region’s academic climate.

Furthermore, in the policy documents, strengthening the academic climate is mentioned in the same breath as strengthening innovation and the economic structure. This refers (or may refer) to the way in which scientific research has contributed to innovation and to innovation-based (or new) businesses. From this standpoint, the academic climate and economic aspects are virtually one and the same. Incidentally, this economic standpoint is also in keeping with the view that, in many cases, economically strong regions also tend to have university campuses.

In the policy documents, the matter of improving the academic climate is specifically linked to the position of the city of Leeuwarden. It seems to be much more about Leeuwarden’s appeal (to students) as a student city. The city of Leeuwarden is described as being ‘the site of a university campus’. Other policy documents, however, broaden the term to cover more than Leeuwarden alone. They point to the impact on ‘*de ûntwikkeling fan it akademysk klimaat yn brede sin yn Fryslân*’ (the development of an academic climate in Friesland, in the broadest sense).

Economic standpoint: factors that influence the choice of location

From an economic standpoint, the academic level of a society can also be seen as adding to the region’s overall appeal, particularly for businesses thinking of establishing a presence there. This is partly about the general impact that the presence of a university campus has on a region’s appeal, or image.⁷⁷

In terms of factors that influence the choice of location, the local availability of a wide range of high-quality educational programmes (including higher education programmes) can be identified as an important factor for businesses (and residents). This is also a factor that becomes increasingly important during periods of labour market shortages.⁷⁸ It could be argued that specific elements (of relevance to Friesland) here include the extent to which university education and vocational education reinforce one another, and the opportunities for advancement.

A region’s general level of education could also be one of the factors that influence the choice of location. In this regard, it should be noted that Friesland has a relatively low percentage of highly educated residents compared to other regions. The presence of UG/CF (and, incidentally, of other knowledge institutions) in the region is associated with a relatively large number of highly educated individuals. While this directly improves the region’s overall percentage, the impact is very small in terms of numbers.⁷⁹

⁷⁷ This could be explored by means of a general study into the matter of image, etc.

⁷⁸ Regional economic studies that address the relationship between university campuses and regional economic development often focus on metropolitan regions. The sheer scale of those regions is much greater than that of Friesland, so it is impossible to draw simple like-for-like comparisons with the Frisian region.

⁷⁹ Wetsus, for example, cited a target of 2,000 knowledge workers who, in theory, are all highly educated individuals. A strikingly large percentage of the employees at Wetsus and typical water technology businesses are highly educated individuals (usually around 50%). In terms of absolute numbers, however, these workforces are relatively small.

Living conditions and quality of life

From a different and more wide-ranging standpoint, the academic climate is seen as only one element in the broad sweep of living conditions and quality of life. At the same time, this is more about 'climate' in the sense of a region's 'image' or 'culture', or the way in which it is 'perceived'. The basic idea is that an academic climate brings more dynamism, innovation and creativity. That line of reasoning is based largely on the number of highly educated individuals in a given region. It assumes that these individuals will make a relatively large contribution to the creative sector, to culture, to the use of restaurants, etc.⁸⁰ There is no specific data concerning the relatively extensive use of these kinds of facilities by highly educated individuals in the city of Leeuwarden and the Province of Fryslân.

⁸⁰ Such reasoning is in line with the concept of the 'creative class' (R. Florida, *The rise of the creative class*, 2002).

Appendix III: Province of Fryslân monitoring indicators (progress reports)

Selection of relevant indicators from: Province of Fryslân (2015), *Monitoring framework University of Groningen/Campus Fryslân*. Leeuwarden.

NO.	THROUGHPUT INDICATOR
4.	The degree of coverage between PhD projects and the Frisian 'hotspots'
NO.	OUTPUT INDICATOR
9.	Number of University College graduates, categorized by track, giving details of any follow-up degree programmes and origin (Fr, NL, EEA and non-EEA)
13.	Number of Master's graduates per programme, categorized by origin (Fr, NL, EEA and non-EEA)
14.	The number of PhD students working on PhD projects at UG/CF and elsewhere in Leeuwarden/Friesland, categorized by PhD project topic, the stage (years 1–5) of that project, and that PhD student's home region
16.	The types of work found by UG/CF's PhD students after they graduate, and the locations where they work (Leeuwarden, Friesland, elsewhere in NL, outside NL) a. Self-employed b. R&D position within an existing business c. Position at a university of applied sciences or a traditional university d. Position in the public sector e. Other positions in the business community
18.	Number of new pre-Master's at Frisian universities of applied sciences (second and third generation)
19.	Number of students per bridging programme/pre-Master's programme, including details of their Bachelor's degree programme and the university of applied sciences in question
20.	Number of students taking the above-mentioned pre-Master's programmes, categorized by home region (Fr, NL, EEA and non-EEA)
21.	Number of university students/PhD students living in Leeuwarden
22.	Elaboration of flanking policy; the number and content of seminars, debates, student symposia, seasonal schools and public events that are directly linked to them
23.	UG/CF's partnerships in the fields of education, training and research
24.	Organizational structure of Campus Fryslân staff (number and staffing level) categorized into academic staff (AS), administrative and support staff (ASS), student-teacher ratio
25.	Activities within the framework of Extension school/development of MOOCs (massive open online courses)
NO.	OUTCOME INDICATOR
26.	Direct spending
27.	Business start-ups: the number of new businesses springing up around UG/CF, and the number of jobs being created for highly educated individuals, with a focus on Frisian 'hotspots'
28.	Innovations by the business community
29.	Highly educated workforce: the percentage of highly educated workers in Leeuwarden/Friesland compared to similar cities and the national situation
30.	Leeuwarden's image as a City of Knowledge and Education; the percentage of young Frisian people taking programmes at universities of applied sciences or traditional universities compared to the national percentages

Appendix IV: Individuals interviewed

The interviews took place from May to June 2020. They were conducted online or by telephone.

Name	Organization
External collaborative partners	
Carin van der Meij	Leeuwarden Student City
Sjon de Haan	World Heritage Site/Wadden Society (Waddenvereniging)
Hessel Bouma	LIMIS/Advisory Board of UG/CF
Jelle Nauta	Network ties to Secondary/Higher Education
Bert Looper	Tresoar
Sebastian Karges	Alumnes SE
Rudolf Simons	DataFryslân
Karel Veeneman	Wetterskip Fryslân (Frisian Water Board)
Harmen de Haas	Former Municipality of Leeuwarden
Christiaan Boerma	Medical Centre Leeuwarden
Joost Krebbekx	Drachten Innovation Cluster
Geesje Duursma	The Pleats
Hans-Paul van der Snee	Fryslân Innovation Pact (IPF)
Dominique Derks	Friesland College
David de Vries	Province of Fryslân
Houkje Rijpstra	Circular Friesland
Tim Wassenaar	Student associations' inter-administrative consultative body (IBOS)
UG/CF	
Anna Beaulieu	Director, Data Research Centre
Engelien Reinstra	Marketing and Communications Manager
Indira van der Zande	Programme Director
Caspar van den Berg	Professor of Global and Local Governance
Gjalt de Jong	Professor of Sustainable Entrepreneurship in a Circular Economy
UCR	
Jorrit Snijder	Director/administrator of UCR
Simon Jongepier	Strategic consultant, Municipality of Middelburg
Ton Brandenburg	Secretary, Campus Zeeland