

+ Education for Sustainable Development Curriculum Design Toolkit

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1 Introduction

Advance HE recognises that Education for Sustainable Development (ESD) in higher education equips learners with knowledge, competencies, and values to tackle existential global challenges whilst having a positive effect on social, economic, and environmental sustainability. There is a need for genuine integration of ESD into university curricula to engage students and equip them with the necessary competencies to not only deepen their understanding of local and global sustainability challenges but to empower them to be true advocates of change.

This toolkit offers a structured yet flexible approach to curriculum design, aligned with the [Advance HE Framework for Education for Sustainable Development](#), and based on the [CRAFTS methodology \(Higgins & Calvert, 2024\)](#). Through critical reflection, participants will be empowered to understand, map, evaluate and enhance the extent to which a module or programme provides opportunities for students to develop ESD competencies by incorporation of authentic learning and assessment experiences which engage the cognitive, socio-emotional and behavioural domains.

Users of this toolkit will have:

- identified the needs of their stakeholders to inform the design, delivery, and assessment of their module
- mapped the current level of ESD present within the design, delivery, and assessment of their module
- reflected on the design, delivery, and assessment of their module to embed ESD practice
- formulated an action plan to enhance the design, delivery, and assessment of their module to embed ESD.

This toolkit is designed for those users who have significant understanding of the chosen module and agency over its design and delivery. This toolkit can be used by individuals, or by module or programme teams in a more collaborative, workshop style fashion.

Before you begin

You should read the [Advance HE Education for Sustainable Development literature review](#) and the guidance produced by [Advance HE and QAA](#). Participants may also familiarise themselves with the [UN SDG website](#) and the supporting [document produced by UNESCO related to learning objectives and content](#).

Identify which module you intend to work on. An existing module or a new one in development can be used. Collate all relevant information needed to understand and deconstruct the module, which includes, at minimum: the module learning outcomes, an outline of weekly content, and the assessment profile.

In addition to this booklet, you will need several sheets of blank paper (with larger sizes such as A3 size or art roll recommended), pens, and at least one copy each of the SDG cards and the competency cards, individually cut out. If you choose, you can print these on sticker paper for a more tactile approach. A more digital approach could be taken with online whiteboarding software or similar.

2 Phase 1: Analyse

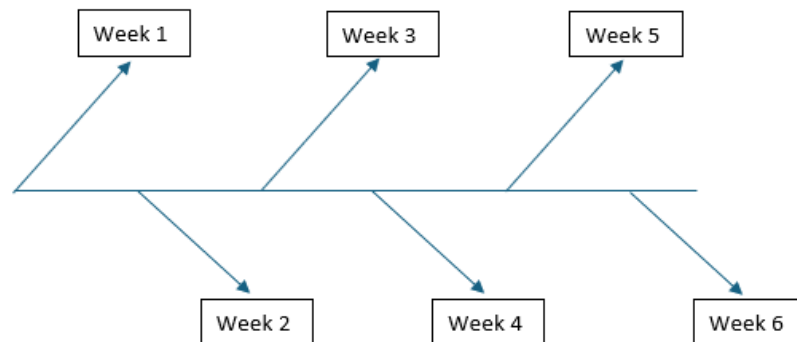
Capture the sustainability-related wants and needs of key stakeholders such as students (former and current), employers and accrediting bodies. This can be done through interviews, focus groups, questionnaires and workshops, or even through simple conversations and emails. Draw out insights by asking them what challenges or opportunities they face related to sustainability, and the relative importance of the ESD competencies. The **Stakeholder Analysis Template** provides a framework for identifying key stakeholders and synthesising their requirements.

2.1 Stakeholder Analysis Template

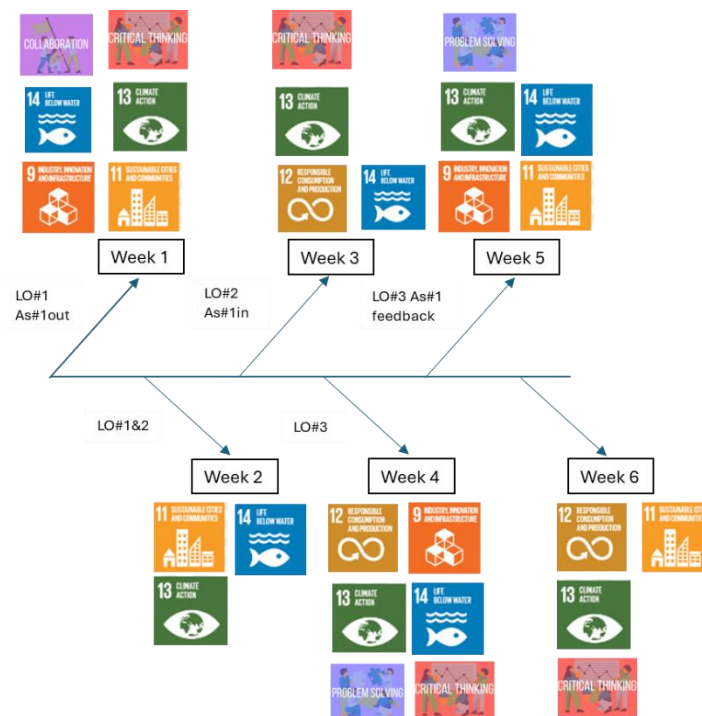
Stakeholder	Key Requirement #1	Key Requirement #2	Key Requirement #3
<i>Ex: Industry Partners</i>	<i>Working knowledge of sustainability in their field.</i>	<i>Ability to work collaboratively with others.</i>	<i>Working with and analysing data.</i>

3 Phase 2: Map

Participants should map out their current module as it currently exists. A fishbone diagram is recommended, with each offshoot representing a week or session, depending on the contact time in the module, but a grid or mind map will also work.



Write a brief description of that week or session's content and learning activities. Mark when each piece of assessment is issued to students, submitted and returned with feedback. Referring to the related cards, identify where the content or learning activities or assessment develop knowledge of the SDGs or identified competencies.



4 Phase 3: Reflect

Review the map. It will quickly become apparent where there may be focuses or imbalances for the SDGS and competencies. Reflect on whether this aligns with the overall aims of the module. Are the focuses appropriate? How might gaps be filled and have all been identified? Information regarding targets and indicators for each [SDG can be found at the UN website](#), with [suggested learning objectives and content provided in the document produced by UNESCO](#). Participants should consider the content of each session and identify opportunities for competency development. The competency cards should be used as a prompt to ensure the correct competency is identified.

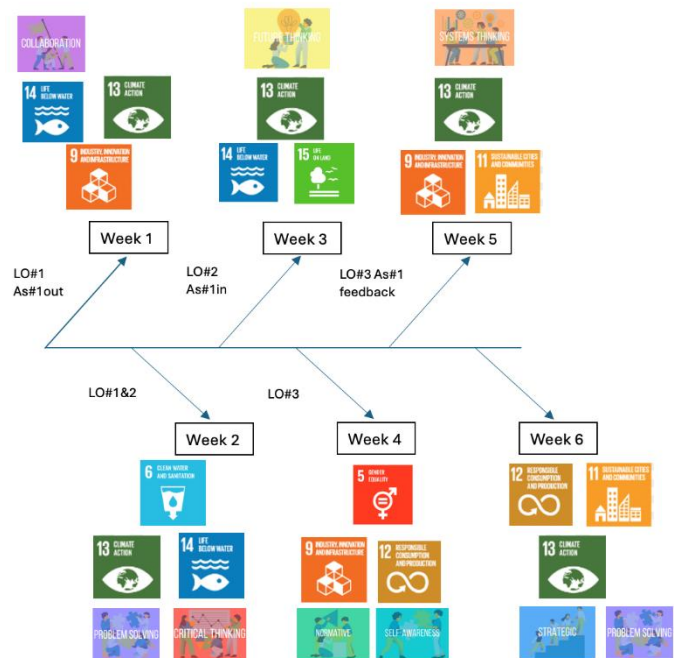
It should be noted that it is unlikely that more than 3 SDGs and 2 competencies can be covered fully and authentically for each week or session of the module. Additionally, SDG4 primarily concerns basic education for children, so it rarely applies to non-education or international development subjects (in fact, it may be appropriate to challenge yourself that you cannot use SDG4).

To maximize the effectiveness of this toolkit, participants are encouraged to engage in a thorough and honest critical evaluation of their module in its current state. When used within a team setting, constructive peer review is also highly recommended.

5 Phase 4: Redesign

Redesign the map, this time refining the structure to address any imbalances, such as adding or removing SDGs or competencies. At this stage, participants are encouraged to think freely and creatively, without being constrained by any potential limitations, allowing them to envision their ideal module.

Some participants may find it helpful to capture how the module has been redesigned in a structured, week by week / session by session manner, in which case the **Module Planner Template** could be used.



Active learning has been identified as the most effective approach to enhancing learning within ESD, as it prioritises student participation and engagement which in turn improves retention of knowledge, fosters deeper understanding, and allows opportunity to practice the competencies ESD wishes to develop.

To design active learning activities for each session, begin by clearly defining the learning outcome, ensuring that each activity aligns with the overall module learning outcome and that each learning outcome is written with an active verb (analyse, create, evaluate) rather than a passive one (know, understand). Next, identify an engagement trigger to spark student curiosity and motivation such as a provocative discussion question or a unique image. Plan activities that require students to actively engage with the content, generally requiring them to reorganise the information, apply it, or evaluate it. As an instructor, focus on facilitating rather than delivering information, guiding students through their learning journey. Finally, always incorporate opportunities for reflection to help students consolidate their understanding and recognise what they have learnt from the activity. The **Active Learning Planner Template** can help you to plan for each activity in this way.

Participants are then encouraged to review the assessment strategies within their module and identify opportunities to enhance authenticity. Unlike traditional assessments like essays or exams, authentic assessments mirror real-world tasks and challenges, allowing students to demonstrate their knowledge and skills in ways that are more motivating and meaningful to them.

5.1 Module Planner Template

Session	Learning Outcomes	Targeted SDGs	Targeted Competencies	Active Learning Strategies
<i>Ex: 1</i>	<i>MLO1, MLO2</i>	<i>SDG9</i>	<i>Problem-Solving</i>	<i>Problem-solving workshop with industry guest speakers.</i>

5.2 Active Learning Planner Template

Learning Outcome	What is the trigger to spark engagement?	How can students do something with the content, rather than just receive it?	How can instructors facilitate doing rather than transmit content?	How will students reflect on the activity?
<i>Ex: MLO1</i>	<i>Industry speaker shares stories of problems encountered.</i>	<i>Students apply problem-solving framework to analysis of industry problem.</i>	<i>Instructors circulate groups and use active questioning to challenge student mindset.</i>	<i>Students share reflections via online polling software.</i>

6 Phase 5: Action Plan

Participants should consider how to translate any identified improvements into practice. Consider if the proposed changes have any implications for the institution's quality enhancement procedures, such as relevant paperwork that should be completed. Attention should also be given to evaluation, so that the completion of the relevant work can be recognised, and its impact on the student experience measured. The **Action Plan Template** provides a framework for capturing this information.

The maps and reflections generated whilst using this toolkit should not be viewed as fixed once information has been gathered, rather they should be viewed as living resources that may be used and updated regularly to help improve the overall teaching and learning experience.

Module Coordinators should be cognisant of the fact that individual modules are not expected to address all 17 SDGs in depth, however degree programmes in their entirety should be expected to do so. At a Programme Level, it is encouraged that all modules, including placement / professional studies and dissertations/projects should go through the above process and having done so Programme Directors can be confident that ESD has been integrated throughout the curriculum design, thus delivering a transformative and cohesive learning and student experience.

6.1 Action Plan Template

Action Point	Quality Assurance / Enhancement Requirements	Measurable Output to Enable Evaluation	Assigned To	Timeline
<i>Ex: Change assessment from exam to reflective portfolio.</i>	<i>Notify quality assurance team.</i>	<i>Improved module evaluation comments regarding assessment value.</i>	<i>Module Co-ordinator</i>	<i>Semester 2</i>

7 About the Authors



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Dr Kieran Higgins (k.higgins@ulster.ac.uk) is a Lecturer in Higher Education Practice at Ulster University, specialising in the development of ESD in the curriculum and upskilling lecturers to support this work. Kieran was previously a Lecturer (Education) in

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Dr Alison Calvert

Following a successful 10-year career in the national and international dairy industry, Dr Alison Calvert (a.calvert@qub.ac.uk) transitioned into education. She is currently a Food Science Lecturer (Education) at Queen's University Belfast, with a passion for making complex food science concepts accessible and engaging for her students. Alison's

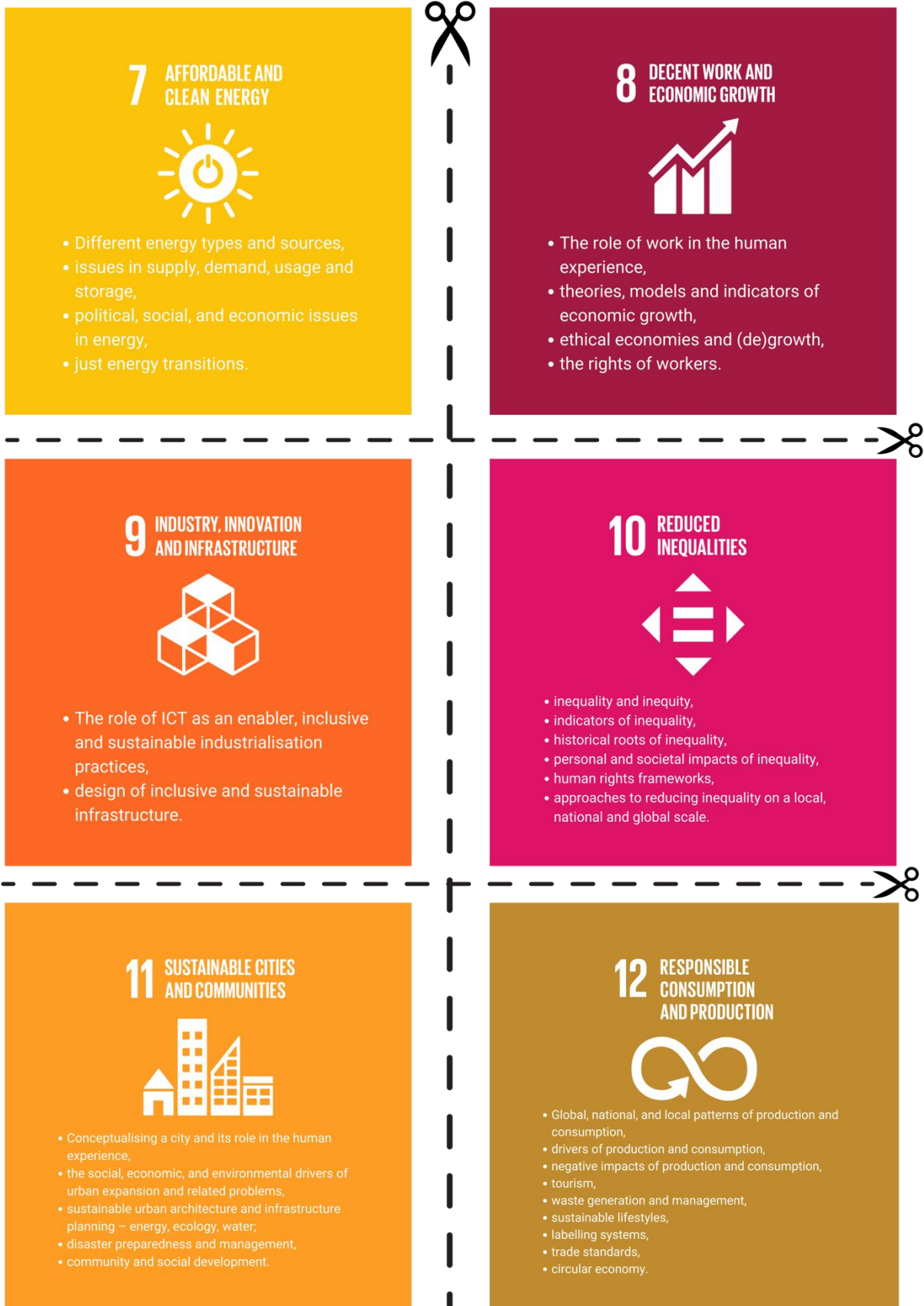
current pedagogical research interests are focused on Education for Sustainable Development (ESD). She has a particular interest in curriculum design strategies and teaching methodologies essential for developing sustainability competencies in graduates, plus the development and delivery of ESD programmes designed to educate and support academics embed ESD principles into their practice. Alison is a Senior Fellow of the Higher Education Academy and a Fellow of the Institute of Food Science and Technology (IFST). Her active participation in industry organisations such as the IFST UK Education and Professional Development Committee and the UK Food Safety Research Network Innovation Board reflects her commitment to professional growth and making meaningful contributions to both the food industry and academia.

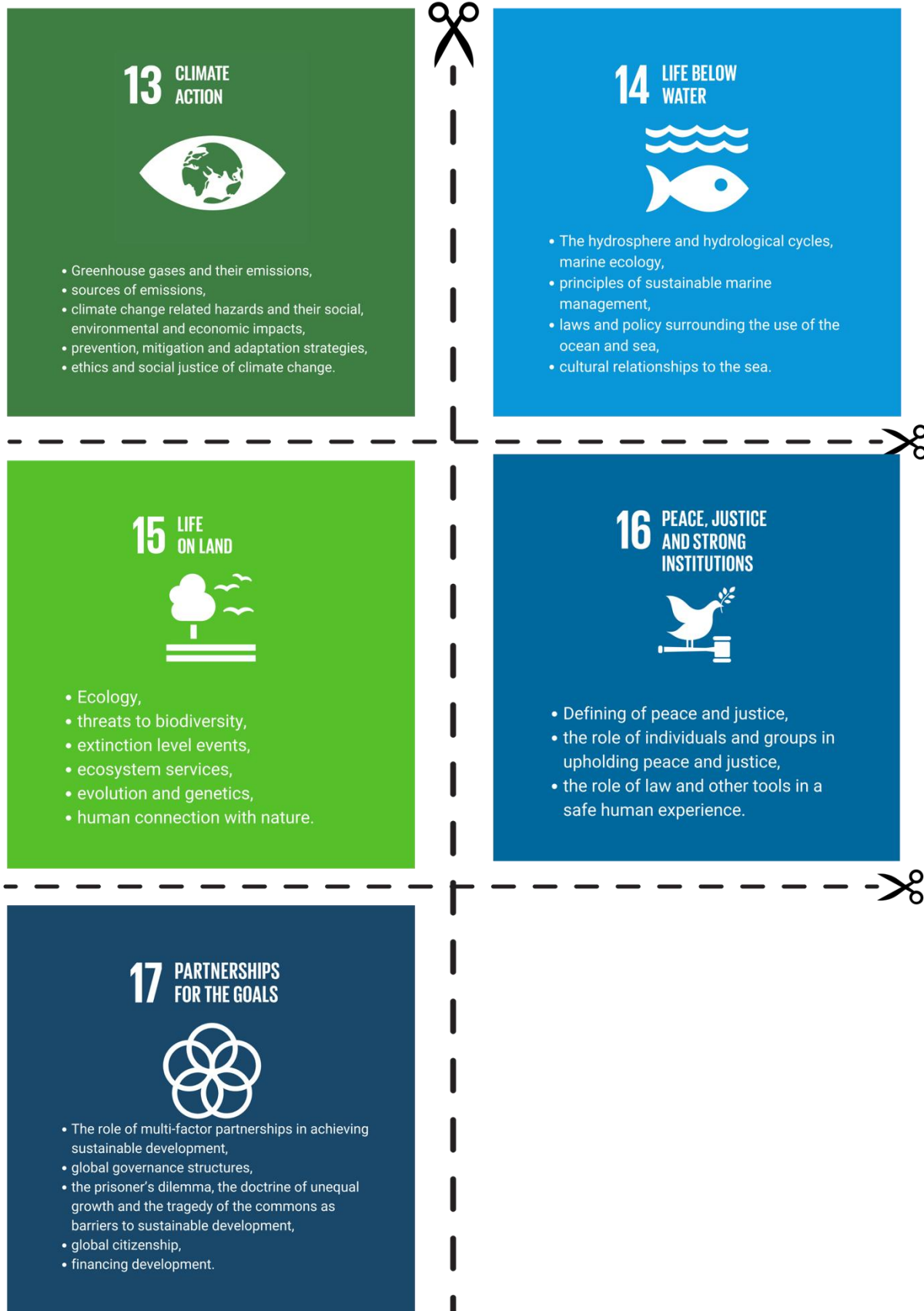
8 Acknowledgements

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Appendix 1 – SDG Cards







Appendix 2 – Competency Cards





CRITICAL THINKING

STUDENTS WITH THIS COMPETENCY CAN:

- question norms, practices and opinions,
- reflect on one's own values, perceptions and actions,
- take a position in the sustainable development discourse.





FUTURE THINKING

STUDENTS WITH THIS COMPETENCY CAN:

- understand and evaluate multiple outcomes,
- create their own visions for the future,
- apply the precautionary principle,
- assess the consequences of actions,
- deal with risks and changes.





SYSTEMS THINKING

STUDENTS WITH THIS COMPETENCY CAN:

- recognise and understand relationships,
- analyse complex systems,
- think of how systems are embedded within different domains and different scales,
- deal with uncertainty.





NORMATIVE

STUDENTS WITH THIS COMPETENCY CAN:

- understand and reflect on the norms and values that underlie one's actions,
- negotiate sustainable development values, principles, goals and targets, in a context of conflicts of interests and trade-offs, uncertain knowledge and contradictions.





SELF-AWARENESS

STUDENTS WITH THIS COMPETENCY CAN:

- reflect on one's own values, perceptions and actions,
- reflect on one's own role in the local community and global society,
- continually evaluate and further motivate one's actions,
- deal with one's feelings and desires.



PROBLEM SOLVING

STUDENTS WITH THIS COMPETENCY CAN:

- apply different problem-solving frameworks to complex sustainable development problems,
- develop viable, inclusive and equitable solutions,
- utilise appropriate competencies to solve problems.

STRATEGIC

STUDENTS WITH THIS COMPETENCY CAN:

collectively develop and implement innovative actions that further sustainability at the local level and further afield.

COLLABORATION

STUDENTS WITH THIS COMPETENCY CAN:

- learn from others understand and respect the needs, perspectives and actions of others,
- deal with conflicts in a group,
- facilitate collaborative and participatory problem solving.

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