

SDG MAPPING OF CBS' COURSE OFFERING

CBS PRME - RESPONSIBLE MANAGEMENT EDUCATION **InFocus** REPORT SERIES
SHORT REPORT NO. 2 - 2020



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Special recognition: We would like to thank Professor John Robinson from the University of Toronto and Adjunct Professor at the Copenhagen Business School for inspiring this work and for sharing his methodology and insights.

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Published: February 2020

Introduction

Beyond the scope of research and traditional student education, universities are increasingly playing a role in the challenges that surround their communities and the larger global community. Given the national status and international renown of CBS, this institution has the opportunity to lead in this changing social contract between the university sector and society.

Sustainability, as one of the most pressing global challenges, is currently being given attention from universities around the world through increased innovation in sustainability, and increased student demand for ethical and educational commitments and initiatives.

In pursuit of these priorities, this initiative has four goals:

1. Create a sustainability inventory that is made available to students interested in choosing sustainability related courses
2. Create greater awareness amongst faculty concerning the sustainability foci of their teaching portfolios.
3. Contribute to CBS' goal of creating curricular "sustainability learning pathways" for CBS students
4. Develop more curricular and co-curricular student engagement opportunities related to sustainability.

SECTION ONE: MAIN SCOPING

Methodology

Our methodology was first tested and implemented at University of Toronto (Brugmann et al., 2019) under the supervision of Professor John Robinson, Special Advisor to the President of the University of Toronto for sustainability and Adjunct Professor at the Copenhagen Business School (CBS). CBS's Campus Sustainability Strategy team and CBS PRME (hereafter, Study Team), screened

all CBS courses and programs to identify content related to the Sustainable Development Goals (SDGs) across all university curricula. We selected a maximum of three keywords to represent each SDG (see Table 1), searching for these terms in course titles, descriptions and objectives using the CBS course finder¹. We excluded SDG 17, "Strengthen the means of implementation and revitalize the goal partnership for sustainable development," from the keyword-search,

as it supports the other SDGs rather than being a unique sustainability dimension. In addition to recording which (if any) SDGs each course addressed, we also recorded the course title, mandatory or elective status, level (Bachelor, Master, Diploma, MBA), study board, description and learning objectives.

¹ <https://www.cbs.dk/en/study/bachelor/all-bachelor-programmes>, <https://www.cbs.dk/en/study/graduate-programmes>

Table 1: SDG course search keywords

Goal 1: End poverty in all its forms everywhere	poverty
Goal 2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture	agriculture, food
Goal 3: Ensure healthy lives and promote well-being for all at all ages	health, wellbeing
Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	educat*, inclusive, equitable
Goal 5: Achieve gender equality and empower all women and girls	gender, women, equality
Goal 6: Ensure availability and sustainable management of water and sanitation for all	water, sanitation
Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all	energy, renewable
Goal 8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	employment, economic growth, sustainable development
Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	infrastructure, innovation, industr*
Goal 10: Reduce inequality within and among countries	governance, trade, inequality
Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable	cities*, urban, resilience
Goal 12: Ensure sustainable consumption and production patterns	consumption, production, waste
Goal 13: Take urgent action to combat climate change and its impacts	climate change, greenhouse gas, environment
Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development	ocean, marine, water
Goal 15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	forest, biodiversity, ecology
Goal 16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	institutions, justice, governance, peace

Adapted and applied from Brugmann, R., Côté, N., Postma, N., Shaw, E. A., Pal, D., & Robinson, J. B. (2019). Expanding student engagement in sustainability: Using SDG- and CEL-focused inventories to transform curriculum at the University of Toronto. *Sustainability*, 11(2), 530.

Findings

Through the SDG mapping, we sought to explore which courses and programs address sustainability and whether these courses are offered at bachelor, master or professional level.

The keyword search shows that 680 courses, of the 1429 offered courses at CBS, relate to at least one SDG, which makes up 47,58 % of all courses offered at Copenhagen Business School. As seen in Figure 1, of the 680 sustainability courses, 256 courses are offered at

bachelor level, 332 courses are at master level and 92 courses are offered within the professional frame (diploma, graduate diploma, part-time master and MBA). This suggests that there are fewer opportunities to study sustainability related topics at an undergraduate level. This may imply that the topic is rather seen as ‘specialized’ and needs foundational knowledge in other areas (economics, finance, etc.). This however makes ‘studying sustainability’ less accessible to students with other academic backgrounds.

When looking at the students’ opportunities to study sustainability, it is relevant to show their options. At bachelor level, 184 courses are mandatory whereas only 72 courses are offered as electives, emphasizing that there are less possibilities for students at undergraduate level to focus on sustainability. At graduate level, there are 155 mandatory courses that address minimum one SDG and 177 electives to choose from. Again, this underlines that sustainability is represented as a rather ‘specialized’ study field.

FIG. 1.
COURSES AT CBS RELATED TO THE SUSTAINABLE DEVELOPMENT GOALS

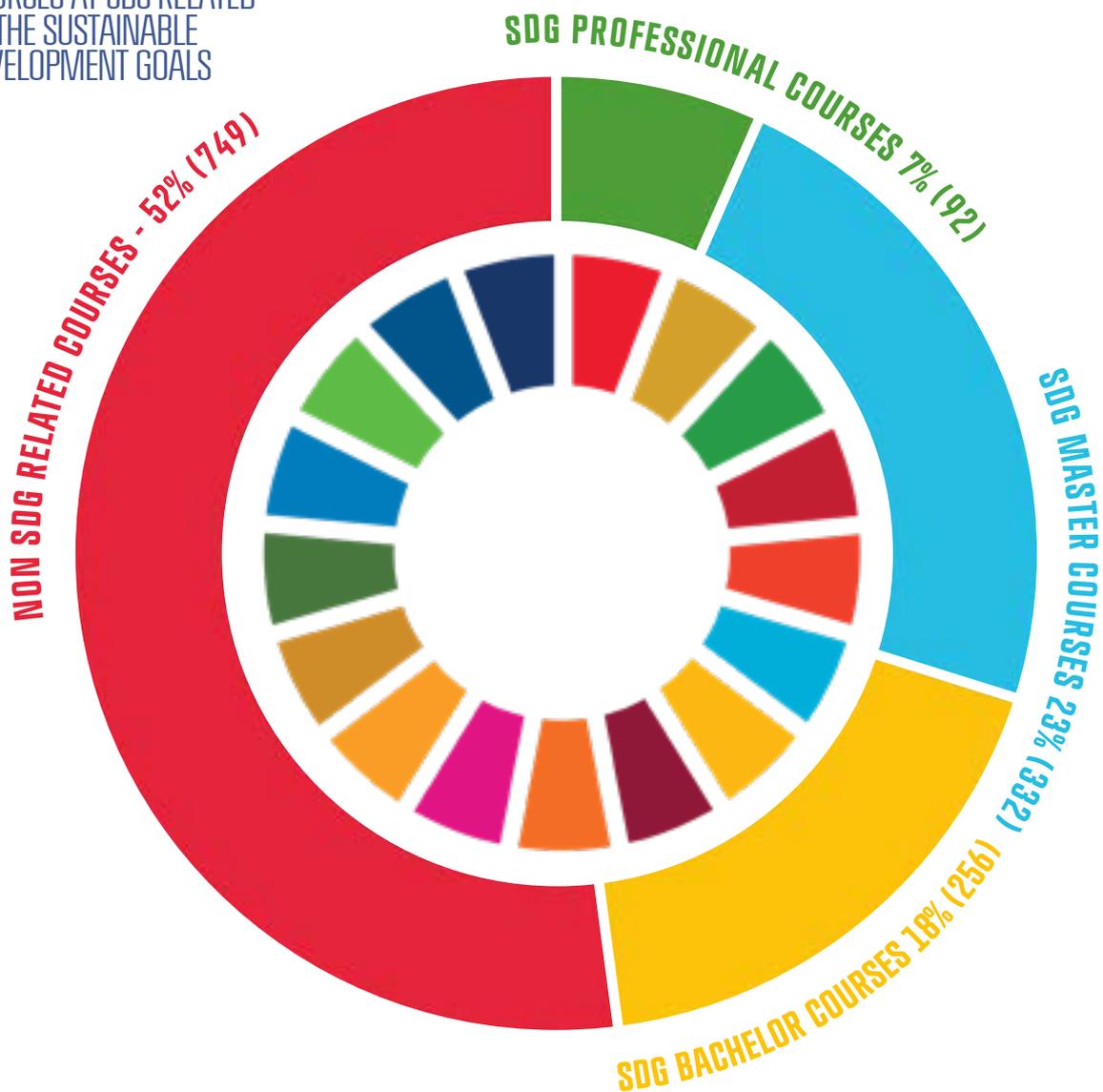


Table 2 shows the three SDGs that have the highest and lowest share of courses throughout the CBS curriculum. The most commonly occurring in Sustainability Goal 9 (infrastructure, innovation, industry) and the least represented SDG is Goal 14 (ocean, marine, water).

However, this result may be biased, as CBS courses in general are very focused on 'innovation' (Goal 9) which can be misleading when linking the mentioned keyword to the achievement of the SDG.

Table 3 shows the distribution among all SDGs and the courses that address the specific SDG.

Table 2: SDGs with highest and lowest share of courses

SDG	Number of courses	% of all courses offered in curriculum	% of SDG courses
<i>SDGs with the highest share of sustainability courses</i>			
SDG 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation)	335	24.8%	52.2%
SDG 16 (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels)	272	19%	40%
SDG 12 (Ensure sustainable consumption and production patterns)	109	7.6%	16%
<i>SDGs with the lowest share of sustainability courses</i>			
SDG 1 (End poverty in all its forms everywhere)	15	1.04%	2.2%
SDG 6 (ensure availability and sustainable management of water and sanitation for all)	9	0.6%	1.3%
SDG 14 (Conserve and sustainably use the oceans, seas and marine resources for sustainable development)	2	0.14%	0.29%

Table 3: SDG course numbers

SDG	Keyword	Number of courses
Goal 1	poverty	15
Goal 2	agriculture, food	16
Goal 3	health, wellbeing	37
Goal 4	educat*, inclusive, equitable	60
Goal 5	gender, women, equality	24
Goal 6	water, sanitation	9
Goal 7	energy, renewable	25
Goal 8	employment, economic growth, sustainable development	63
Goal 9	infrastructure, innovation, industr*	355
Goal 10	governance, trade, inequality	35
Goal 11	cities*, urban, resilience	80
Goal 12	consumption, production, waste	109
Goal 13	climate change, greenhouse gas, environment	36
Goal 14	ocean, marine, water	2
Goal 15	forest, biodiversity, ecology	32
Goal 16	institutions, justice, governance, peace	272

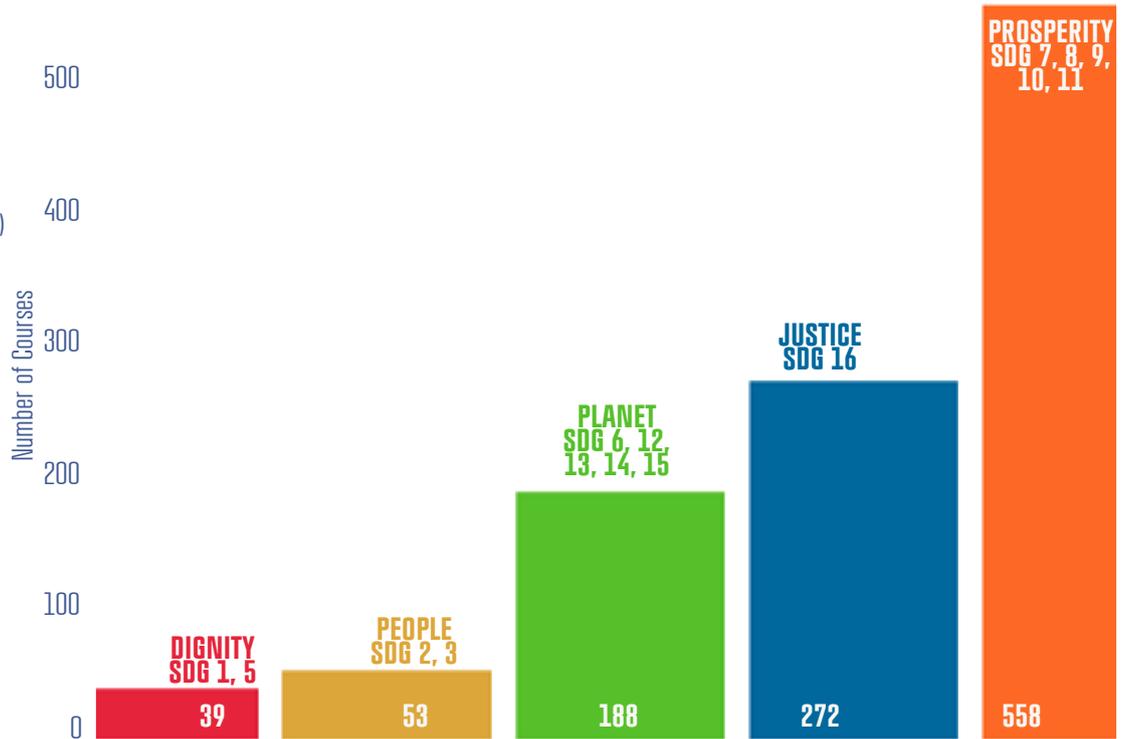
In addition to the analysis of sustainability course distribution, it is important that the results of the inventory be easily understood and relatable. While the Sustainable Development Goals maintain great significance as internationally adopted objectives, the number of goals makes them in some ways a cumbersome means of

conceptualizing the themes through which we understand the multifaceted issue. Filho et al. (2017)² propose a set of six thematic areas to group the SDGs that addresses this issue: dignity, people, planet, partnerships, justice, and prosperity. Since our inventory clustering scheme does not include SDG 17, the partnerships thematic area

is not relevant in this application of their framework. Figure 2 summarizes the grouping of thematic area, and the number of sustainability courses within each. It is important to note that since many courses are clustered under more than one SDG, they may fit under multiple thematic areas and therefore these groups are not mutually exclusive.

FIG. 2.
NUMBER OF
SUSTAINABILITY
COURSES PER
SDG THEMATIC
AREA

(Leal Filho et al., 2018)



SECTION TWO: HOW ARE THE SDGS APPLIED AT CBS?

Following the course scoping exercise, and inspired by the Humboldt tradition adopted at CBS, we proceeded to apply the same methodology to CBS' Research Centers related to the SDGs. Firstly, we wanted to explore how different Centers defined their work. Still further, we wanted to see how this work transferred into specific classroom offerings for the students at CBS.

Table 5. CBS Research Centers and their Self-Defined Strategy

CBS Sustainability	Goal 17	Strengthen the means of implementation and revitalize the global partnership for sustainable development
Center for Business Data Analytics	Goal 4	educat*, inclusive, equitable
Center for Civil Society Studies	Goal 1, 3, 4, 5	Poverty/ health, wellbeing/ inclusive/ equality
Center for Corporate Governance	Goal 16	Institutions, justice, governance, peace
Center for Corporate Performance	Goal 8	employment, sustainable development
Center for Financial Frictions (FRIC)	Goal 16	Institutions, justice, governance, peace
Center for Leisure and Culture Services	Goal 5, 12	Gender, diversity, sustainable tourist consumption
Center for Statistics	Goal 4	Education
Center for Tourism and Culture Management (TCM)	Goal 11	Cities, resilience, Tourist behaviour, decision making
Center for Advanced Studies on Project Management	Goal 4, 9	Educat*, innovation
Center for Business and Development Studies (CBDS)	Goal 8	employment, economic growth, sustainable development
Center for Business History	Goal 4	Educat*, society
Center for Innovation	Goal 9	innovation
Center for Organizational Time (COT)	Goal 4, 9	Educat*, organization studies, entrepreneurship, innovation studies, business history
Center for Owner-Managed Businesses	Goal 4, 9	Innovation, educat*
Center for Public Organization, Value and Innovation (POVI)	Goal 16	Democracy, governance
Copenhagen School of Energy Infrastructure (CSEI)	Goal 7	energy, renewable
Danish Research Data for Social Sciences (DRDS)	Goal 4	Education, research, database, society (mainly researching on topics regarding Goal 1, 2, 3, 4, 5)
Governing Responsible Business Research Environment	Goal 16	Institutions, justice, governance, peace
Imagine .. Creative Industries Research	Goal 9	Creativity, transnational networks
Pension Research Center (PeRCent)	Goal 16	Pension, justice

Table 6. SDG course numbers and centres

SDG	Keyword	No. of courses	Centres
Goal 1	poverty	15	Center for Civil Society Studies
Goal 3	health, wellbeing	37	Center for Civil Society Studies
Goal 4	educat*, inclusive, equitable	60	Center for Business Analytics, Center for Civil Society Studies, Center for Statistics, Center for Advanced Studies on Project Management, Center for Business History, Center for Organizational Time (COT), Center for Owner-Managed Businesses, Danish Research Data for Social Sciences (DRDS)
Goal 5	gender, women, equality	24	Center for Civil Society Studies, Center for Leisure and Culture Services
Goal 7	energy, renewable	25	Copenhagen School of Energy Infrastructure / (CSEI)
Goal 8	employment, economic growth, sustainable development	63	Center for Corporate Governance, Center for Business and Development Studies (CBDS)
Goal 9	infrastructure, innovation, industr*	335	Center for Advanced Studies on Project Management, Center for Innovation, Center for Organizational Time (COT), Center for Owner-Managed Businesses, Imagine ... Creative
Goal 11	cities*, urban, resilience	80	Center for Tourism and Culture Management (TCM)
Goal 12	consumption, production, waste	109	Center for Leisure and Culture Services
Goal 16	institutions, justice, governance, peace	272	Center for Corporate Governance, Center for Financial Frictions (FRIC), Center for Public Organization, Value and Innovation (POVI), Governing Responsible Business Research Environment, Pension Research Center (PeRCent)



SECTION THREE: SUMMARY

Sustainability is a challenge for modern society. Education for sustainable development constitutes a highly complex challenge and opportunity to contribute through knowledge dissemination transforming local, regional and global societies to the targets of Agenda 2030. Sustainable development involves knowledge of ecology and citizenship, economy and society, knowledge which is necessary for the survival of the individual and the species. Education for sustainable development has been characterized as that of changing in status of knowledge, behaviour and attitudes of its learners (Luppi, 2011).

Curriculum development in responsible management education is a long-standing project as CBS. It encourages bachelor and master programmes to reflect on their individual perspective on responsible management education by framing expected competencies that alumni attain from the programme.

This report creates provides an overview of courses offered at CBS that includes sustainability content. More specifically the content has been reviewed to allow for an understanding of coverage of the SDGs in CBS course offerings available during the academic year 2017-2018. Due to the dynamic nature of programmes and course offerings we observe continuous developments in the topical areas framed by Agenda 2030.

One can extrapolate models for further engagement with sustainability in programmes and curricula. Examples:

Three Models for Pathway Programming:

Embedded: no additional course credits.

Add-on: minor, area of concentration (e.g. Sustainable Finance Minor), supplementary courses.

Majors: degree programmes that align with attributes framework

This can be implemented by...

- Inserting sustainability sections into the larger courses at CBS
- Continuing to work that progresses sustainability content from and across BSC to MSC programmes
- Continuing to work with units in 2nd and 3rd year content courses at the BSC level
- Continuing to work with faculties on pathways for further embedding sustainability in programmes and curricula. This may include as examples, more case studies and capstone leadership courses
- Integrating, valuing and supporting non-formal educational initiatives in the service of sustainability. This may include as examples, offerings by student organisations in the area of sustainability, Carbon Literacy Certification of the PRME office and case competitions as offered by CBS Business.



APPENDIX

Table 4. Courses at the intersection of two SDGs

SDG	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1		3	4	5	2	2	2	7	5	2	3	3	4	0	3	9
2	Table 4 shows the courses at the intersection of two sustainable development goals. SDG 9 (Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation) and SDG 16 (Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels) are addressed jointly in 91 of the courses. Additionally, SDG 12 (Ensure sustainable consumption and production patterns) is discussed jointly with SDG 9 in 55 courses offered at CBS. Grouping the SDGs then shows CBS' concentration on prosperity (Goal 7, 8, 9, 10, 11) with 558 courses, justice (Goal 16) with 272 courses and planet related issues (Goal 6, 12, 13, 14, 15) with 188 courses.		4	6	0	1	4	5	11	0	5	10	3	0	5	5
3				7	3	2	3	5	22	1	2	4	4	0	3	11
4					6	2	3	11	17	13	8	10	4	0	4	25
5						2	1	2	8	3	5	5	1	0	2	7
6							3	3	6	0	4	4	3	0	2	4
7								4	17	0	5	12	8	1	4	12
8									13	4	5	6	5	0	4	30
9										12	39	55	19	1	17	91
10											0	3	3	0	1	22
11												18	7	0	9	29
12													9	1	9	32
13														1	4	15
14															0	0
15																10
16																

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Brugmann, R., Côté, N., Postma, N., Shaw, E. A., Pal, D., & Robinson, J. B. (2019). Expanding student engagement in sustainability: Using SDG-and CLE-focused inventories to transform curriculum at the University of Toronto. *Sustainability*, 11(2), 530.

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