

The Sustainable Development Goals and Student Entrepreneurship in the Arctic

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This article answers the research question of how entrepreneurship projects in Higher Education (HE) in the Arctic can incorporate the Sustainable Development Goals. Students can play a significant role as driving force for sustainable development in the Arctic. Their unique combination of highly specialized skills, innovative thinking and strong entrepreneurial spirit can make a substantial contribution to the development of the Arctic region. Many students are intrinsically motivated towards engaging themselves in sustainable change. It is a well-documented attitude among the so-called “millennial generation” that they are looking beyond profit and strive to make a difference in their communities and to make an impact on pertinent social and environmental issues. The article analyses a project called “Promoting sustainable student entrepreneurship in the Arctic”, which seeks to support the entrepreneurial potential among students to the benefit of the sustainable development of Arctic societies. In terms of sustainability thinking, the project builds on two key frameworks: 1) The UN Sustainable Development Goals, and 2) The Abundance Cycle framework. By incorporating social, environmental as well as financial aspects, the internationally recognised Abundance Cycle framework provides an operational approach for working with sustainable entrepreneurship and a toolkit for incorporating sustainability thinking into teaching and entrepreneurial projects in Higher Education in the Arctic. The project highlighted that experiences and methods from outside the Arctic can be translated and implemented if adapted to specific Arctic needs and experiences, and furthermore that the partners from outside the Arctic context learn something new about innovation and entrepreneurship processes.

Introduction

How can entrepreneurship projects in Higher Education (HE) in the Arctic incorporate the Sustainable Development Goals? We provide a project-based answer to this question. The question (and project) is relevant, because of several overlapping trends. First, we observe a general trend that both public and private actors demand more focus on entrepreneurial skills and mind-

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set being included in HE curricula and courses. North American universities like MIT and Stanford have since the late 1990s been highlighted as frontrunners of “the entrepreneurial university” (Trencher *et al*, 2014). In a European Commission report on entrepreneurship in HE from 2008, it is concluded that in most EU-countries “entrepreneurship in non-business studies is a very new issue. In general terms, entrepreneurship is not yet sufficiently integrated into the curriculum of higher education institutions” (European Commission, 2008: 15). Ten years later, programmes, courses, conferences, projects, and camps are too numerous to count.

Secondly, the focus has widened from a belief that an entrepreneurial mind-set and skills would lead to new jobs and economic growth in countries struggling after the financial crisis. Today, entrepreneurship is included in all kinds of courses and thinking across the disciplines from the natural sciences to humanities spanning the traditional business focus to entrepreneurship and innovation in the public sector and socio-economic or environmental projects with non-economic purposes (Chiu, 2012; Reffstrup & Christiansen, 2017). The focus has also deepened as universities are increasingly going beyond their third mission or engagement with society by adding a fourth mission of “co-creation of sustainability”.¹ Innovation and entrepreneurship has been a natural way of increasing and experimenting with new triple or quadruple helix projects, but also moving from economic to non-economic purposes (Rosenlund, Rosell & Hogland, 2017; Trencher *et al*, 2014). As Richard Chiu writes in an analysis of entrepreneurship education in the Nordic countries:

It has been long understood that entrepreneurship is a key driver of economic growth, employment, innovation and productivity. Entrepreneurship could also contribute to social and environmental development (2012: 4).

Third, the Sustainable Development Goals (SDGs) or the global goals running from 2015-2030 are for all, also for the Arctic. There are 17 SDGs with 169 targets.² They all include the three dimensions of sustainable development, namely the social, economic, and environmental dimensions, and focus on five areas: People, Planet, Prosperity, Peace, and Partnerships (United Nations Department of Economic and Social Affairs, n.d.). The SDGs are not specifically targeted at developing countries like the predecessor the Millennium Development Goals (United Nations, n.d.). Moreover, although the SDGs are from the United Nations, everyone is invited to take ownership and work with the SDGs. With increasing global attention given to the Arctic, it should come as no surprise that the SDGs have also found their way to the Arctic. The peoples, communities, and countries of the Arctic have long been focused on sustainable development, which is also at the core of the work of the Arctic Council (AC) since its inception in 1996, especially in the Sustainable Development Working Group (SDWG). The current Finnish Chairmanship of the AC has placed the SDGs as its guideposts. It is illustrated by recent events such as the Rovaniemi Arctic Spirit Conference 14-16 November 2017 with SDG implementation as the main theme (Rovaniemi Arctic Spirit, n.d.). 1 December 2017, the Kingdom of Denmark in partnership with the Arctic Economic Council hosted an international high-level conference on the “SDGs in the Arctic: Local and Global Perspectives” (Ministry of Foreign Affairs of Denmark, 2017). From October 2017, UK based think-tank, Polar Research and Policy Initiative (PRPI) has held ten “High-Level Dialogue on SDGs in the Arctic” events in Iceland, Finland, Canada, UK, US, Norway, and the Faroe Islands, and even as far away as India and Australia. In Australia, the event was co-hosted with the Australian Institute of International Affairs³ (PRPI, n.d.). At this roundtable, it was discussed:

how Australia can contribute to the United Nations' 2030 Sustainable Development Goals, both domestically and in the Arctic region, and [the session] drew parallels between the experiences of Australia and New Zealand's Indigenous communities and those in the Arctic (AIIA, 2018).

Finally, we observe an increase in research and university collaboration across the Arctic as evidenced by e.g. University of the Arctic activities and thematic networks, the Fulbright Arctic Initiative (Virginia *et al*, 2016), a network like the China-Nordic Arctic Research Centre, the work and partnerships of PRPI, and finally, the Arctic Council's latest legally binding "Agreement on Enhancing International Arctic Scientific Cooperation" (Arctic Council, 2017).⁴ All these activities and focus on SDGs in the Arctic suggest real commitment and coordinated efforts. Responding to these observations, this article analyses early findings from a new HE project called "Promoting sustainable student entrepreneurship in the Arctic". We present the project and findings over the next sections including how the project works on two parallel tracks: one about needs and experiences of the universities where the project is implemented, and one about translation of the transferable skills and mind set training from the experienced partner universities to the Faroe Islands and Greenland.

Promoting Sustainable Student Entrepreneurship in the Arctic

Since early 2017, five universities across the North Atlantic Arctic have been working on the project "Promoting sustainable student entrepreneurship in the Arctic". Our universities educate students in disciplines ranging from natural/technical to social sciences, and the project has been funded by the Nordic Council of Ministers, the Bank of Greenland Fund, and the Knud Højgaard's Fund. The partners in the project are Ilisimatusarfik – University of Greenland (Nuuk), Arctic Technology Center, Sisimiut (Greenland), Fróðskaparsetur Føroya – University of the Faroe Islands (Tórshavn), Háskólinn á Akureyri – University of Akureyri⁵ (northern Iceland), DTU – Technical University of Denmark, as well as the College of the Atlantic (Maine, USA) which has contributed with the Abundance Cycle method explained further below. The project has a total duration of three years and is going on its second year. The geographical focus on the West Nordic region has created good conditions for cooperation and a common need-driven approach to entrepreneurship in HE. Likewise, the West Nordic universities in Greenland, Iceland, and the Faroe Islands are presented with the same challenges of small communities with limited capacity in terms of entrepreneurial skills at HE levels and support for start-ups. However, the intention is to disseminate the project findings to a broader circle of Arctic universities via workshops at Arctic assemblies and by making the results and entrepreneurial methods public to other universities.

Needs and Experiences

Implementing any new project from one context to another is always a challenge. Simply put, the project transfers existing knowledge and experience from two universities, Technical University of Denmark (DTU) and College of the Atlantic (COA), initially to the University of the Faroe Islands and the University of Greenland. DTU and COA are very resourceful universities with long traditions of innovation and entrepreneurship training. Furthermore, DTU is a large university operating in a North European context of a highly developed welfare system, highly functioning educational system with a critical mass of researchers and students, and a strong, diverse, and international business community supportive of the university. The Faroe Islands and Greenland, like many other countries and places in the Arctic, are not near this level of

development and supporting circumstances found in the capital region of Denmark. This, of course, provides some barriers, but there are some opportunities of being small. Furthermore, Greenland is characterised by many small towns and settlements scattered across huge distances connected only by ocean and air travel, when weather conditions allow for it; whereas the Faroe Islands is rather small with a tight-knit society. The general educational level in Greenland is lower than in the Faroe Islands. In terms of economy and culture, both countries are still connected to fisheries, hunting, herding, and shipping. The populations are small; 51,000 for the Faroe Islands and 56,000 for Greenland compared to DTU's 11,200 active students and about 6,000 staff (DTU, n.d.). A main difference between Denmark, Faroe Islands, and Greenland is the degree of the national economy's diversity with Faroese and Greenlandic economies more dependent on the public sector for jobs and development than Denmark. Overall, to translate experiences and knowledge from DTU, we have identified a need for both scaling down DTU experiences and activity levels and focusing more on questions of public sector and social innovation than private sector and for-profit activities. We also sought to identify existing experiences from courses and other activities in Greenland and the Faroes that could be of inspiration.

Technical University of Denmark (DTU)

One of the core strategic missions of DTU is to disseminate research-based knowledge and technologies to society through cooperation with industry and the public sector. Innovation is an integrated part of the educational programmes and via traineeships and joint research projects, the student's knowledge and good ideas are put to the disposal of the companies, often resulting in start-ups. In 2017, DTU registered 60 start-ups and 50 student start-ups. The tradition of innovation and entrepreneurship combined with over 100 years of research in the Arctic has provided a strong basis for engaging in cooperation with Arctic HE institutions to develop student entrepreneurship adapted for the Arctic societies. At the same time, DTU works with the SDGs at a strategic level and uses them as the basis for research and education. In many of the SDGs, technology plays an important role in the solutions of the articulated problems, and future generations of candidates will be increasingly concerned with sustainability. Thus, DTU's research and educational activities are supporting the realisation of the SDGs in the Arctic.

Experiences from DTU's Arctic Engagement

Arctic Technology Center (ARTEK) DTU has educated 100 Arctic engineers up to 2018; most of them are now employed in Greenlandic companies. DTU has student trainee programmes with Arctic companies and many of the students write their thesis based on this cooperation. This provides the students with direct knowledge of the opportunities as well as challenges of running a business in the Arctic.

DTU has been engaged in international research concerning climate, mining, fisheries, oceanography, telecommunications, environment, and much more contributing to the knowledge of how to create sustainable development in the Arctic. Among other things, DTU has analysed the potential of business and societal development if a space-based infrastructure with satellites combined with drones and autonomous systems were at the disposal of Arctic societies. In the international Joint Nordic Master's programme, called Cold Climate Engineering, three tracks are offered: 1) *Space* including earth observation techniques, mapping and navigation, 2) *Land* including design and operations of Arctic infrastructure, and 3) *Coast* including Arctic ships and offshore

infrastructure and operations. Students are of various nationalities, and thus, knowledge of Arctic engineering is actively disseminated across countries. Likewise, new educational programmes are being developed based in Greenland: A Bachelor's programme in fisheries technology together with the self-rule government of Greenland, and an international Master's programme in Arctic Mineral Resources under the EU Knowledge and Innovation Community called EIT Raw Materials.⁶

DTU Skylab

DTU Skylab⁷ is the hub for technology-based innovation and entrepreneurship at the university. The hub is a meeting point between all kinds of stakeholders within the ecosystem including universities, industries, public sectors, and investors. Through various programmes, facilities, and other offers, DTU Skylab supports three types of innovation: 1) Start-up projects from idea to mature projects can get help on business development, fundraising, company creation, team, internationalisation, and communication; 2) Courses from DTU are hosted, co-created, and mentored with involvement of DTU Skylab; 3) Public and private engagements with students and researchers happen through case competitions, hackathons, sprints, and innovation projects. The physical space covers 2,000m² and offers highly accessible interdisciplinary prototyping workshops and labs, teaching facilities, incubation and office space, as well as flexible co-working and event space. Until recently, the hub was focused on student innovation, but with a new large grant from the A.P. Møller Foundation, an additional 3,000m² of facilities will be added, building up to an even more significant inclusion of researchers and industry. DTU Skylab is largely built around international partnerships where joint programmes and exchanges happen in relation to e.g. EuroTech⁸, Nordic Five Tech⁹, EUXCEL¹⁰, and Nordic Entrepreneurship Hubs. This pushes DTU Skylab to a position as an internationally leading hub, and is a popular destination for visiting delegations (100 in 2017, half of them international from 18 countries).

The numbers from 2017 speak to the size and experience from DTU Skylab: 152 student start-ups and pre-start-ups used DTU Skylab services. DTU students registered 50 new companies during the year. Forty-three teams of students joined the hub's various start-up acceleration programmes like Skylab Ignite¹¹ and European Venture Programme¹² and 27 start-ups got soft funding of up to 20,000 EUR through Skylab Funding.¹³ On corporate collaboration, numerous spinoff cases with student teams working on corporate IP were created in the course Hardtech Entrepreneurship¹⁴ and the hub facilitated four major hackathons, e.g. the in-house bi-yearly hackathon Open Innovation X¹⁵, based on corporate/organizational challenges. There has also been an increased focus on social innovation. DTU is a Danish partner university and DTU Skylab joined the facilitating team in the UNLEASH event,¹⁶ which focuses on co-creation and problem solving for the SDGs. Moreover, DTU Skylab designed and hosted the student case competition "Better Food for More People" at the World Food Summit in Copenhagen, and held two "Let's Act Together" events for students on social innovation. These activities involved more than 260 students. Additionally, a new student-driven SDG-ambassador team counting 45 students was launched. (DTU Skylab, 2018).

College of the Atlantic and the Abundance Cycle Framework

Located in Bar Harbor, Maine, the College of the Atlantic enriches the liberal arts tradition through a distinctive educational philosophy called human ecology. A human ecological perspective

integrates knowledge from all academic disciplines and from personal experience to investigate, and ultimately improve, the relationships between human beings and our social and natural communities. The human ecological perspective guides all aspects of education, research, activism, and interactions among the college's students, faculty, staff, and trustees. The COA community encourages, prepares, and expects students to gain expertise, breadth, values, and practical experience necessary to achieve individual fulfilment and to help solve problems that challenge communities everywhere.

Although most people feel that supporting sustainable development is important, entrepreneurs may encounter difficulties translating sustainability into business strategies and tactics for new ventures. The framework called Abundance Cycle, developed by Professor Jay Friedlander, Sharpe-McNally Chair of Green and Socially Responsible Business at College of the Atlantic, bridges this gap between sustainability and business (Friedlander, 2016). The Abundance Cycle framework is tailor-made for leveraging sustainable business models to launch enterprises, remake existing companies and provide pathways for Arctic entrepreneurs to simultaneously build economic value and fulfil SDGs. The three central perspectives in the Abundance Cycle framework – people, planet, profit – are derived from the concept of “the triple bottom line” (TBL). TBL refers to the notion that the performance of companies should be measured only by the traditional measure of financial profit, but by three different bottom lines:

- The profit and loss account; the traditional measure of corporate profit.
- The organization's “people account”; a measure of how socially responsible the organization has been in its operations.
- The company's “planet” account; a measure of how environmentally responsible it has been.

Rather than viewing these areas as trade-offs or separate, the Abundance Cycle inextricably links these areas and seeks solutions that build a virtuous cycle simultaneously strengthening each bottom line (see Figure 1). Finding a new perspective is at the heart of innovation and by building on the TBL line of thinking the Abundance Cycle framework can help operationalize the concept of sustainability for the coming generations of Arctic entrepreneurs.

The Abundance Cycle also goes further by tying together strategy and sustainability. It expands the value chain to seamlessly incorporate each aspect of the TBL into the main activities of an enterprise (see Figure 2). Doing so both de-risks sustainability and allows enterprises to link sustainability and competitive advantage, fundamentally tying value creation and sustainability together.

Experiences from The University of the Faroe Islands

Between September 2014 and January 2018, as part of the Master's in West Nordic Studies, Governance and Sustainable Management at The University of the Faroe Islands, we developed and taught a two-year international Master's Programme with more than 10 Master's and PhD courses relating to sustainability and included innovative teaching and learning methods.

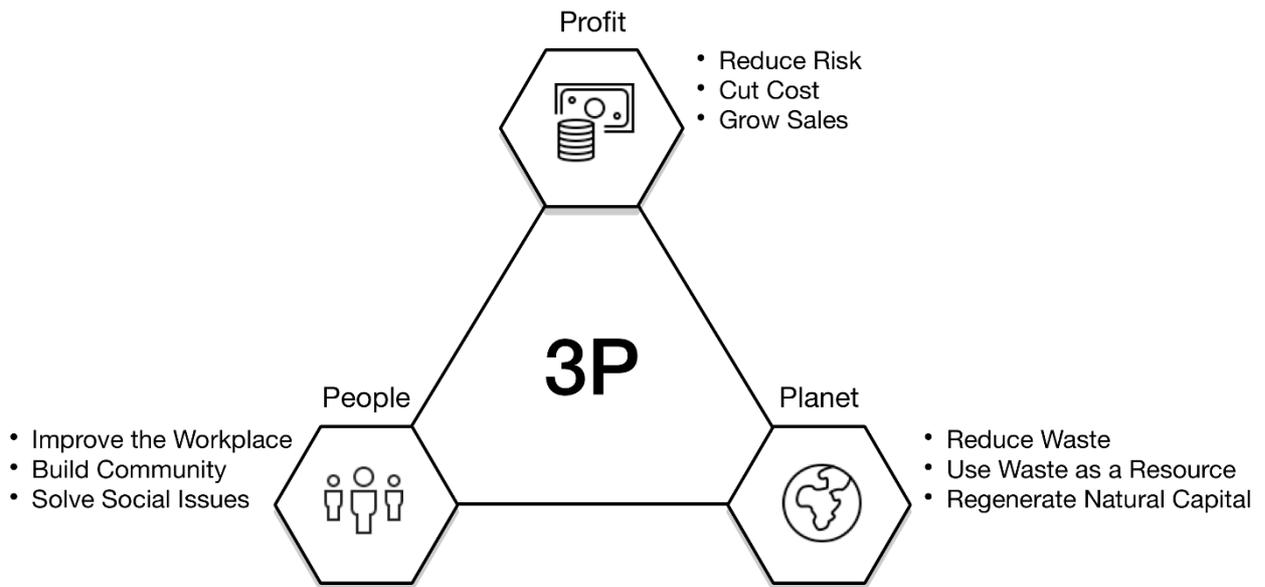


Figure 1: Abundance Cycle Framework’s Basic Components

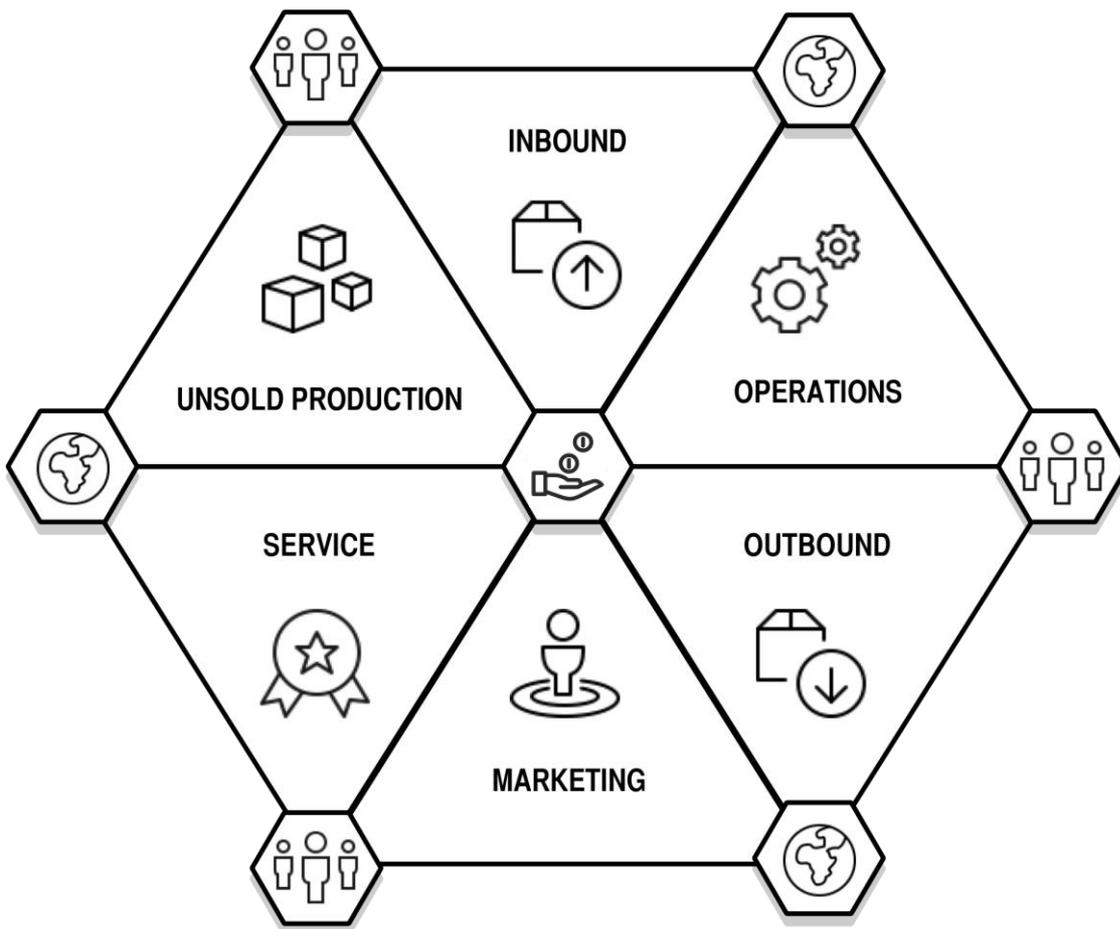


Figure 2: The Abundance Cycle links to strategy by incorporating TBL across the enterprise.

Student numbers for each course were between five and fifteen. Our overall experience including student feedback of this (new) way of teaching is that students – if they read the course literature and participate in all elements of the courses – reach a qualitatively higher level of knowing compared to students following traditional classroom based courses. Our understanding of levels of knowing follow Bent Flyvbjerg's application of Aristotle's idea of *phronesis* (also known as practice and master learning) coupled with Dreyfus and Dreyfus' five stage model of skill acquisition. We have further applied Andrew Van de Ven's (2007) Engaged Scholarship approach in both research and teaching; an approach that situates the research and learning experience in a dialogic setting with relevant stakeholders.

We developed three types of courses that implicitly contained innovation and entrepreneurship, but mostly theorised these elements through the lens of transdisciplinarity.¹⁷ The first type uses a teaching and learning approach with three elements in a 50-25-25% division:

- 1) Traditional classroom teaching and dialogue between teacher and students about academic literature and empirical examples. This element accounts for 50% of the time and will introduce different topics, theories, and concepts, which will be used to reflect upon, analyse, and discuss the other activities.
- 2) Dialogue meetings with stakeholders relevant to the course topics accounting for 25% of the time. Students help prepare the dialogue meetings.
- 3) Students' own communication projects about a course topic communicated to a non-academic audience accounting for 25% of the time. Students are free to work in groups or individually and select form, medium, and audience. Examples of projects include writing a blog, writing newspaper articles, making videos, podcasts, posters, public speaking, a radio programme, teaching elementary school pupils, or art exhibitions. Students are supervised throughout the process from project formulation to implementation to make sure projects fit with the course content and learning outcomes.

The second type of courses, projects on transition to a sustainable society, was developed as part of a larger project developing an old city house from the 1960s, which the University of the Faroe Islands inherited and uses (as per the testament) as a dormitory and guest house for foreign researchers. We call the house 'The Green Student-House', and have re-imagined it as a living learning lab. The larger project and vision is to develop the house into an example of how to retrofit and re-model a typical Faroese city house to a sustainable house, perhaps energy-neutral or energy+ house, through a pilot project of zero-emissions building. We work together with other schools, the municipality, architects, companies, and the neighbours and local community take part as well. All activities are documented on our websites.¹⁸ Examples of student projects include an aquaponics system, a self-composting composter, growing vegetables and mushrooms, and upcycling trash to garden furniture. Students are supervised throughout the process from project formulation, literature search, website communication, and implementation to make sure projects fit with the course content and learning outcomes.

The third type applies an Engaged Scholarship approach coupled with Narrative Governance theory in practice. Whenever possible we would bring students to workshops and conferences with stakeholders, and encourage them to become *green change agents* in their local communities. One course was a combination of these elements; a combined Master's and PhD course on Arctic Science Diplomacy in Practice with a one-day intensive course prior to participating in the three-

day Arctic Circle conference. Other courses were in connection with a network called Green Growth Dialogue and its different conferences.¹⁹

The Project Progression and Lessons Learned

The first year of the project: “Promoting sustainable student entrepreneurship in the Arctic” has mapped the needs and challenges of introducing innovation and entrepreneurship as an integrated part of the educational programmes offered by the partner universities. Through group discussions of the very diverse needs and experiences identified, we found it important to work on two parallel tracks. On the one hand identifying and working with the specific needs of the places of implementation and experiences of the universities there. On the other hand identifying and translating the transferable skills and mind-set from the experienced partners to the new partners (e.g. from DTU and COA to West Nordic universities). Working with the SDGs and the Abundance Cycle framework is more or less the same across settings; however, developing and implementing new courses in Greenland and the Faroes is at this stage an experience of scaling down, focusing more on the social and environmental aspects and less on creating start-ups. Furthermore, it is about letting the students define and act out what is possible given the universities’ very limited resources.

The main operational goal in the first year has been to train teachers at Arctic HE institutions based on the Abundance Cycle framework and the SDGs to be able to teach, train, and cultivate entrepreneurial mind-sets and competencies among students. Intensive workshops have been held at the partner universities for both faculty, senior students, and professional innovation facilitators, and business incubators. In combination with the training of teachers, the project has focused on the development and implementation of courses for students in sustainable entrepreneurship. The project has been presented to Arctic stakeholders: other universities, policy makers, and business sectors at the Arctic Circle Assembly in Reykjavik, 13-15 October 2017 and 19-21 October 2018, and at the Arctic Circle Forum in the Faroe Islands, 8-9 May 2018. The project has created awareness of the possibilities of integrating entrepreneurship thinking into the traditional HE systems.

In the next phase, developing, implementing and evaluating pilot curricular courses at the participating universities will continue – the key parameters for success being to complete at least four pilot student courses. The project will also continue to disseminate the knowledge and results to a broader range of Nordic and Arctic stakeholders at the Arctic Circle Assembly and Forum as well as putting the method and the experiences learned at the disposal of other Arctic universities. In numbers, the project aims at educating 10 faculty to be able to integrate the Abundance Cycle framework in their teaching, thus supporting the education of around 100 new Arctic entrepreneurs spread across the West Nordic countries, and finally to present the project concept and results at a minimum of four international workshops.

Abundance Cycle Workshop – Train the Teachers

In December 2017, the first course in the Abundance Cycle Framework was held at DTU by Professor Jay Friedlander. Participants came from the universities of Greenland, the Faroe Islands, Aarhus University, and DTU. Studies have shown that people believe in sustainable development, but are often unclear as to how to achieve these goals. As a result, sustainability efforts happen in an *ad hoc* fashion rather than a systemic approach – reducing impact and wasting valuable resources.

Furthermore, plenty of evidence from books like Conscious Capitalism to Harvard Business Review articles and academic studies tracking stock market performance show that sustainability focused enterprises outperform their peers. The objective of the workshop was to teach participants how to break down constructs, utilize proven tactics and use the Abundance Cycle to plan, analyse, and maximise sustainable development impact from across the curriculum. Throughout the two workshop days, the participants shared experiences described above and explored how to use the model and learn from others who are already creating abundance. Based on the SDGs and knowledge of context and local needs in Greenland and the Faroe Islands, the participants came up with sustainable business ideas and developed the business models by applying the Abundance Cycle Canvas (see figure 3) and the Abundance Cycle Tactics. As tools, the Canvas and Tactics helped break down the businesses into their core activities in order to understand their competitive strengths. One of the ideas spurred a new project on sustainable Arctic container farming, which DTU students have been engaged in developing further. The participants left the workshop with a toolkit for incorporating abundance into their teaching and projects. The next section describes how this was done at the University of Greenland the following semester.

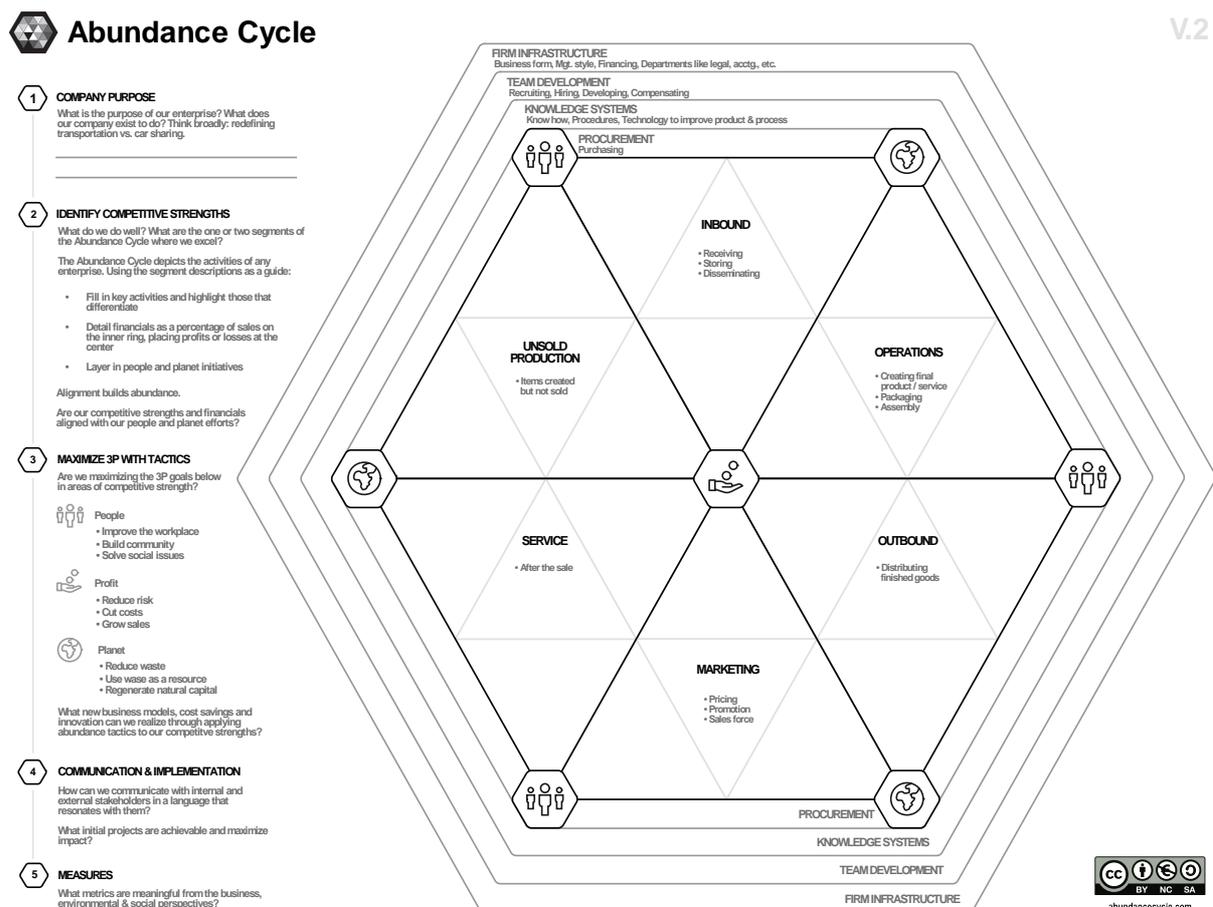


Figure 3: The Abundance Cycle Canvas allows enterprises to chart out their strategy and sustainability together.

Bringing the Arctic to DTU Skylab

In the 2018 Spring semester, at the DTU course Hardtech Entrepreneurship taking place at DTU Skylab, the Abundance Cycle platform facilitated the start-up business *Arctic Grow* reusing shipping containers for growing crops in the Arctic. Arctic Grow was started by students from Denmark and the Faroe Islands and is reaching out to Greenland to spread the concept further North. Inspired by SDG number two, Zero Hunger, students at DTU Skylab decided to focus on issues of food security and food production in the Arctic. During the course, students battled with the many practical issues of locally grown produce in the Arctic, like the not uncommon lack of available goods due to weather conditions. They quickly discovered that *food* as a theme is related to other SDGs and sustainability within the Arctic in a myriad of ways: CO₂ emissions from imports (e.g. SDG13 on Climate Action); accumulation of plastics and garbage (e.g. SDG14 on Life Below Water); spoilage and waste due to harsh climates and distances, high prices and their socio-economic impact on, often, low-income consumers, and, adverse effects on health such as diabetes and obesity due to the consumption of highly processed and low quality foods (e.g. SDG3 on Good Health and Well-Being) (Jørgensen, 2010). While working on Arctic Grow, a self-contained food production unit fitted within a repurposed shipping-container, the reality of scale of the problem became apparent to them. Not only did they realise how difficult such a solution would be on a purely technical and financial level, but more importantly, how far-reaching the developmental implications of solving sustainable local food production in the Arctic can be.

Two Courses at University of Greenland

Based on the above, University of Greenland developed and taught two interdisciplinary courses in the Spring semester 2018. Both courses were offered to both Bachelor's and Master's level students. The first course, Sustainable Entrepreneurship I, ran from 5 February to 23 March, and the second course, Sustainable Entrepreneurship II, ran from 3 April to 18 June. The overall aim of the first course was that the students gain theoretical insight as well as hands-on experience with the pre-idea phase and planning for sustainable entrepreneurship (Marshall, Coleman & Reason, 2017; Bastien & Holmarsdottir, 2017). The second course builds on this and aims for planning, executing, and evaluating sustainable development projects in an iterative way in close relations with stakeholders (Berzin & Pitt-Catsoupes, 2015; Foley & O'Connor, 2013; Gibson-Graham & Roelvink, 2014; Godoy et al, 2005). The two courses individually and together form an action research process (Marshall, Coleman & Reason, 2017): After an introduction to the core theories, concepts, and methodology in the first course, the students form interdisciplinary teams based on interests, previous experiences, preferences, mixing bachelor's and master's students, etc. After the team formation, groups go on a field trip to a socio-geographical setting and context of which the groups are working. Here the students will perform ethnographic research (interviews, observations, etc.) and improve the project together with the stakeholders.

After the completed fieldwork, the groups analyse the data and embark on a creative process including divergent and convergent thinking. The Abundance Cycle Canvas will inspire, guide, and structure the creation of sustainable entrepreneurial opportunities. There have been eight students enrolled in both courses forming five teams, and at the time of writing, experiences are very positive.²⁰ The students have gained a better understanding of innovative processes in theory and practice as well as understanding of the importance of connections to and inclusion of relevant local stakeholders both to create viable, successful projects, and to validate the assumptions,

implementation process, and results of the projects. It was easy for teachers and students to work with the Sustainable Development Goals and the Abundance Cycle framework. Another positive experience of the project has been the strengthened relations between the local communities and the university, which can be a starting point for collaboration on future projects.

A New Course on Innovation at the University of the Faroe Islands

Starting in the Autumn of 2018, the University of the Faroe Islands will run an experimental new course on innovation. The course will be a 10 ECTS, semester-long academic and practical elective course open to all university students (Bachelor's, Master's, and PhD level) and external participants. Based on the core values and reading lists of the two courses offered at the University of Greenland, it will make use of the Sustainable Development Goals as a framing device and the Abundance Cycle framework as two of its key guiding principles. While the University of the Faroe Islands does not offer courses on entrepreneurship or innovation at the time of writing, since 2015, initial experimental attempts to engage students utilising a combination of theoretical and practical work focusing on issues of local issues of sustainability have surpassed expectations. Furthermore, this built-up knowledge and experiences are combined with theoretical and practical training from the project workshop described above. The course will see students meet with local stakeholders from government, industry, civil society, and incubators in an effort to maximize the impact of their chosen projects. While students will not be required to work on commercial ventures, their projects must take into account the triple-bottom-line outlined within the Abundance Cycle framework – and will be required to present their work to a panel of stakeholders they have encountered throughout the semester.

Conclusion

In this article, we have provided a project-based answer to the research question: How can entrepreneurship projects in Higher Education (HE) in the Arctic incorporate the Sustainable Development Goals? We argued that several trends are overlapping making this question and project relevant: Not only is HE in general experiencing more focus on innovation and entrepreneurship mind-set and transferable skills development, this is increasingly coupled with sustainability purposes and the SDGs widening and deepening the application of innovation and entrepreneurship. Furthermore, we observe the same trends in the Arctic: an increase in research and HE collaboration, more focus on innovation and entrepreneurship, and more focus on the SDGs; however, their combination in theory and practice is underdeveloped and understudied. This article has presented preliminary findings from the project: “Promoting sustainable student entrepreneurship in the Arctic”.

The overall conclusion is that it is possible to incorporate the SDGs in HE in the Arctic, in our cases the Faroe Islands and Greenland, and bring SDGs and the Arctic into HE outside the Arctic, in our case Denmark. Based on a “train the teachers” workshop and many more meetings and workshops, two courses in Greenland implemented and demonstrated that the Abundance Cycle framework is a suitable theoretical and practical approach. It is easy to work with for teachers and students to include the SDGs in many different settings. It allowed us to bridge the gap between two diverse realities; to translate knowledge and experience from the resourceful and big-scale non-Arctic universities and reality to the less resourceful and small-scale Arctic universities and reality. Another finding from our project is that the existing courses and teaching approaches in

the Faroe Islands and the new courses in Greenland have been able to demonstrate that students, if given the opportunity to lead, can drive projects quite far despite the universities' lack of resources utilising e.g. own social capital and goodwill from society. Thus, it seems obvious, that with a more focused approach on innovation and entrepreneurship coupled with the SDGs in HE in the Arctic, applying a clear framework like the Abundance Cycle, and with better trained teachers and new experiences, Arctic universities and not least the students can take SDG projects even further as we get closer to 2030.

Notes

1. First and second being research and teaching.
2. For a full list and description see <https://sustainabledevelopment.un.org/sdgs>.
3. An independent institute and forum for debate in Australia (similar to Chatham House).
4. It is beyond the scope of this article to cover all the HE actors working on SDGs in the Arctic.
5. University of Akureyri joined the project later in 2018 and activities there are not covered in this article.
6. See also www.coldclimate-master.org; www.eitrawmaterials.eu
7. See www.skylab.dtu.dk
8. See <http://eurotech-universities.eu/>
9. See <http://www.nordicfivetechnology.org/>
10. See <http://euxcel.eu/>
11. See www.skylab.dtu.dk/programmes/ignite
12. See www.europeanventureprogramme.com
13. See <http://www.skylab.dtu.dk/programmes/funding>
14. See <http://hardtechentrepreneurship.dk/>
15. See <http://www.oi-x.dtu.dk/>
16. See www.unleash.org
17. See appendix for list of courses.
18. www.lindbergshus.fo and www.greenstudenthouse.com
19. See also www.greengrowthdialogue.com
20. The courses have not been formally evaluated yet.
21. A PhD course was offered, but no PhD students signed up.
22. No courses were offered because of a lack of teaching resources, but the conference is part of one student's master's thesis on tourism in the Faroe Islands.

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Appendix

Name of course	ECTS	Where	When / student no.
Political Sociology of Governance and Sustainable Management in the West Nordic Region	10	Uni. Faroe Islands	Autumn 2015 / 5 Autumn 2017 / 10
Science, Economics and Politics of Sustainability, Climate, and Environment	10	Uni. Faroe Islands	Autumn 2015 / 5 Autumn 2017 / 10
West Nordic Geopolitics from a Faroese Perspective	10	Uni. Faroe Islands	Autumn 2016 / 10
Governance and Sustainable Management in the Faroe Islands	10	Uni. Faroe Islands	Autumn 2016 / 10

Table 1. Overview of 50-25-25% courses (Master's level)

Project	ECTS	When	Student no
Aquaponics system and food security in the Faroe Islands	10	Autumn 2016	2 (and 1 teacher)
Mushroom growing and food security in the Faroe Islands	10	Autumn 2016	2
Composting, community building, and food security in the Faroe Islands	10	Autumn 2016	2
Potato planting, youth action, SDGs, and food security in the Faroe Islands	5	Spring 2017	1
5R guidelines for sustainable living	10	Autumn 2017	1
Window plants in homemade recycled glass pots	10	Autumn 2017	1
Garden makeover, community-building, and upcycling	10	Autumn 2017	1
History of Lindberg and Lindberg's House	15	Spring 2018	1

Table 2. Overview of Green Student-House projects, University of the Faroe Islands (Master's level)

Name of course	Level	ECTS	Where	When / student no.	Focus
Green Growth Dialogue	Master	0	Reykjavik, Iceland	3 days, August 2015 / 15	Green Diplomacy; Renewable Energy
Green Growth Dialogue	Master	5	Nuuk, Greenland	3 days, May 2016 / 10	Sustainable Shipping; Indigenous peoples climate action
Green Growth Dialogue	Master ²¹	5	Sandoy, Faroe Islands	5 days, June 2017 / 10	Sustainable Agriculture; Aquaponics and Hydroponics in the Arctic
Green Growth Dialogue	Master ²²	30	Tórshavn, Faroe Islands	3 days, May 2018 / 1	Responsible Tourism
Arctic Science Diplomacy in Practice	Master and PhD	5	Reykjavik, Iceland	4 days, October 2017 / 15 students	Science Diplomacy in theory and practice. Participation in Arctic Circle

Table 3. Overview of Engaged Scholarship courses offered by the University of the Faroe Islands