



PERISCOPE
FUNDED BY ERASMUS+

Project Purchasing Education and Research with an Innovative Sustainability Scope

The PERISCOPE Consortium
Intellectual Output 5
White Paper

Massive Open Online Course (MOOC): Purchasing and Supply Management in Innovation and Sustainability

<http://eu-periscope.essca.fr/>



August 2022

This research is part of Project PERISCOPE (eu-periscope.essca.fr), co-funded by the Erasmus+ Program of the European Union with project number 2019-1-FR01-KA203-062990.





Contents

1. Executive Summary	4
2. Introduction to the White Paper Intellectual Output 5	5
2.1. Welcome to the MOOC for PSM in Innovation and Sustainability white paper!.....	5
2.2. The main intended learning outcome defined for the MOOC.....	5
3. Building on PERISCOPE’s Previous Intellectual Outputs	7
4. The PERISCOPE MOOC’s Concept and Design	9
4.1. The ADDIE approach.....	10
4.2. Analysis.....	10
4.2.1. MOOC learning theory, goals, and objectives.....	10
4.2.2. Partner organizations.....	11
4.2.3. Learning objectives for each module.....	12
4.3. Design.....	19
4.3.1. Learning strategy.....	19
4.3.2. Structure of the module.....	19
4.3.3. Learning materials.....	19
4.3.4. Assessment.....	20
4.4. Development.....	20
4.4.1. Risks.....	21
4.4.2. Deadline.....	22
4.5. Implementation.....	22
5. MOOC Platform and Technical Realization	24
5.1. Canvas: The PERISCOPE MOOC platform.....	24
6. Conclusion	30
7. Additional Materials	31
7.1. The Blame Game: A role-playing scenario.....	31
7.2. Purchasing’s Contribution to Innovation Exploration: Mini case studies.....	32
7.3. Early Supplier Involvement: Mini case studies.....	38
7.4. Accountability and Stakeholder Relationship Management quiz.....	41
7.5. Ecological and Social Challenges to Procurement quiz.....	43
7.6. Case study: Danone.....	45
The following case study is taken from:	45



Johnsen, T. E., Howard, M., & Miemczyk, J. (2019). *Purchasing and supply chain management: A sustainability perspective*. (2nd ed.). Pages 115–124. Routledge. ISBN-978 1-13-806476-8. 45

Reproduced by Permission of Taylor & Francis Group..... 45

8. References 53

Arghode, V., Brieger, E. W., & McLean, G. N. (2017). Adult learning theories: Implications for online instruction. *European Journal of Training and Development*, 41(7), 593–609..... 53

9. References: MOOC Content 54

MPI 1 Managing Innovation 54

MPI 2 Early Supplier Involvement 54

MPI 3 Purchasing’s Contribution to Innovation 55

MSP 1 Ecological and Social Challenges to Procurement..... 55

MSP 2 Sustainable Sourcing 55



1. Executive Summary

The development of the PERISCOPE Massive Open Online Course (MOOC) is part of the five Intellectual Outputs (IO5) for Project PERISCOPE (Purchasing Education and Research with an Innovative Sustainability Scope). Funded by the EU Erasmus+ Strategic Partnership, Project PERISCOPE aims to aid students in acquiring future Purchasing and Supply Management (PSM) competencies in innovation and sustainability.

This white paper IO5 presents the development and implementation of the PERISCOPE MOOC on PSM in innovation and sustainability. Based on literature reviews (IO1 white paper), empirical results from the World Café (IO2 event report) and Delphi methods (IO3 white paper), the PSM skills and competencies needed for innovation and sustainability were identified and analysed for the development of a cafeteria module-based course (IO4) and transferred to the design of this MOOC.

This MOOC offers three sets of main modules focusing on Purchasing in Innovation (MPI), Sustainable Purchasing (MSP), and Purchasing in Innovation and Sustainability (MISP). Each module provides free, online, and interactive short videos along with quizzes and other innovative learning materials which can be used to stimulate curiosity and critical thinking via the discovery of these new topics or to facilitate group discussion in class.

By proposing three separate modules, educators can integrate one or two modules that fits with their PSM master's programs into their teaching, e.g., as part of lectures. Master's students, or anybody who is interested in gaining insights into the role of PSM in sustainability and innovation, can also follow the course independently in a self-learning mode. For users which follow the course in a self-learning mode, are urged to first enroll first in the MOOC on PSM fundamentals-developed by the previous Erasmus+ strategic partnership called Project PERFECT (www.project-perfect.eu) to acquire basic PSM skills.

The course design, the technical realization, and production of the content, and the implementation of the MOOC platform, are described in detail in this white paper IO5. This work was led by ESSCA, School of Management in France, with the support of all project partners.



2. Introduction to the White Paper Intellectual Output 5

2.1. Welcome to the MOOC for PSM in Innovation and Sustainability white paper!

This white paper reports on the five Intellectual Outputs (IO5) of Project PERISCOPE, funded by Erasmus+ strategic partnership no. 2019-1-FR01-KA203-062990. The aim of IO5 is to develop the design, technical realization, and production of pedagogical materials forming the MOOC for PSM in Innovation and Sustainability.

2.2. The main intended learning outcome defined for the MOOC

The main learning outcome of the MOOC course is to allow participants to identify, assess, apply, and integrate existing scientific knowledge to analyze problems and design solutions in the domain of innovation sourcing and to challenge contemporary business models and evaluate supply chain practices in sustainability.

Intended learning goals are also presented in the following.

Upon successful completion of the course, participants should be able to:

- Describe how technological innovations might affect different fields of our economy and society.
- Describe and evaluate Early Supplier Involvement (ESI) practices and tools in New Product Development (NPD).
- Evaluate the main stages of purchasing's involvement in the innovation process and the NPD managerial tools.
- Discuss managerial challenges associated with each stage of purchasing's involvement in technical innovation when sourcing from start-ups is concerned.
- Critically reflect on global warming, as one of the planetary boundaries, and supply chain actions.



- Explain the sustainability risks associated with different sourcing situations and how to manage these.
- Understand the company in its extended business environment and understand stakeholder theory with regard to implementing actions that enhance accountability.
- Describe different circular supply chain strategies and apply them to specific company contexts.

This MOOC covers three major topics designed as follows:

- Four modules on MPI.
- Four modules on MSP.
- One module of conclusion on MISP.

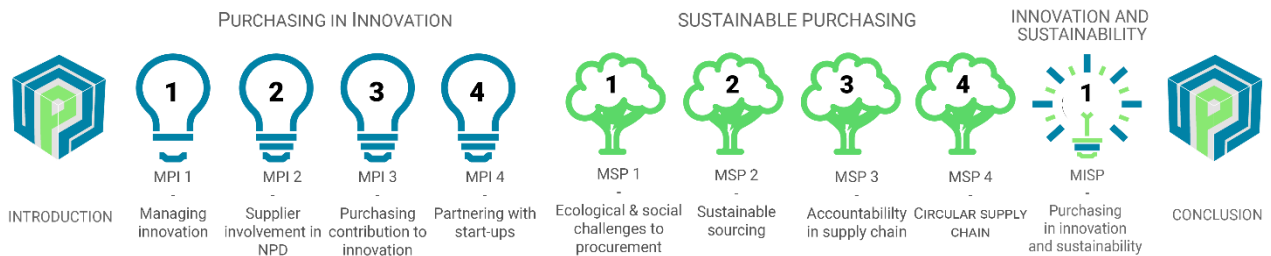


Figure 1 Design of the PERISCOPE MOOC

The target groups of this MOOC are:

- Educators who wish to use parts of or the whole content on their PSM courses.
- Students (master's level) who wish to acquire knowledge and develop new skills on PSM for innovative and sustainable solutions.
- Practitioners and professional associations.
- Anyone interested in the topic.

For educators, the PERISCOPE team designed specific learning materials, such as train to the trainer guidelines, case study instructions and role-play descriptions. These learning materials



may support teachers in transferring soft skills which can only be developed in class; for example, creativity, strategic thinking, and critical thinking (Arghode, Brieger, & McLean, 2017). Resources for educators are available upon request on the PERISCOPE website: <http://eu-periscope.essca.fr/>.

For the other target groups, the module courses have been designed to include different interactive activities that will help students, or anyone interested in the topic to learn autonomously. In each module, participants can find teaching videos, practice quizzes, illustrated and detailed slides, additional recommended learning materials, case studies with quizzes, and so on. These will support student-centered digital learning. Please note that the instructions and corrections for case studies must be given by the educator.



Figure 2 Design of the PERISCOPE modules

The developed MOOC is officially available and enrolment is free of charge. After introducing readers to the course design, this paper will discuss the technical realization and production of the MOOC.

3. Building on PERISCOPE's Previous Intellectual Outputs



The work reported in this white paper is part of PERISCOPE IO5, which aims to develop and validate a module-based course which includes learning materials for purchasing and/or supply management education programs that focus on innovative and sustainable purchasing. Before creating the MOOC in line with IO5, we needed first to understand the skills and competencies required in the area of PSM in innovation and sustainability. Therefore, former IO1, IO2, and IO3 focused on providing a framework for PSM competencies in innovation and sustainability.

Building on a theoretical literature review, best practices, a World Café sessions approach, and a Delphi study, we identified the required competences that PSM managers must have in relation to innovation and sustainability solutions. Furthermore, an open module-based course for finding and applying innovative and sustainable solutions in PSM Education was developed in IO4, based on research outputs. Finally, open-source learning materials were developed to prepare students for finding and applying innovative and sustainable solutions in PSM Education. Figure 3 provides an overview of the PERISCOPE IOs project.

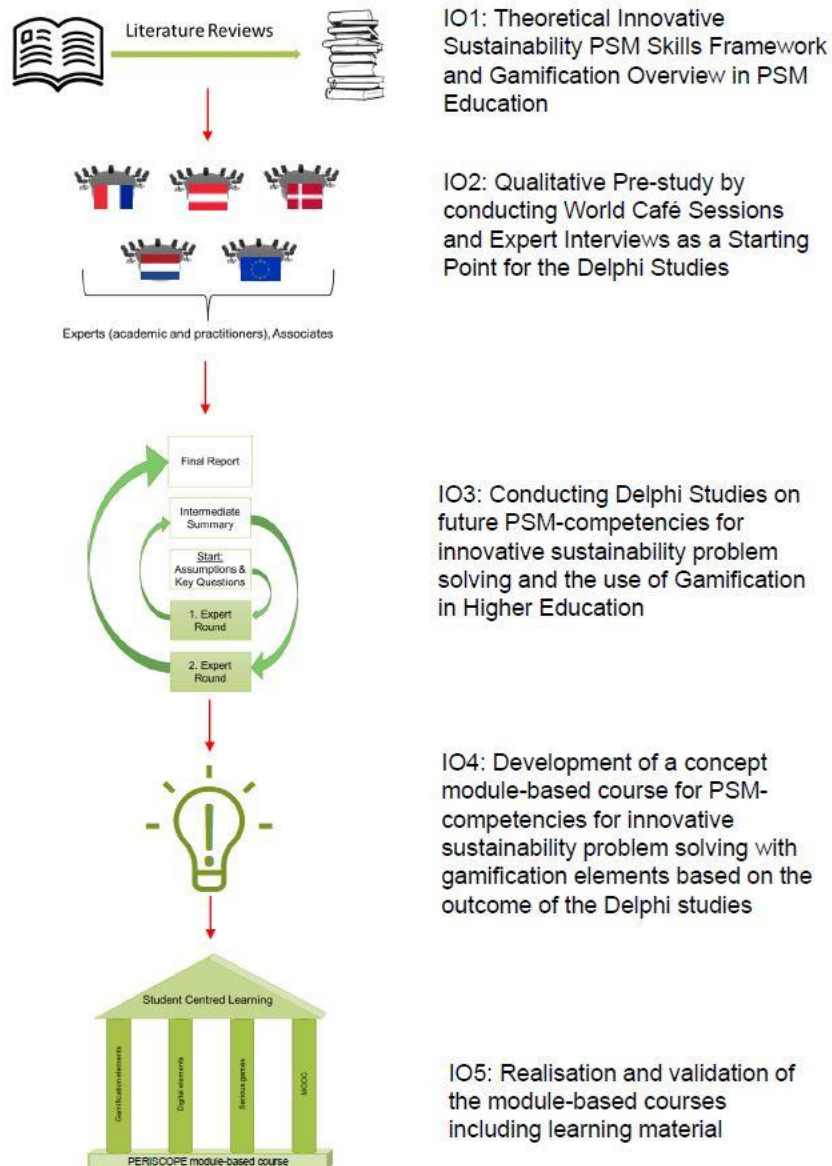


Figure 3 Overview of Project PERISCOPE's Intellectual Outputs

4. The PERISCOPE MOOC's Concept and Design

This section explains the learning and organizational strategy methods used for the concept and design of the MOOC, starting with a brief explanation of the instructional system design (ADDIE) approach and followed by an outline of the different stages involved.



4.1. The ADDIE approach

ADDIE is the instructional system design framework that many instructional designers use to develop online courses (Nadiyah & Faaizah, 2015). A former online course within ESSCA's Pedagogical Advance Institute, in French original name: Institute de Pédagogie Avancée (IPA), so hereafter referred as IPA, was successfully implemented with ADDIE. The name corresponds to the five phases involved in building online courses:

Analysis: define the learning theory, learning goals, and learning objectives of the MOOC.

Design: create the structure of the MOOC (modules) and the content of the modules. Develop the education strategy; that is, interactivities, assessments, resources, and game elements.

Development: develop learning materials (writing video scripts, recording and editing videos), learning activities (writing questions for the quizzes and their feedback), and learning materials (links, PDFs, e-books, etc).

Implementation: implementing all the learning materials and videos on Canvas. Provide training on Canvas.

Evaluation: testing period with students. Implement changes, if necessary.

The whole MOOC was built following the five steps of this methodology.

4.2. Analysis

4.2.1. *MOOC learning theory, goals, and objectives*

Higher education institutions have been incorporating sustainability and innovation into education and curricula. However, little is known about *how PSM educators incorporate sustainability and innovation in their programs*.

This issue was raised during an educator's workshop at the IPSERA International Conference in the field of PSM in 2021. Many educators explained that the difficulties in incorporating sustainability issues in PSM activities stem from the lack of a framework regarding the evolution of PSM activities for teaching the competencies and skills needed for innovation and sustainability.



This was also noted by Backstrand et al. (2019). In response to this gap, we sought to integrate the competencies identified in IO3 into the learning objectives and goals of the MOOC. Thus, the identified competency requirements were used to create an innovative, open, student-centered module-based course presented in “cafeteria” mode, i.e., educators can freely select the lessons that fit with their program. ‘Our MOOC is a student-centered digital space that can be used in a number of ways: students can be guided by educators while following the overall module-based course design or while studying separate self-contained modules. This module-based course may also be integrated into the study programs of participating institutions.’

4.2.2. Partner organizations

ESSCA School of Management – Project Coordinator - Katia PICAUD BELLO, Associate Professor, Dr.

Twente University of Technology – Klaas STEK, Assistant Professor, Dr.; Holger SCHIELE, Professor, Dr.

Audencia Business School – Thomas JOHNSEN, Professor, Dr, HDR; François CONSTANT, Assistant Professor, Dr.

GRAZ University of Technology – Volker Koch, Assistant Professor; Marcus, BERND ZUNK, Professor, Dr.

Copenhagen Business School – Andreas WIELAND, Associate Professor, Dr.; Philip BESKE-JANSSEN, Assistant Professor, Dr.





4.2.3. Learning objectives for each module

PURCHASING IN INNOVATION (MPI) MODULES 2 ECTS (50+ learning hours)			
Managing Innovation	Supplier Involvement in New Product Development	Purchasing's Contribution to Innovation Exploration	Partnering with Start-ups for Sourcing Innovation
<p>At the end of this module, participants should be able to understand different strategic approaches of innovation management and processes and how technological innovations might affect them.</p> <p><u>Learning objectives:</u></p> <ul style="list-style-type: none"> ○ Get to know definitions and different types of innovation ○ Understand which factors can affect the innovation process ○ Become familiar with the different strategic approaches of innovation management ○ Acquire knowledge of upcoming technologies, how they work, and in 	<p>At the end of this module, participants should be able to understand the involvement of suppliers in product innovations and describe supplier involvement in managerial processes and the tools applied in companies.</p> <p><u>Learning objectives:</u></p> <ul style="list-style-type: none"> ○ Understand the key ingredients of supplier involvement in NPD's contribution to technical innovations ○ Identify different types of adaptation needed to facilitate 	<p>At the end of this module, participants should be able to evaluate the main stages of purchasing's involvement in the innovation process and managerial tools.</p> <p><u>Learning objectives:</u></p> <ul style="list-style-type: none"> ○ Infuse curiosity about the new role purchasing plays in sourcing innovation from supply network. ○ Critically analyze the maturity of a purchasing organization <p>Skills covered: Curiosity and strategic thinking.</p>	<p>At the end of this module, participants should be able to discuss managerial challenges at each stage of purchasing's involvement in technical innovation, when sourcing from start-ups is concerned.</p> <p><u>Learning objectives:</u></p> <ul style="list-style-type: none"> ○ Infuse curiosity about the new role purchasing plays in sourcing from start-ups. ○ Critically analyze the maturity of a purchasing organization <p>Skills covered: External stakeholder relationship management and strategic thinking.</p>



<p>which fields they can be implemented</p> <ul style="list-style-type: none"> ○ Assess new technologies, e.g., Gartner’s Hype Cycle <p>Skills covered: Curiosity, creativity, and digitalization skills.</p>	<p>supplier involvement in NPD</p> <p>Skills covered: Curiosity and critical thinking.</p>		
<p><u>Description</u></p> <p>Why is innovation important to a company? Unforeseen challenges are inevitable in business. Innovation can help companies stay ahead of the curve and grow their company in the process. Innovation allows companies to adapt and overcome the challenges of change. Innovation fosters organizational and economic growth, and innovation allows companies to distinguish their business from others, so it separates businesses from their competition. Based on the latest edition of Gartner’s Hype Cycle and/or DHL’s Trend Radar, different contemporary technological innovations are discussed. This could include innovations such as machine learning, self-driving vehicles, drones, blockchain, and 3D printing. Videos are used to illustrate these innovations. The</p>	<p><u>Description</u></p> <p>NPD time and cost can be reduced significantly through ESI. We explore some practical models and tools for assessing and implementing ESI.</p>	<p><u>Description</u></p> <p>We discuss the meaning of purchasing’s contribution to innovation, and we explore how procurement can add value to a company beyond making cost savings, especially by contributing to innovation. One of the specific objectives of this module is to explain the new role purchasing plays in sourcing innovation.</p>	<p><u>Description</u></p> <p>This module gives an overview of the buyer–start-up relationship, which is asymmetric by nature. It is considered as a new type of relationship, which requires the adaptation of conventional supplier management processes and practices by buying firms to achieve the desired relationship outcomes. The importance of sourcing innovative technologies and knowledge from suppliers is well-established. A more recent challenge concerns how to scout innovations from non-traditional suppliers, including suppliers from outside existing supply networks. In this context, sourcing from innovative start-up companies is emerging as an opportunity; however, it presents new challenges and therefore new ways of managing the sourcing process. Not surprisingly, this is</p>







<p>students are then asked to select one of these innovations, or to choose another innovation, to use as a starting point to discuss a new business model for supply chain management.</p>			<p>rapidly becoming a key challenge in purchasing and innovation.</p>
 <p>TU GRAZ Volker KOCH</p>	 <p>ESSCA Katia PICAUD BELLO</p>	 <p>AUDENCIA Francois CONSTANT</p>	 <p>AUDENCIA Francois CONSTANT</p>

SUSTAINABLE PURCHASING (MSP) MODULES 2 ECTS (50+ learning hours)			
Ecological and Social Challenges to Procurement	Sustainable Sourcing	Accountability in Supply Chains	Circular Supply Chain
<p>At the end of this module, participants should be able to critically reflect on global warming, as one of the planetary boundaries, and supply chain actions.</p> <p><u>Learning objectives:</u></p> <ul style="list-style-type: none"> ○ Understand (basic level) global warming as one of the planetary boundaries 	<p>At the end of this module, students should be able to explain the sustainability risks associated with different sourcing situations and how to manage these.</p> <p><u>Learning objectives:</u></p> <ul style="list-style-type: none"> ○ Identify the drivers of sustainability sourcing ○ Evaluate how to manage supplier sustainability 	<p>At the end of this module, participants should be able to define accountability and to whom companies should be accountable in the business environment. Moreover, they will understand how to engage with stakeholders to enhance and manage accountability.</p> <p><u>Learning objectives:</u></p>	<p>At the end of this module, participants should be able to describe different circular supply chain strategies and apply them to specific company contexts.</p> <p><u>Learning objectives:</u></p> <ul style="list-style-type: none"> ○ Understand the core principles of the circular economy



<ul style="list-style-type: none"> ○ Understand the contradictory goals between material growth and planetary boundaries, with a focus on our heating planet ○ Understand how emissions contribute to global heating and the consequences thereof for the survival of mankind ○ Explain the importance of sustainability in the supply chain (scope 3) ○ Discuss how supply chain decisions can contribute to harmful emissions ○ Discuss how supply chain activities are an essential source of ecological and social challenges <p>Skills covered: Holistic supply chain and curiosity.</p>	<ul style="list-style-type: none"> ○ compliance risks through supplier monitoring ○ Analyze different sourcing situations from a sustainability risk management perspective and develop appropriate strategies for managing these <p>Skills covered: Risk management, cross-functional teamwork, and negotiation skills.</p>	<ul style="list-style-type: none"> ○ Describe the interlinkages between companies' actions and the extended business environment ○ Understand the stakeholder theory and frameworks to identify and classify relevant stakeholder groups ○ Collaborate with stakeholders to enhance accountability <p>Skills covered: Holistic supply chain, strategic thinking, and analytical skills.</p>	<ul style="list-style-type: none"> ○ Get to know how the circular economy can be implemented ○ Understand the different strategies in the R-Framework ○ Identify different circular strategies in the supply chain <p>Skills covered: Holistic supply chain and creativity</p>
<p><u>Description</u></p> <p>Climate science has often been excluded from management courses. To fill this gap, in this module, a short overview of climate science is provided to students. This includes concepts such as planetary boundaries, tipping points, and carbon</p>	<p><u>Description</u></p> <p>This module examines sourcing as part of PSM. The module takes a sustainability perspective on sourcing, evaluating both environmental and social sustainability risks associated with different sourcing strategies. The module examines</p>	<p><u>Description</u></p> <p>The module will introduce the various standards, certificates, and auditing schemes which enable procurement professionals to make informed decisions about materials, suppliers, and product selections. These can include FSC, RSPO, ISO</p>	<p><u>Description</u></p> <p>Circular approaches are often reduced to “recycling”, but circularity is much more! This module presents core principles of the circular economy, how the transition from a linear economy towards a circular economy can be implemented, and its</p>





<p>budgets. Essential figures are presented (e.g., emission curves, temperature curves, and sea-ice-level curves). The module ends by demonstrating how different supply chain processes contribute to the emission of greenhouse gasses.</p>	<p>how sustainability risks are affected by different types of global sourcing strategy and what managers can do to mitigate these.</p>	<p>14000, CO2 Neutral label, etc. Among others this module will also cover the development process of a certificate as well as a critical reflection on certificates in general and indications on assessing individual certificates in terms of their potential for creating higher accountability in the supply chain or being misused for greenwashing.</p>	<p>application to specific company situations. The different strategies of the R-Framework are described and the differences between the linear supply chain vs. circular supply chain are explained. Furthermore, key questions for purchasing regarding a circular supply chain are discussed.</p>
 <p>CBS Andreas WIELAND UTWENTE Holger Schiele</p>	 <p>TU GRAZ Volker KOCH</p>	 <p>CBS Philip BESKE-JANSEN</p>	 <p>AUDENCIA Thomas JOHNSEN</p>

<p>PURCHASING IN INNOVATION AND SUSTAINABILITY (MISP) MODULES 1 ECTS (25+ learning hours)</p>		<p>Train the trainer Guide for educators</p>
<p>MISP 1 Achieving Sustainability Through Purchasing Innovation</p>	<p>MISP 2 Purchasing in Innovation and Sustainability</p>	<p>Transferable skills</p>
<p>At the end of this module, participants should be able to understand the benefits of combining purchasing innovation and sustainability goals. <u>Learning objectives:</u></p>	<p>At the end of this module, participants should be able to describe real-life examples related to purchasing practices in innovation and sustainability. <u>Learning objectives:</u></p>	<p>Understanding how to use the general MOOC or how to use just single modules of the course in their own curriculum</p>



<ul style="list-style-type: none"> ○ Evaluate the benefit of combining sustainability and innovation goals (justify the decision) ○ Understand options to integrate purchasing and innovation in the sourcing process (explain ideas and concepts) <p>Skills covered: Cross-functional teamwork, analytical skills, and risk management.</p>	<ul style="list-style-type: none"> ○ Illustrate the involvement of purchasing in innovation and sustainability with a real-life example ○ Understand a company’s real situation and challenges faced regarding implementing PSM actions that enhance sustainability in collaboration with stakeholders <p>Skills covered: Curiosity, cross-functional teamwork, and strategic thinking.</p>	
<p><u>Description</u></p> <p>Evaluate the benefit of combining sustainability and innovation goals (justify the decision) and understand options for integrating purchasing and innovation in the sourcing process (explain ideas and concepts).</p>	<p><u>Description</u></p> <p>This module introduces a practical example of the involvement of MPI and sustainability projects from a purchasing manager professional and expert. Emmanuel Galliot from Manitou explains how purchasing managers in Manitou contribute to the innovation and sustainability requirements of the company. He answers questions posed in a variety of the lessons available via this MOOC, such as: “How does purchasing contribute to innovation sourcing in Manitou?” and “How is</p>	



	<p>sustainability implemented in Manitou’s purchasing processes?”</p>	
 <p>UTWENTE Holger SCHIELE</p>	 <p>ESSCA Katia PICAUD BELLO</p>	<p>UTWENTE Klaas STEK PDF Video with instructions for the lecturer</p>

4.3. Design

4.3.1. *Learning strategy*

The cafeteria module-based MOOC for PSM in Innovation and Sustainability covers three major topics designed as follows:

- MPI: four modules that may be followed by students in the proposed order to validate two ECTS.
- MSP: four modules that that may be followed by students in the proposed order to validate two ECTS.
- MISP: two modules.

Five ECTS can be validated on completing the proposed MOOC in combination with face-to-face PSM courses with educators (contact hours) as defined in the syllabus proposed for each course. To do so, students must complete the following hours proposed in each module.

- ECTS = 24–25 learning hours.

4.3.2. *Structure of the module*

The structure of the MOOC and the contents of each module were validated by all partners. The global structure of the MOOC is illustrated in Figure 1.

4.3.3. *Learning materials*

The PSM in Innovation and Sustainability MOOC's cafeteria modules provide learning materials for educators which can be used in physical and online lectures. These include:

- PowerPoint slides.
- PDF files for case studies.
- Links to videos for case studies.



- MOOC teaching videos.
- Interactive and dynamic quizzes.

4.3.4. Assessment

Students validate their skills through practical and dynamic exercises such as quizzes, a role-playing game, case studies, and a challenge-based case study.

- Quizzes

For quizzes, students will receive individual feedback on each question/quiz.

- Role-playing game and case and practical real-life studies

Learning activities and technical support are provided in the MOOC and the train the trainer guidelines. Educator support is required in every module for the assessment of the role-playing game, case studies, and the challenge-base. Students can pose questions related either to the content of the case study or regarding technical issues when submitting the homework related to the case study.

Case study assessment criteria should be specified by educators.

4.4. Development

Once the design phase (IO4) had been completed and validated by PERISCOPE members and the advisory board of PERISCOPE, the development phase was led by ESSCA with the pedagogical support of IPA <https://ipa.essca.fr/en/> and ESSCA's online campus <https://esscaonlinecampus.edu.eu/fr/>.

The learning materials were produced in collaboration with the four partners cited above.

The lead and vice-lead institutions are responsible for:

The organizational dimension:



- Organizing and coordinating meetings with the partners to share guidelines and instructions concerning the five phases of the IO5 planning and to validate them together (please see the instructional system design).
- Organizing individual meetings with every partner, if necessary. For example, to clarify the learning objectives of the module that the member is responsible for and to confirm the coherence between the objectives and the activities.
- Following-up regarding the progress of the IO5 planning and to make sure deadlines are met .
- Reporting the progress of the planning and finding solutions together.

The technical dimension

- Testing and evaluating the learning materials.
- Editing the learning materials produced by each partner.
- Setting up the quizzes: adding questions and feedback, adding points, etc.
- Setting up educators and student's access to the MOOC in a free accessible webpage and platform.

ALL partners are responsible for:

- Participating in coordination meetings related to the MOOC (which will be organized separately from the monthly meetings).
- Producing the content of the learning materials for their modules.
- Recording their teaching videos according to the format suggested by the lead and vice-lead institutions.
- Producing PowerPoint slides to accompany the videos
- Writing the learning scripts for the teaching videos and the 10 questions with answers for the quizzes.
- Ensuring that all the relevant students at their institution have enrolled in the MOOC.
- Providing student support, i.e., feedback from quizzes.

4.4.1. Risks

- Underestimating the time needed to complete the project. Clear task distribution between the coordinator, IPA, and online campus may help.



- Underestimating the importance of involving the instructional designers of partner institutions in the project. Teachers will need their support while producing learning materials, such as when recording and editing videos.
- Two institutions do not have instructional designers. Solution: they can record the videos either in their e-learning department or via an e-learning private agency.

4.4.2. Deadline

Educators and students gained access to the module-based course design, including learning materials, in June 2022. All modules and quizzes had to be ready in May 2022 to be tested in June 2022 at the University of Twente.

The whole content of the MOOC was available and ready for testing in June 2022 as planned. Students and other participants from almost all partner countries (around 60) tested the MOOC. In the next section, the testing and implementation of the MOOC is described in detail.

4.5. Implementation

In the implementation phase, the prototype—which was designed and developed in Canvas—was implemented. The learning materials were uploaded and the testing students self-enrolled in the PERISCOPE MOOC by clicking on the URL <https://canvas.instructure.com/enroll/KWTWFT>, available from the PERISCOPE website.

The PERISCOPE MOOC was accessible during the testing period from May 31st to June 15th 2022.

The associated partners of Project PERISCOPE collaborated to test the study materials. Together with PERISCOPE, a collaborative Learning, Teaching, and Training Activity (LTTA) was organized at the University of Twente campus in June 2022. A dozen PhD and master's students from the PERSIST partners LUT, TU Dortmund, and EUBA were present. Moreover, 15 PhD and master's students attended from the PERISCOPE partners Audencia Nantes, ESSCA Angers, and TU Graz. Moreover, about 10 University of Twente PhD and master's students were present, plus a University of Utrecht student and a lecturer from abroad.



The partner organizations selected the students. This selection process ensured that the appropriate students were selected to assess the MOOC; that is, those who were studying, at a minimum, for a master's degree in a PSM track. The participants were given instructions via emails and online preparation meetings. The students had to prepare themselves by completing the Project PERFECT MOOC. During the Learning, Teaching, and Training event, students evaluated each module and sent their feedback concerning the content and technical aspects of the MOOC. Afterwards, and based on their feedback, modifications were integrated into the course.



Figure 4 Participants in the testing of the PERISCOPE MOOC at the Learning, Teaching and Training event at the University of Twente

5. MOOC Platform and Technical Realization

This MOOC, being the last stage of Project PERISCOPE, is aimed at both a learner and a teacher audience. “Learner” here means anyone (a student, professional, or anyone interested in the subject, etc.) who wishes to follow this MOOC for the purpose of learning independently. “Teacher” means PSM teachers or PSM trainers who teach part or all of the content of this MOOC in their courses/training. Specifically, these teachers can ask students to carry out activities independently (for example, videos and quizzes), and they can use resources (case studies with instructions for use and solutions) to allow their students to carry out more in-depth activities. Other configurations are possible.

The learner (no. 1) who follows the MOOC with the support of a teacher, i.e., all the activities of one or more modules (videos, quizzes, case studies), will be able to carry out deep learning, while the learner (no. 2) who follows the MOOC autonomously (without the support of a teacher) will be able to reach the first levels of Bloom’s taxonomy in terms of learning. In other words, learner 1 will be able to develop skills, while learner 2 will acquire knowledge. This is why we have defined the learning objectives and skills to be developed on the presentation page of each module in the MOOC platform represented as overview.

These contextual elements are provided to help readers understand the particularity of this MOOC, which aims not only to enable learners to acquire knowledge but also to provide a teaching and learning device for teachers, trainers, and PSM professionals.

Please note that this MOOC does not have an exchange space (forum). The only support provided is that provided by the teachers.

The following section details the technical guidance given to each of the institutions, and examples are provided regarding the development work done at ESSCA.

5.1. Canvas: The PERISCOPE MOOC platform



It was decided that the PERISCOPE MOOC would be placed on the Canvas platform. It is a platform that fulfils the following requirements, which were identified based on recommendations provided by learning designers from ESSCA IPA and ESSCA's online campus:

- Simple operation and editing
- Renowned platform with lots of members and courses
- Project partners' prior experience of working with the platform
- Easily approachable contacts for initial questions.
- Free of charge with regard to the placement and hosting of courses as well as participation
- Customizable
- Possibilities for testing learning success, e.g., integrated quizzes
- Multimedia
- Open access for participants.

The Canvas platform on campus provides an easy and free-of-charge means of publishing the PERISCOPE MOOC. The videos are hosted on YouTube.

The course page of a MOOC on Canvas contains an introductory video providing overviews of the course's purpose, content, and structure. The targets and learning goals are introduced. After this initial introduction, the learner is directed to a page explaining technical functionalities and outlining the detailed structure of the course.

INTRODUCTION - Periscope MOOC Presentation

About

Katia PICAUD-BELLO is pleased to welcome you to this MOOC. Discover her introduction!

Introduction_MOOC PERISCOPE_Katia Picaud Bello_ESS... Copier le li...

Katia PICAUD BELLO
ASSOCIATE PROFESSOR,
ESSCA SCHOOL OF MANAGEMENT,
FRANCE

Target groups

The course is intended to



Figure 5 The introduction video of the PERISCOPE MOOC

The first set of the MOOC started by the Module Purchasing Innovation (MPI). The MPI module begin with the course of Managing Innovation which focuses on the innovation process and technological innovations that affect different fields of our economy and society, with a particular focus on PSM decisions. The MPI section continues with a lesson on Supplier Involvement in NPD, which addresses supplier management in innovation as a responsibility of purchasing managers. The MPI section ends by examining contemporary topics related to purchasing in innovation: purchasing’s contribution to innovation and partnering with start-ups for sourcing innovation.

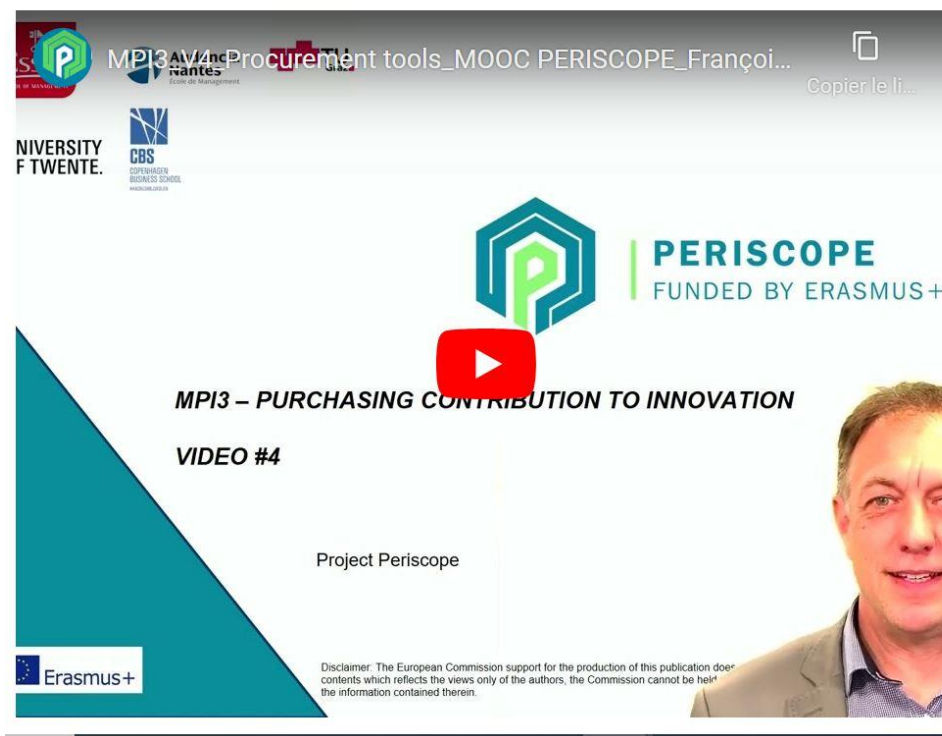


Figure 6 Example of a PERISCOPE module’s video presentation

The Module Sustainable Purchasing (MSP) modules start with the Ecological and Social Challenges to Procurement course. Climate science has often been excluded from management courses. To fill this gap, this module provides a short overview of climate science. This course was very much appreciated by students during the testing event at University of Twente in June 2022. Two professors, Andreas Wieland and Holger Schiele, share their perspectives on the future role of procurement in the face of current ecological and social challenges. The MSP section continues with a lesson on sustainable sourcing and a contemporary case study of



Danone, which allows students to develop their risk management and cross-functional teamwork skills. The MSP section ends by providing an overview of companies' actions and the extended business environment via two modules focused on accountability in supply chains and the circular supply chain. Strategic thinking and the holistic supply chain perspective are the skills that students must acquire.

Learning objectives:

- Describe the interlinkages between companies' actions and the extended business environment
- Understanding the stakeholder theory and frameworks to identify and classify relevant stakeholder groups
- Collaborating with stakeholders to enhance accountability



Skills:

- Holistic supply chain perspective
- Strategic thinking
- Analytical skills



Your teacher



Philip BESKE-JANSSEN, Assistant Professor, Dr., Copenhagen Business School,

Figure 7 Example of a video showing the learning objectives, skills, and teacher introduction for a particular module

The PERISCOPE MOOC ends with the final work of Project PERISCOPE, which focuses on identifying the role of purchasing in sustainability and innovation. A new course developed by Professor Holger Schiele, MSP 1 Achieving Sustainability Through Purchasing Innovation, focuses on discussing why we benefit from considering sustainability and innovation jointly in the supply chain and how to systematically achieve this by embedding sustainability into the purchasing innovation process. To conclude the PERISCOPE MOOC, an interview video was created in collaboration with the company Manitou. A purchasing professional was invited to describe the purchasing experience with an emphasis on innovation and sustainability solution.



 Learning goals:

- Evaluate the benefit of combining sustainability and innovation goals (justify the decision),
- Understand options to integrate purchasing and innovation in the sourcing process (explain ideas and concepts)



Your teacher



Prof. Dr. habil. Holger SCHIELE, Professor of Technology Management and Supply,

University of Twente, Nederland

Module overview

Figure 8 Example of learning goals and teacher introduction



Figure 9 Example from the micro-conference – the interview with a PSM professional

The core of each lesson is a short and interactive video, as can be seen in Figures 6 and 9. At the end of the short videos, tasks and quizzes ‘prompt the active participation of the viewer,



thereby ensuring they are engaged with the learning experience and facilitating successful learning. In each module, the learning objectives, skills the learners will acquire, and the teachers' details are noted, along with a module overview, references, and advice for further learning.

Learning objectives:

- describe how technological innovations e.g. the blockchain technology, machine learning or drones might affect different fields of our economy and society
- acquire knowledge of upcoming technologies, how they work and in which fields they can be implemented
- assess new technologies e.g. Gartner's Hype Cycle



Skills:

- creativity
- digitalization skills

Please note that creativity can be only acquired by following educators' instructions during the group exercise.

Your teacher



Volker KOCH, Professor, GRAZ University of Technology, Austria

Figure 10 Example from the first module of PERISCOPE: Managing Innovation



Thomas JOHNSEN, Professor, Dr., HDR, Audencia Business School, France




 **Module overview**



Figure 11 Example of the didactics of the PERISCOPE MOOC design

To include videos on the MOOC platform, it was necessary to make them available online in order to integrate them onto the platform. This was possible via different portals (e.g., YouTube, Vimeo etc.) and also our own servers. The important thing is that the file is in a suitable format and can be accessed directly from the MOOC canvas platform. The PERISCOPE team decided to use PANOPTO because of its great popularity in higher education institutions, friendly use, impact assessment, learning materials protection and following recommendations from the platform operators. To facilitate the uploading of videos, a PANOPTO channel was created by ESSCA IPA where more than 20 videos were uploaded. Moreover PANOPTP was requested by our CBS partners.

After uploading the videos, they were integrated into the MOOC platform. The project team decided to add subtitles to the developed videos so deaf people could follow the course. For this, the subtitles were implemented directly in YouTube.

6. Conclusion



Educational institutions such as universities change and improve their teaching and learning methods in order to keep up with the requirements of their target groups in the age of digitalization. A MOOC is an attractive learning format which provides self-regulated and flexible mobile learning within a large community for a broad variety of target groups. The PSM field is one of increasing importance, and our PSM fundamentals MOOC explores highly pertinent topics in the PSM field within an open education framework’.

The MOOC’s dissemination is ongoing, and the course is being integrated into ongoing teaching activities and existing curricula as well as into newly designed modules and courses. Any students and teachers can make use of the MOOC, as it is freely available. Continuous further development is planned. The MOOC will be updated and maintained for five years of time.

The ESSCA IPA can be contacted by anyone wishing to make any suggestions or comments about the course.

7. Additional Materials

Further learning activities and materials have been developed within the framework of Project PERISCOPE and the PSM in Innovation and Sustainability MOOC. They are outlined in this section. Firstly, the additional exercises and questions for discussion are provided; these can be used to further enrich existing courses or as a supplement to the MOOC. Secondly, teaching materials for a scenario-based sustainability role-play and a real-life case study are included.

7.1. The Blame Game: A role-playing scenario

Description:

Students are first presented with several examples of social issues in global supply chains. This includes the Rana Plaza tragedy. Students are then put into randomized groups that represent different supply chain actors (i.e., consumers, brand company, factory owner(s), politicians). They are asked to work in groups to uncover arguments regarding why such incidents are “their fault” and why they are the fault of others. Each group is then asked to discuss their arguments. It will turn out that the examples discussed were not the fault of an actor but a systemic failure.



Skills covered:

- Holistic supply chain and critical thinking skills

Length and didactical method:

- 2 x 45 min
- Content + group exercise

7.2. Purchasing's Contribution to Innovation Exploration: Mini case studies

MINI-CASE 1: J CORP

J Corp is one of the world's largest solar panel manufacturers, selling about 13 GW of modules in 2021. Headquartered in China, J Corp manufactures its solar products and sells to commercial and residential customers worldwide. J Corp has built a vertically integrated solar product value chain, with an integrated annual capacity of 9 GW for silicon ingots and wafers, 5 GW for solar cells, and 9 GW for solar modules. J Corp is a large organization: it has over 13,500 employees across its six production facilities globally, with 15 overseas subsidiaries around the world.

J Corp used to offer both polycrystalline and monocrystalline photovoltaic modules, which are traditional solar panel technologies. More recently, J Corp has faced huge competition pressure from the number two and number three worldwide leaders in their traditional business, forcing them to innovate. Moreover, given the recent surge in the cost of polysilicon and logistics, J Corp is considering booming market demand for PV modules with higher efficiency and lower cost per watt. They are also willing to address new markets, like those related to the most advanced cell technologies and high-throughput tools, to capitalize on the growing market demand for inside-houses panels (the walls of houses are covered with thin solar panels to make energy with artificial light, which facilitates zero emissions).

Several departments have been involved in a large open-innovation program, in the form of an internal competition. Purchasing was challenged to find suppliers capable of developing the most advanced solar cell technologies; that is, those that are thin as a sheet of paper. Purchasing was the first to identify G Corp, a recently founded Spanish company currently operating in the B2B market with one main line of products, graphene films. These are films used in research and development (R&D) for electronics, solar cells, ultra-capacitors, batteries, membranes, touch screens, and others. G Corp directly employs fewer than 20 people in three operating offices and



exports graphene materials to 40 countries through more than 10 local distributors. The company owns a patent but is ready to sell it.

How did Purchasing become aware of the existence of the G Corp business, knowing that G Corp is far from the traditional business of J Corp?

1. Leverage open innovation platforms (Innocentive, etc.) to detect the best technology fit.
2. Hire a consultant to screen the thin solar cells market.
3. Talk to suppliers belonging to the current supply base and listen to their innovation roadmap.
4. Attend fairs and exhibitions to meet interesting companies

Justify your answer:

MINI-CASE 2: M CORP

It is worth noting that in many companies, purchasing is not expected to detect innovations; however, it is encouraged to disclose good practices identified within the existing supply base. Purchasing is therefore implicitly more of an executant than an importer of innovations because of the powerful technical departments. However, M Corp executives have understood the opportunities that lie in obtaining complementary assets from external partners and have asked purchasing to start exploring innovations outside the current supply base. This approach has proved a clear success...

M Corp product lines include fixed, rotary, and heavy-tonnage rough-terrain tele handlers; rough-terrain, semi-industrial, and industrial forklifts; skid and track loaders; articulated loaders; backhoe loaders; aerial work platforms; truck-mounted forklifts; storage equipment; and attachments. In addition to its machines and in order to provide a personalized service to each customer, the



group's offering is also based on a complete services offering, from equipment maintenance to financing. M Corp makes about €2 billion per year, with 5,000 people employed worldwide.

During the Covid-19 pandemic, M Corp employees were confined at home and purchasing was no longer able to perform supplier audits. Thus, the purchasing director decided to organize a challenge among management and engineering schools, in the form of a competition, to ask students to think of innovative solutions to solve that problem. The challenge was open to graduate students only, who received support from business mentors. A final, held in front of a prestigious jury, was organized and prizes were offered to reward the best participants. The winning group suggested the use of smart glasses to virtually visit suppliers, and they developed an app to track suppliers' answers during the audit process.

Universities and schools are definitely sources of innovation, and few companies have understood this fact. Other sources of innovation are reachable by purchasing, but which sources are the most innovative?

1. Individuals, who are registered as "solvers" in open innovation platforms.
2. Existing suppliers from the current supply base.
3. Start-ups, start-up incubators, and innovation clusters.
4. Tier 2 and Tier 3 suppliers.

Justify your answer:

MINI-CASE 3: D CORP



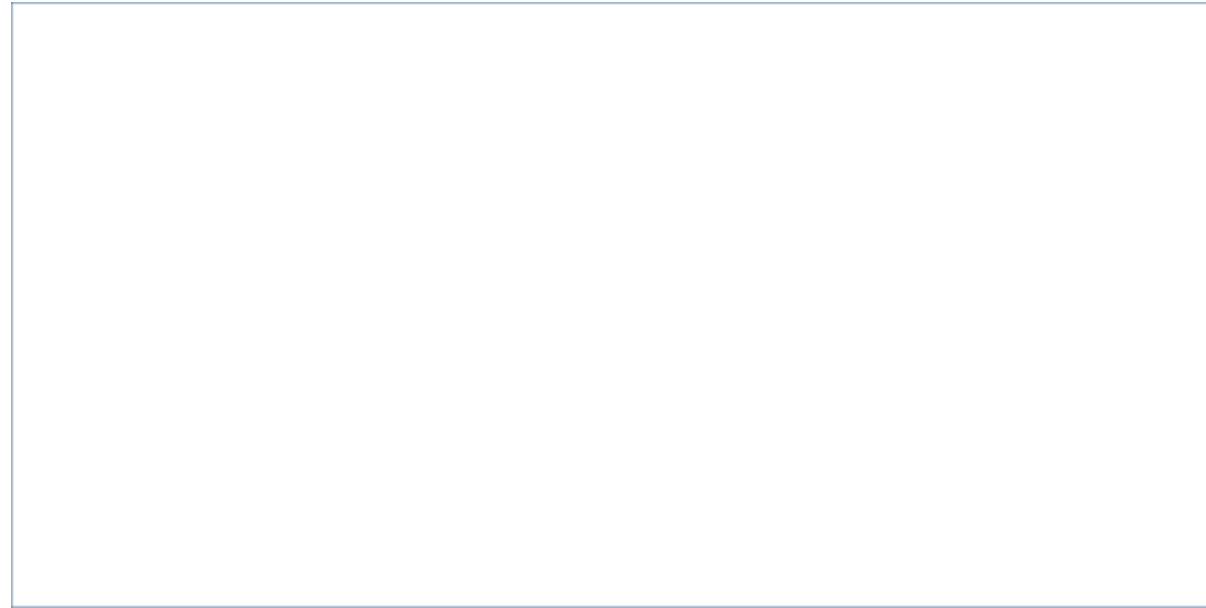
D Corp is a family company created in the early 1970s, making about €120 million per year with fewer than 1,000 employees. D Corp leads the smart home building solutions business in Europe. It develops and produces technological solutions to support the energy transition and personal comfort both at home and at work. D Corp's product range consists of energy control, shutters, lighting, alarm systems and smart products for consumers. They also respond to business needs by providing innovative applications such as IoT-ready platforms for industry (boilers, heaters, roller shutters, and windows) and for the service sector (energy operators, banks, and insurance companies). Overall, D Corp's business concerns the smart building industry and associated services.

D Corp suffers from management in "silos", and a strong "designed-inside" R&D culture is still dominant among the departments. Recently, D Corp faced drastic changes in its core market, forcing the firm to adopt new technologies which are not well known inside, such as cloud services and IoT. Traditionally, D Corp used to manage low-service products (electrical and mechanical components), and it was not used to dealing with connected products. To complement the R&D function, the firm has implemented another department supporting innovation, called the Research and Innovation (R&I) department, which is expected to explore market or technological changes and to push new strategic orientations to other departments, including purchasing. Thus, the technical departments (R&D and R&I) still have a strong position, whereas purchasing is seen as a follower. In 2013, the managing director nominated the R&D director as the head of the purchasing department. This move proved significant, signalling that purchasing would now be involved in R&D and innovation.

Purchasing must adapt to these new types of sourcing, under a strict time constraint. What actions would you recommend to develop purchasing's contribution to D Corp's innovation capabilities?

1. Adapt innovation processes and split innovation exploration from innovation exploitation.
2. Hire a lead buyer in charge of orchestrating innovation activities.
3. Start building a team of buyers who are involved in innovation activities with R&D and R&I.
4. Invest in information systems to better scout innovations.

Justify your answer:



MINI-CASE 4: V CORP

V Corp designs and sells inverters, chargers, and electrical products related to renewable energies, and products related to power conversion. The company has about 200 employees, 50% of whom are R&D engineers. They are a technology-focused and sales-driven company, relying on a strong R&D team. Most products contain software, and lately more and more of their competitive advantage is in software. Until recently, the dominant type of innovation at V Corp was incremental. The adoption of new technologies in the renewable energies business has consisted of low innovative improvements so far. For instance, V Corp uses to upgrade its range of products by changing remote controls for energy control systems from an analog to a digital version which includes an LCD screen. This type of change added some value to the end customer in the sense that the user interface was friendlier, the ease of use increased, and the number of product functions could be increased as well. However, recently, drastic market changes appeared to be putting huge pressure on the strategic position of the firm. Minor product improvements were no longer sufficient to capture new market share, or even to hold on to the firm's existing market position. The market has been disrupted by small firms offering apps for smartphones capable of entirely replacing the products sold by V Corp. This type of disruption calls for an immediate adaptation of the strategy and a quick reaction. Thus, as a good follower, V Corp has started to consider a switch from a product design, manufacturing, and distribution model to a new business model in which services are offered in addition to products. Cloud



services, smartphone apps, and connectivity are the new targets. Purchasing used to implement a traditional sourcing process, e.g., with little involvement from suppliers in the development stage. Now, purchasing is expected to source new technologies; however, it struggled to adapt to these new expectations (sourcing a cloud service is definitely not the same as sourcing a simple product like a printed circuit board). The challenges in purchasing are therefore related to the adaptation to sourcing new technologies in the context of low technological and market uncertainty and a low awareness of these technologies, rather than sourcing traditional products for the firm.

What kind of adaptations to the sourcing process would you recommend to V Corp's purchasing, in order to better capture incremental innovations?

1. Organize supplier days, when suppliers come and present their innovation roadmap.
2. Join together start-up ecosystems and innovation clusters to explore radical innovations.
3. Start holding joint meetings with S Corp's R&D department, to increase innovation know-how.
4. Outsource the sourcing of these new technologies to external consultants.

Justify your answer:

Skills covered:

- Holistic supply chain
- Critical and strategic thinking
- Risk management
- Analytical skills

Length and didactical method:



- 1 x 2h
- Case study, requiring homework. Application to a specific case in group work with role-playing elements. Debrief and discussions in class.

7.3. Early Supplier Involvement: Mini case studies

MINI CASE 1: FADO in the European automotive sector

Fado is a leading international producer of a key car-part system and is one of the top European automotive tier-one suppliers. Founded in the 1990s, it has grown to become a major player in the global automotive industry. The company is backed by a R&D and production network with sites in 34 countries. It is the preferred partner of the world's largest automakers, which value its operational excellence and technological expertise. The purchasing department is organized into category purchasing and innovation purchasing. The innovation purchasing division manages the involvement of suppliers in technological innovation projects and is located near to the R&D department offices.

Recently, the R&D department started an NPD project consisting of the application of a new generation of composites within the core product design to reduce the weight of a vehicle and its CO₂ emissions. These composites are very light. They weigh nearly 20% less than conventional products and consequently reduce CO₂ emissions by 10 kg over the lifespan of the vehicle. These composites are also 15% slimmer than existing models, opening up some 10 liters of additional interior volume. This extra space provides additional legroom for rear passengers while shortening the vehicle's length and thereby reducing its weight. The project was classed as a co-development project, which means it is expected to be developed in partnership with suppliers, with the cost of development being divided between the internal R&D of FADO and the suppliers.

The selected suppliers should focus on ways to enhance the performance of the new composites regarding adapting them to the safety requirements imposed in the automotive industry. The involvement of new suppliers in a complex risk development project requires the expertise of the purchasing department in the management of supplier involvement. Despite the fact that the main responsibility of purchasing in FADO is the management of sourcing and contracting, the role of purchasing in this project also consists of searching for and selecting new and unknown suppliers.

The architectural challenge of the NPD project required interactions to take place between different engineering disciplines and areas of expertise. Consequently, there was a need to



search for and evaluate suppliers located outside the industry. In this case, one purchasing professional was unsure about their role in supporting R&D in this project:

“[I’m] not so sure whether sometimes we are doing innovation in the sense that R&D is already doing this; then we can get [into] a conflict with them.”

Likewise, another purchasing manager even considered that this practice is far from the activities of the purchasing department:

“I am not really purchasing. As innovation purchasing, I am in the middle between the R&D and purchasing departments. You have to be a bit different, and that is why innovation purchasing has to be independent from the daily routine of the normal purchasing work. It is impossible that somebody who’s buying materials is talking today with supplier X about costs and logistics problems then has to move to talking about innovation with this same supplier X. It is impossible because there can be conflicts between either the people or the companies involved. This atmosphere is not good [with regard] to talk[ing] about innovation.”

Please read and analyze the following questions:

- What are the principal challenges for the purchasing department in FADO regarding implementing supplier involvement practice?
- What are the advantages and disadvantages of involving new suppliers in the co-development NPD process?
- What ESI practices are needed to improve the purchasing innovation process, based on the six steps presented in video 3?

MINI CASE 2: ANEMOS in the European Heating, Ventilation, and Air Conditioning (HVAC) sector

Starting in 2002, the HVAC industry has been in upheaval. Three macro-environmental changes have contributed to the transformation of products, markets, and the industry’s structure. The first is the new Energy-related Product (ErP) requirements developed by the European Energy Performance of Buildings Directive (EPBD). These requirements set specific energy performance for various product groups that consume energy. This new ErP regulation, adopted in 2002, had a strong impact on the HVAC industry in terms of energy-using products, since the EPBD



initiatives, in fact, limit the electricity used in the heating system commonly used by HVAC companies.

Therefore, ANEMOS decided to develop a NPD project which concerns the development of the Triple Comfort System (3CS). This innovative 3CS provides a simultaneous heating of towels and bathrooms through lateral and frontal heat diffusion. The 3CS innovation involves the application of a technology sensor connected to an electronic card, which manages the maximum temperature in the regulating circuit, thereby providing a constant temperature between 24 and 25°C. The traditional heating of towels operates via a mechanical system; this controls the safety degree of the device via a circuit breaker which works when the temperature reaches 50°C. That is, the device is turned off when it reaches 50°C; after 50 minutes, it starts another cycle. Therefore, it was not possible to maintain the 23/24°C temperature required for optimal comfort in the bathroom.

With the 3CS system, the circuit breaker is piloted by an electronic card, which acts as a power regulator for limiting the temperature and starting the heating cycles in less than two minutes. The 3CS system attempts to replace the traditional heating of towels with a new premium product range which combines three functions: drying towels, maintaining the temperature of the bathroom at 22°C or more if the customer wants, and achieving up to 25% energy savings.

The purchasing department was not involved from the beginning of the beta project, but it was involved earlier than usual when it came to identifying and engaging with new suppliers. R&D and purchasing therefore worked together on searching for and identifying suppliers by attending trade fairs and special events. The responsibility of the purchasing department was to select the appropriate supplier with the technical capabilities needed to develop this project while maintaining the control of risk in supplier selection.

In the beta project, the supplier selection criteria were not only focused on technical capabilities and motivation. New suppliers had to go through a supplier approval process to assess risk, quality, and their financial situation before being involved in this project. After scanning the supplier market, Anémos had two suppliers who could support the project. One of these two suppliers was a new supplier that had never worked for Anémos. This supplier was rich in experience in the application of this new technology; however, the purchasing manager decided to select a known supplier from the supply base. According to the purchasing manager, the reason for not selecting unfamiliar suppliers was:



“Anémos has not yet developed any strategy for new suppliers; therefore, it is difficult to take the risk. We do not trust suppliers before the supplier approval process, [and] we are afraid that this supplier will take our know-how or technical expertise.”

Please read and analyze the following questions

- What is the timing (stages of the NPD process) and extent of supplier involvement in this project?
- What are the advantages and disadvantages in applying a supplier approval process in the supplier selection process for innovation?
- Based on the purchasing innovation process presented in video 3, what ESI practices should be included to involve new suppliers in further projects?

Skills covered:

- Curiosity and critical thinking

7.4. Accountability and Stakeholder Relationship Management quiz

1. Latent stakeholders... (Tick as many boxes as you think apply):

- a. possess power and urgency.
- b. possess one attribute only.
- c. possess legitimacy and urgency.
- d. are not relevant for companies.

2. The market perspective of the business environment includes:

- a. NGOs.
- b. policy makers.
- c. suppliers.
- d. the media.



3. Standards and certificates...
 - a. are commonly used for greenwashing.
 - b. reduce cost and competitive advantage.
 - c. are a possible way to engage with stakeholders.
 - d. signal a certain sustainable quality to stakeholders.
4. Definitive stakeholders...
 - a. possess power and legitimacy only.
 - b. are always shareholders.
 - c. are of medium importance for companies.
 - d. possess all three attributes.
5. A materiality analysis...
 - a. is worthless since it is conducted by the company itself.
 - b. can be used to align company practices with stakeholder interests.
 - c. makes the stakeholder challenge even more complex.
 - d. includes only topics relevant to companies.
6. Ideally, companies should use stakeholder theory to...
 - a. find the most powerful stakeholders and do as they want.
 - b. maximize profits.
 - c. include as many stakeholders as possible in strategy building.
 - d. show accountability mainly towards their shareholders.
7. Many stakeholders...
 - a. are easy to identify since they have many ways to express their interests.
 - b. are possibly hidden due to the complexity of global supply chains and their impacts.
 - c. should be disregarded since they cannot harm companies.



- d. can be disregarded since they have no interest in companies anyway.

Skills covered:

- Holistic supply chain perspective
- Analytical skills

7.5. Ecological and Social Challenges to Procurement quiz

1. Planetary boundaries include...

- a. e-waste generation, ocean plastics, and radiation from nuclear waste.
- b. freshwater use, stratospheric ozone depletion, and ocean acidification.
- c. education, social equity, gender equality, political voice, and housing.
- d. arctic summer sea ice, the Amazon rainforest, boreal forests, and permafrost.

2. During the last 800,000 years, the concentration of CO₂ in the atmosphere was relatively stable at around...

- a. 2 and 3 parts per million.
- b. 12 and 17 parts per million.
- c. 90 and 110 parts per million.
- d. 200 and 250 parts per million.

3. Several studies demonstrate that the consensus among climate scientists that global warming is caused by humans is around...

- a. 40%.
- b. 60%.
- c. 80%.
- d. 100%.



4. According to a survey of climate researchers, the majority expect that the rise in global temperatures will be around...
- a. 1°C.
 - b. 2°C.
 - c. 3°C.
 - d. 4°C.
5. The increase in global temperatures since 1850 can best be explained by...
- a. natural drivers only.
 - b. human drivers only.
 - c. natural and human drivers.
 - d. the number of sunspots.
6. According to the Paris Agreement, ...
- a. the rise in temperature should be limited to well below 2°C.
 - b. the hole in the ozone layer should be reduced by half.
 - c. the global extinction of species should be stopped by 2050.
 - d. the use of micro plastics should be banned.
7. The majority of the CO₂-equivalent emissions in the supply chain of a typical sports bag are generated...
- a. during production of the sports bag in China.
 - b. during transport from China to Europe.
 - c. when the end consumer drives to the retailer.
 - d. during disposal of the sports bag.
8. When taking a supply chain perspective, it becomes evident that the CO₂-equivalent emissions from producing 1 kg of beef...
- a. are equivalent to the emissions from driving c. 70 km by car.



- b. are equivalent to the emissions from driving c. 400 km by car.
- c. are typically lower than the ones from producing 1 kg of potatoes.
- d. are typically lower than the ones from producing 1 kg of pork.

9. By 2050 Microsoft plans to...

- a. be carbon negative.
- b. remove from the environment all the carbon the company has emitted either directly or by electrical consumption since it was founded in 1975.
- c. reduce Scope 1 and 2 emissions by 30% in absolute terms.
- d. require its around 1,300 suppliers to use exclusively renewable energy in the manufacturing of components.

Skills covered:

- Curiosity and critical thinking

7.6. Case study: Danone

The following case study is taken from:

Johnsen, T. E., Howard, M., & Miemczyk, J. (2019). *Purchasing and supply chain management: A sustainability perspective*. (2nd ed.). Pages 115–124. Routledge. ISBN-978 1-13-806476-8.

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Case Study: Danone¹

¹ This case is based on the Danone 2017 Registration Document, <http://iar2017.danone.com/performance-in-2017/human-rights-and-responsible-procurement/> (downloaded 22 March 2018), and a keynote presentation by Danone VP Sourcing & Supplier Development, Paul Gardner, at Audencia Nantes School of Management, 26 March 2013.



Danone is among the global leaders in the food and beverage sector, committed to creating and sharing sustainable value for all. With global sales totaling €24.7 billion and a work force amounting to 99,187 employees worldwide (2017), Danone relies on four main businesses: essential dairy and plant-based products; waters; early life nutrition; and advanced medical nutrition. “Essential dairy and plant-based” products, which include famous brands like Activia, Oikos, and Danette, accounted for 52% of global sales in 2017. Danone is the global market leader in fresh dairy products and the global market leader in plant-based food and beverages, as well as the leader in Europe in medical nutrition.

Danone’s signature, “One Planet. One Health”, expresses a vision of social, societal, and environmental responsibility that the Company has upheld for many years. Since 2006, the definition of Danone’s mission of “bringing health through food to as many people as possible”, centered the Company’s strategy on three categories of challenges:

- Ensuring consumers’ safety and fostering healthier eating and drinking habits: relates to challenges relating to product safety and quality and to efforts to promote a healthy lifestyle and nutritional education;
- Communicating and engaging with stakeholders: relates to challenges relating to employee development and involvement, relationships with suppliers and the development of communities, and consideration of the regions where the company operates, including concern for the environment and local economic development;
- Contributing to protecting the planet: relates to environmental challenges, including preservation of natural resources, fighting pollution, preventing loss of agricultural land, limitation of the impact of agri-business on the environment across the life cycle of raw materials, production, packaging, transport, sales, consumption, and end of life/disposal.

Reflecting its “One Planet. One Health” vision, Danone is now working on product redesign and production, reducing the number of ingredients where possible, and proposing new organic and non-genetically modified (GMO) product lines. Other commitments include promoting sustainable agriculture, conserving water, reducing waste, reducing its carbon footprint, promoting animal welfare, and investing in the community. These initiatives reflect Danone’s ambitions around product stewardship and the circular economy.

Sustainable sourcing and supplier development



Danone's name for purchasing is Cycles & Procurement. Via Cycles, Danone protects and secures its key resources (milk, water, and plastic), and it takes a strategic approach to procurement to support the business and social agenda of Danone. In terms of value, milk represents the main raw material purchased by Danone. Danone sources milk, directly and indirectly, from over 140,000 milk producers in around 30 different countries. A very high proportion of these are small producers located mainly in emerging the countries of Africa and Latin America that own fewer than ten cows (so-called "subsistence farms") or "family farms" with fewer than 300 cows. Often, milk is collected from collection centers to which these small producers deliver their production daily. For dairy and beverage products, fruit is another critically important raw material. Other food raw materials include fruit-based preparations, sugar, and packaging materials, such as plastics and cardboard. Given the nature of these raw materials, supply markets can be volatile.

For milk sourcing, Danone typically enters into agreements with local producers or cooperatives through its operating subsidiaries. Liquid milk prices are set locally over contractual periods that vary from one country to another. The company aims to ensure a sustainable long-term supply, to minimize risks by optimizing the use of all milk components using new technologies, and to pool the needs among the various businesses, especially across the essential dairy and plant-based and early life nutrition businesses.

Cost volatility of raw materials is controlled through a range of measures. In addition to the reduction of production waste and the use of lighter packaging and more effective use of milk sub-components, there is a focus on pooling purchasing requirements across subsidiaries. The purchasing policy known as Market Risk Management defines the rules for securing the physical supply and price setting with suppliers. Monitoring of exposures and policy implementation are managed at the raw materials category level by the central purchasing team. Buyers typically negotiate forward purchase agreements with suppliers, as full hedging against price volatility is not available in the current financial markets.

In addition to operational priorities, Danone's purchasing is dedicated to ensuring that the sustainability criteria of the group are respected by all suppliers, who are informed of the standards and requirements of Danone from the outset. Sustainability criteria are increasingly incorporated into specifications, supplier selection processes, contracts, and ongoing evaluations of supplier performance.



In the case of packaging, purchases are managed through global and regional purchasing programs. In this category, the goal is to reduce the environmental impacts by, for example, developing new 100% recyclable materials, increasing the share of recycled PET from 10% to 25% in several countries, and ultimately producing bottles made from second-generation 100% bioplastics.

In the milk supply chain, Danone has been working on traceability since the 1990s, based on its FaRMS (Farmer Relationship Management Software) program, which assesses the farming practices that can affect food safety and milk quality as well as environmental impacts and conditions for workers. Through the FaRMS initiative, Danone evaluates the performance of farmers on food safety and traceability as well as a wider range of economic, social, and environmental criteria. In 2017 this covered approximately 90% of the milk producers that Danone works with directly. The FaRMS tool is gradually being reorganized into different, more specialized, and dedicated tools on topics such as animal welfare, greenhouse gas emissions, water consumption, and a range of social issues.

The RESPECT program for tier one suppliers

Danone has developed a program called RESPECT, which aims to ensure that suppliers comply with Danone's fundamental social principles that reflect the fundamental rights of ILO conventions and focus on:

1. Child labor
2. Forced labor
3. Non-discrimination
4. Freedom of association and right to collective bargaining
5. Health and safety at work
6. Working hours
7. Pay

RESPECT applies to first tier suppliers across all of Danone's purchasing categories except raw milk, i.e., transformed raw materials (fruit preparations, powdered milk, etc.); packaging; production machinery; and transport and other services. Subcontractors, i.e., suppliers that manufacture finished products on behalf of Danone, are also covered by the RESPECT program.



However, Danone uses very little subcontracting, as the majority of its finished products are produced at its own production sites.

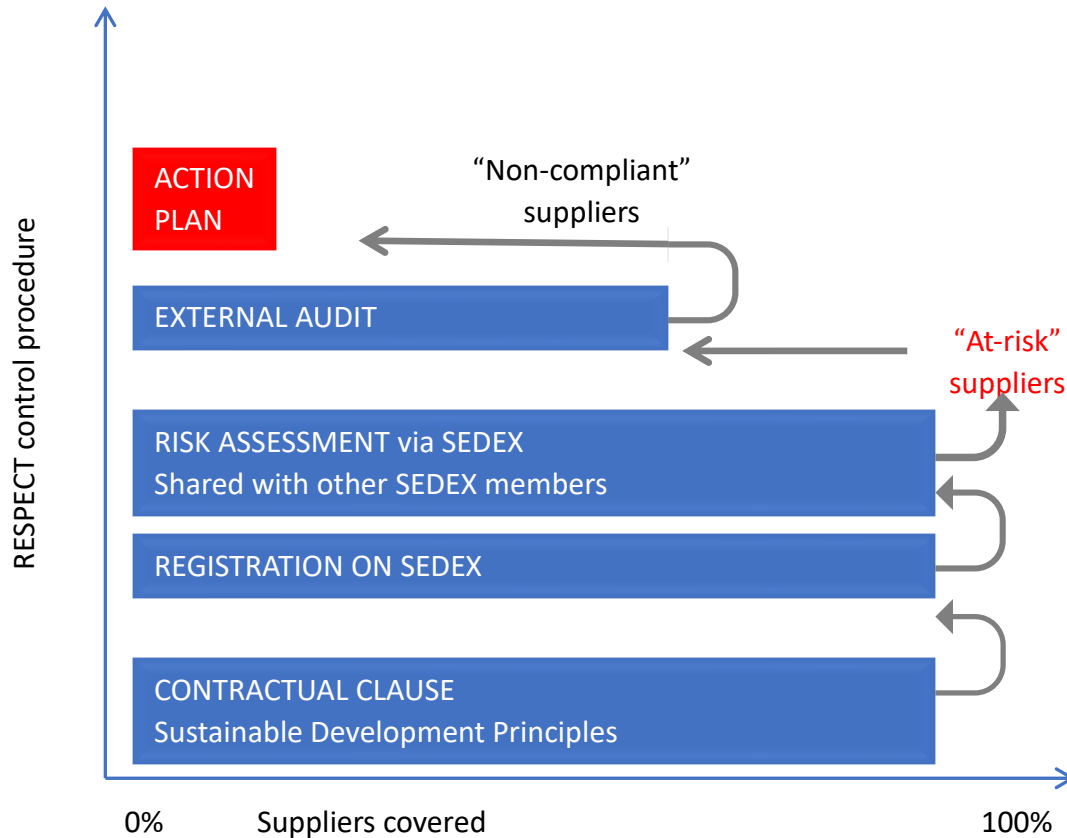
The RESPECT program is based on the process of:

- Contractualizing Danone’s Sustainability Principles.
- Suppliers self-assessing their corporate social responsibility (CSR) performance through a questionnaire, completed using SEDEX (the Supplier Ethical Data Exchange) intelligence.
- Conducting external social audits for “at risk” suppliers.
- Setting up corrective action plans to remedy the noncompliance identified through audits.

The figure below illustrates the process:



Figure 1.10. The RESPECT process



Source: Danone 2012 Sustainability Report, p. 46

The RESPECT program is managed through SEDEX, a not-for-profit membership organization dedicated to improving responsible and ethical business practices in global supply chains. The RESPECT program focuses on:

- Integrating Danone’s Sustainability Principles into supplier contracts and terms and conditions.
- Sharing information through supplier self-assessment concerning their CSR performance, using the SEDEX platform shared by consumer goods industry players.
- Auditing CSR performance using the SMETA (Sedex Members Ethical Trade Audit) benchmark for at-risk suppliers (www.sedexglobal.com/ethical-audits/smeta).



By the end of 2017, 4,082 first-tier supplier sites had been registered on the SEDEX platform. Through the AIM Progress consortium for responsible sourcing, Danone can access audits commissioned by its peers on common suppliers, thus reducing the burden of multiple audits. In 2017, 195 SMETA audits were conducted on Danone's first-tier suppliers, commissioned either by Danone or by peers. The audits are carried out by independent audit companies and evaluate supplier compliance against the four pillars of the SMETA protocol: labor rights, health and safety, environmental management, and business ethics. These are encompassed in Danone's Sustainability Principles.

When non-compliance is identified through the audits, the procurement teams will verify that the suppliers implement the corrective action plans defined by the auditors. Most cases concern health and safety issues, working hours, or compensation. In July 2017, Danone introduced an indicator to monitor the timely launch of SMETA audits (after the suppliers have been identified as at risk) and the timely closure of non-compliance: 65% of Danone's suppliers complied with Danone's standards; this rate was 100% for central procurement.

The aim is to close all non-compliance and improve suppliers' sustainability performance; in some cases, there is no alternative but to terminate relationships with suppliers who do not collaborate.

In 2017, Danone launched a process to upgrade RESPECT and evolve towards a due diligence approach, reinforcing a first-tier suppliers approach, but covering also its sub-tier upstream supply chain and focusing in particular on human rights. This process was inspired by the UN Guiding Principles on Business and Human Rights (UNGP) and contributed to the development of a vigilance plan, as required by the 2017 French Corporate Duty of Vigilance Law.

In order to reinforce first-tier supplier assessment, Danone developed a new approach at the end of 2017 to segment its suppliers according to three levels of priority. Danone will determine these levels proactively, using geographical, sector-specific, and trade data. Audits will be mandatory for all high priority suppliers. Appropriate assessment measures will also be taken for medium priority suppliers.

Upstream risk mapping and traceability

In 2017, Danone mapped major potential risks for the 20 most exposed categories of procurements. Risks were analyzed according to a grid based on ISO 26000, GRI G4, and SA 8000 standards, integrating the potential impacts of purchased products in the areas of social and human rights, local communities, consumers, fair trade practices, and the environment. Combined



with stakeholder expectations, this risk analysis determined the priority categories of product and service procurements on which Danone will focus its attention in the coming years. By 2017, risks identified included workers employed through labor agencies or service providers, palm oil, cocoa, cane sugar, and fruit. The potential risks brought to light are mainly situated in farms and plantations, located upstream in the supply networks. Supported by independent experts, Danone has initiated traceability actions on these priority categories. In agriculture, the current progress—as of 2017—is:

- Palm oil: At the beginning of 2018, Danone achieved 100% traceability back to mills and 68% back to plantations.
- Fruit: Danone has determined the priority supply chains based on its materiality matrix specific to fruit procurement. Danone has asked first-tier suppliers to map their own sources of supply back to farms and to identify major potential risks. More than 65% of volumes have been traced back to farms.
- Cocoa and cane sugar: For each category, Danone has developed a traceability and risk assessment procedure, starting in 2018.

As part of the traceability work done with first-tier suppliers in respect of fruit, in 2016, Danone chose to assess suppliers at production locations in certain priority geographic areas. An audit program was carried out in 2016 and 2017 on a representative sample of farms covering seven main categories of fruit representing 75% of total volumes purchased. These audits were conducted by independent third parties based on the Sustainable Agriculture Initiative (SAI) FSA 2.0 tool. The results served to define a reference base and an improvement plan for environmental focuses. Starting in 2018, Danone launched field investigations in the area of human rights with local stakeholders.

Tackling forced labor

In 2016, Danone joined the Consumer Goods Forum's (CGF) collective initiative to eradicate forced labor from global supply chains. CGF members commit to eradicating forced labor drivers from their own operations and global supply chains, based on the three following principles: every worker should have freedom of movement, no worker should pay for a job, and no worker should be indebted or coerced to work.

For several years now, Danone has cooperated with specialized stakeholders to strengthen action to combat the various forms of forced labor in supply chains. For example, to fight informal employment in recycled plastic procurement, Danone has developed cooperatives of waste-pickers



with support from local partners, thereby enabling these workers to leave the informal economy and gain access to paid employment which is recognized by public authorities and complemented by social benefits.

Driving change through industry collaboration

Although auditing and evaluating supplier compliance via Danone's policies is key to Danone's approach to sustainable supply chain development, the company does not see the evaluation of compliance as an end in itself; Danone also supports suppliers when non-compliance is identified, engaging with independent organizations in driving sustainability improvement. Through the AIM-PROGRESS group Danone collaborates with other food manufacturers, many of which are competitors, including Nestle, Kraft, Unilever, Diageo, Mars, PepsiCo, and Cadbury. The AIM-PROGRESS group develops common standards on CSR around four pillars—health and safety, labor standards, environmental management, and business ethics—with the purpose of mutualizing information and results of audits concerning common suppliers. Members have agreed to share experiences, ideas, and solutions while respecting confidentiality; the idea is that common standards imposed on suppliers by several major food industry members will have greater impact.

Skills covered:

- Risk management
- Cross-functional teamwork
- Negotiation skills

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