



Innovationscampus Nachhaltigkeit
Transdisziplinäre & Transformativ Nachhaltigkeitsbildung



Overview of the TTNB project

Improving the quality of study and teaching through
transdisciplinary and transformative sustainability education
at Baden-Württemberg's universities

Transdisciplinary

Cooperation between
Students and industry partners

Transformative

Solution-oriented approach
Memorable learning experiences

Partnership

 **Baden-Württemberg**
Ministerium für Wissenschaft,
Forschung und Kunst



universität freiburg





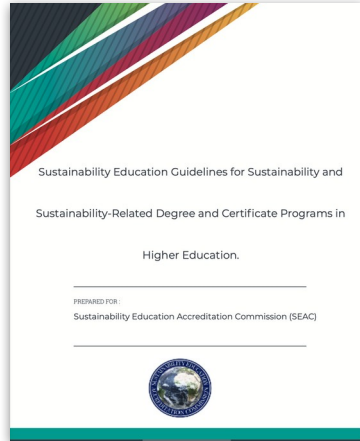
Key Competencies in Sustainability

*and the Accreditation of Sustainability Degree
Programs in the United States*

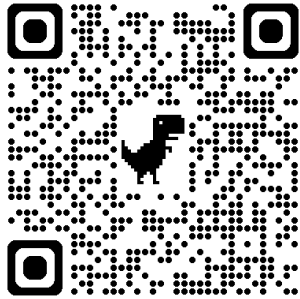
Krista Hiser, Ph.D., Director and Founder
Sustainability Education Accreditation Commission (SEAC)

Moderation: **Katja Brundiers**, Ph.D,
Co-Lead ICN-TTNB, University of Freiburg

24 June 2026 – FRIAS, University of Freiburg



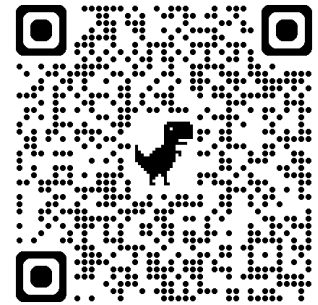
Website:



Email: krista@sustedu.org

www.sustedu.org

LinkedIn:



CERTIFICATE OF ACCREDITATION

*The Sustainability Education Accreditation Commission
awards X-year initial accreditation to:*

To be announced 8 July!

Master's of Arts in Sustainability Program



for excellence in Sustainability Education

Valid August 1, 2026 - September XXXX

Davis Bookhart, Lead Commissioner

Krista Hiser, Director

Diverse institution types, levels, & regions

500 people's input

100 program directors

5 years' effort

> \$500K in grants

21 institutional teams

6 site visits



Gaia University



University of Colorado
Boulder



COLORADO
MOUNTAIN COLLEGE



HAWAII
PACIFIC
UNIVERSITY



Skyline
College



Northeastern
University



MARICOPA
COMMUNITY COLLEGES



PennState



USC University of
Southern California



UNIVERSITY OF
SOUTH DAKOTA

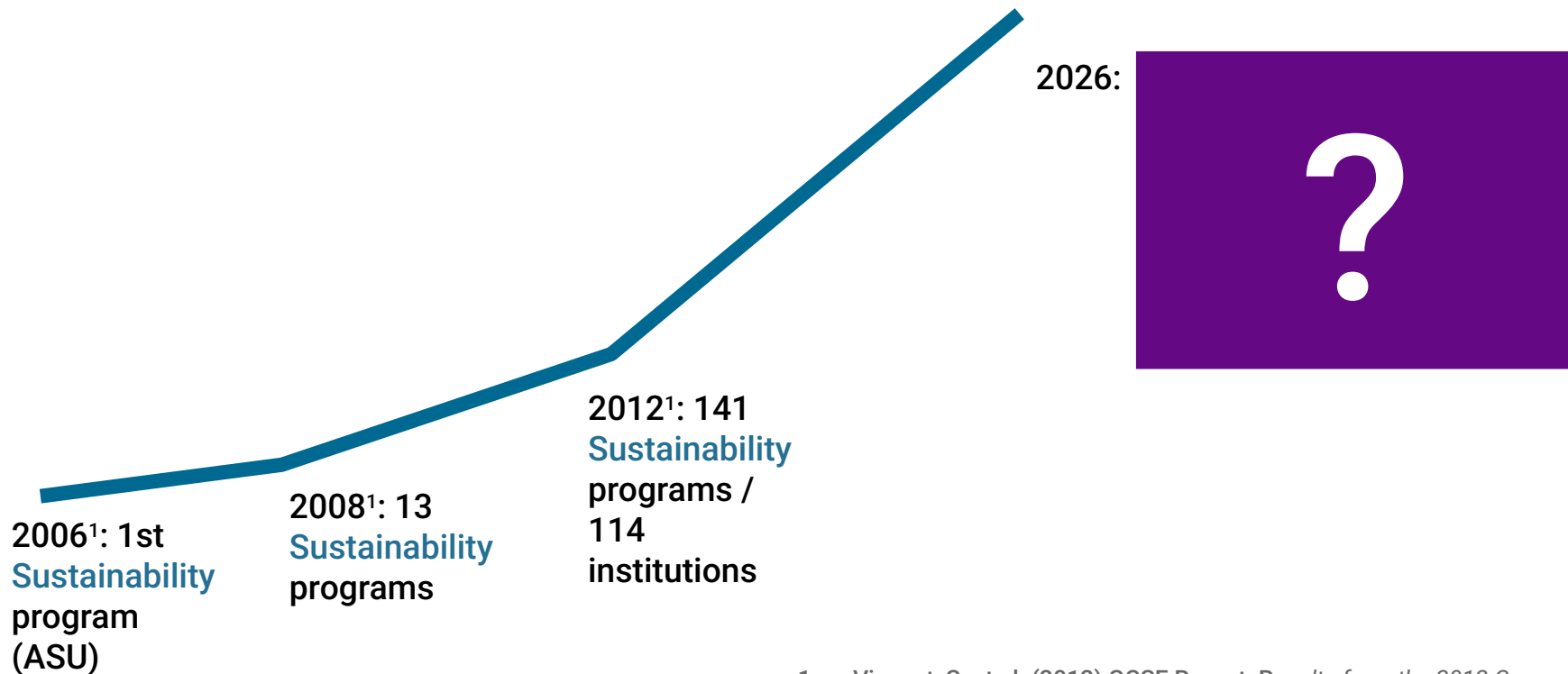


TEXAS
The University of Texas at Austin



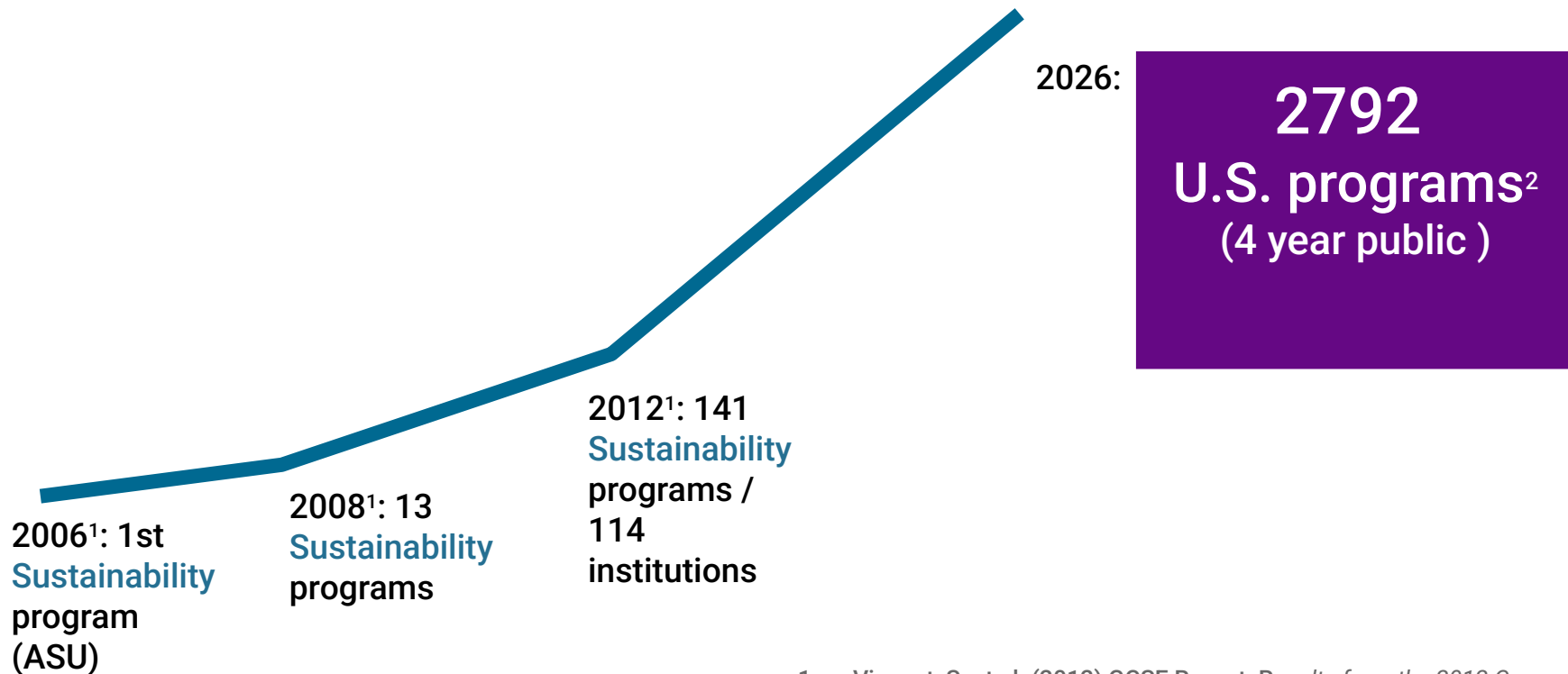


Proliferation of Sustainability Degrees



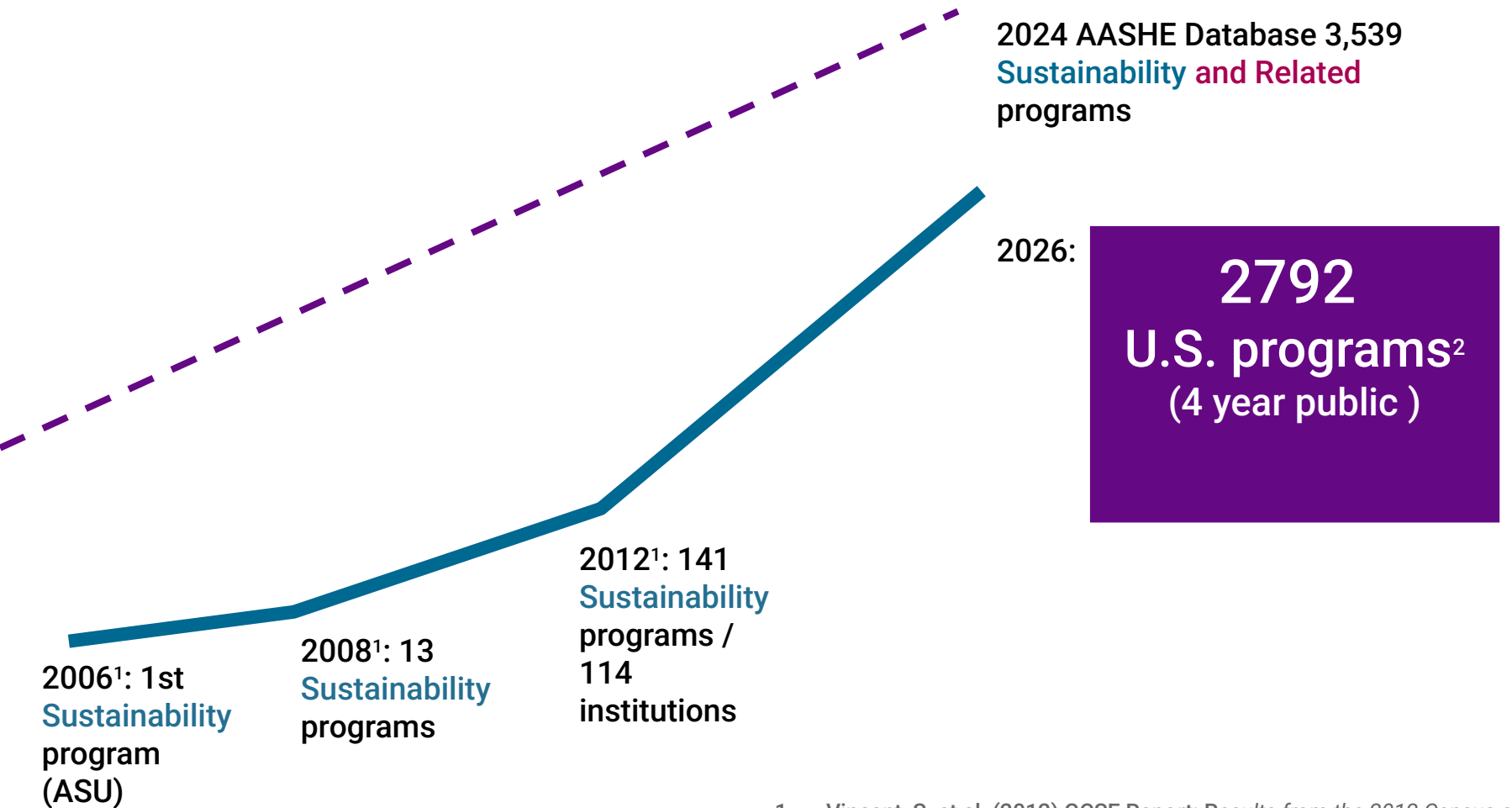
1. Vincent, S. et al. (2012) GCSE Report: Results from the 2012 Census of U.S. Four Year Colleges and Universities

Proliferation of Sustainability Degrees



1. Vincent, S. et al. (2012) GCSE Report: Results from the 2012 Census of U.S. Four Year Colleges and Universities

2. AI Estimate, unpublished



1. Vincent, S. et al. (2012) GCSE Report: Results from the 2012 Census of U.S. Four Year Colleges and Universities
2. AI Estimate, unpublished



Challenges to Higher Education

- Enrollment declines
- Consolidation & closure
- Future workforce
- Political landscape
- Artificial intelligence

Challenges to Higher Education

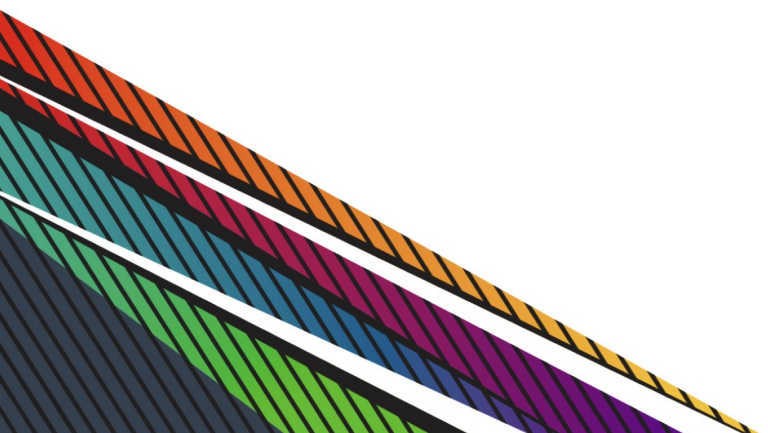
- Enrollment declines
- Consolidation & closure
- Future workforce
- Political landscape
- Artificial intelligence

- Food and water
- Climate disasters
- Climate migration
- Equity, justice, inclusion
- Pandemic

Presentation Overview

1. Leveraging the **Key Competencies in Sustainability Framework**
2. Tracing the **Pathway to Accreditation** (2011-2026)
3. **Transformational Accreditation** for Sustainability Degree Programs
4. **Conclusion & Discussion**

Leveraging the Key Competencies in Sustainability Framework



What are the key competencies?

Competence: “a functionally linked complex of knowledge, skills, and attitudes that enable successful task performance and problem solving.”

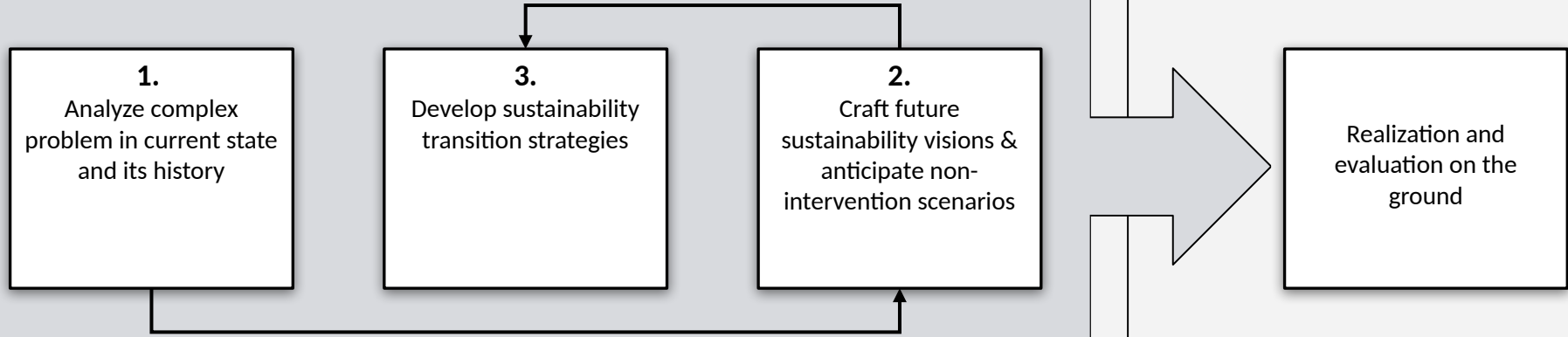
(Wiek et al, 2011, p.204)

“A key competency... entails complexes of **interrelated knowledge, skills and attitudes** related to a shared function for successful task performance. Each **key competency in sustainability** contributes to a specific and distinct function for **successful problem solving of real-world sustainability challenges.**”

(Brundiers et al, 2023, p.5, based on Wiek et al., 2011)

Wiek, A., Withycombe, L., & Redman, C. L. (2011). Key competencies in sustainability: a reference framework for academic program development. *Sustainability science*, 6(2), 203-218.

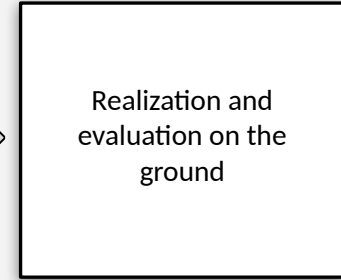
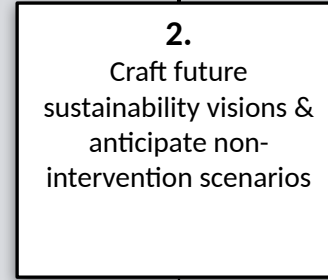
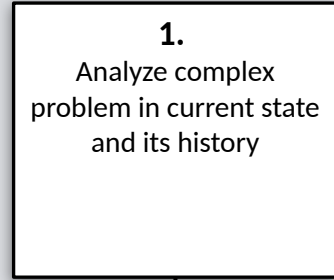
Brundiers, K., King, J., Parnell, R., & Hiser, K. (2023). A GCSE proposal statement on key competencies in sustainability: Guidance on accreditation of sustainability and sustainability-related programs in higher education. Global Council for Science and the Environment.



integrated problem-solving framework

Values thinking

Values thinking



Systems thinking

Strategic thinking

Futures thinking

Implementation
competency

Values thinking

**Problem-solving requires many
competencies**

Interpersonal competency

Intrapersonal competency

Integrated Sustainability Problem Solving Competency



Values thinking

1.
Analyze complex
problem in current state
and its history



3.
Develop sustainability
transition strategies



2.
Craft future
sustainability visions &
anticipate non-
intervention scenarios



Systems thinking

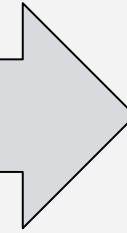


Strategic thinking



Futures thinking

Values thinking



Realization and
evaluation on the
ground



Implementation
competency

Competencies develop
and work together....



Interpersonal competency



Intrapersonal competency

with values-thinking
playing a leading role.



Integrated Sustainability Problem Solving Competency

The “4-Dimensional Model” of Learning Objectives



Enter the portal...

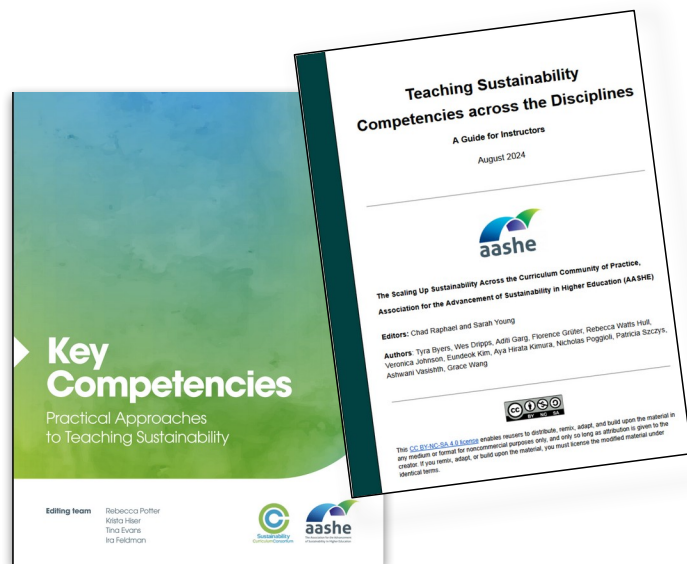
“Thinking through Sustainability
Challenges with the Key
Competencies in Sustainability”

<https://www.sustedu.org/competencies>



Value of a Shared Competency Framework

- Curriculum
- Teaching Practices
- Assessment
- Career
- Program Learning Outcomes
- Program Evaluation (+ SEAC Accreditation)



How SEAC Guidelines “lean on” the KCSF

CORE 1, Standard 1 (C1.S1)

Developmental Competency Framework

A competency framework **guides the creation of program learning outcomes that students develop across multiple courses.**

Evidence shows that by program completion, candidates exhibit knowledge, skills, attitudes, and abilities of sustainability professionals, with increasing proficiency and complexity.



Ex: Program Learning Outcomes (Master's)



- Students will understand and analyze the **systems**, frameworks and concepts that contribute to and determine sustainability (i.e., environmental, economic and societal) outcomes.
- Students will identify the opportunities, levers, and solutions that different stakeholders can implement to strategically drive positive change.



- Students will **engage critically with different viewpoints and values** to develop a deeper, more nuanced understanding of the tradeoffs implicit in sustainability decision-making.



- Students will demonstrate the professional skills and knowledge required to drive change and impact in sustainability and related fields **through real-world projects and applications**



- Students will work **collaboratively and effectively within teams** and with external stakeholders.
- Students will communicate effectively to a variety of audiences through different mediums

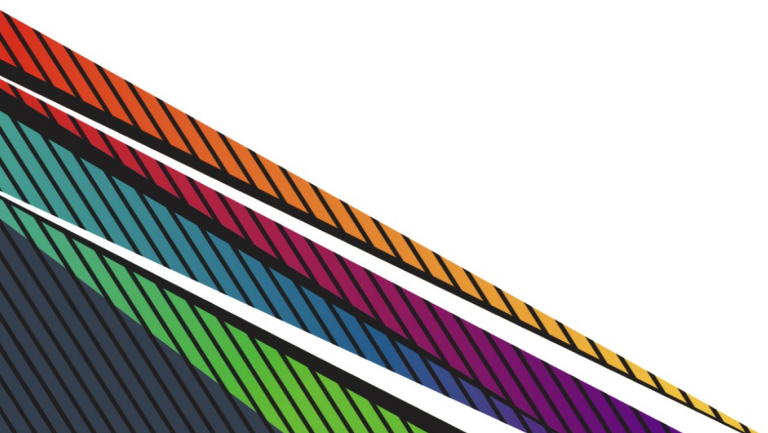
Mapping Exercise: the Key Competencies in Sustainability Framework (KCSF)

Instructions: Sketch out some notes below in response to the question: How could the key competencies in the previous page map with either four core OR required courses in your program? If adjustments to courses are needed, use the space below to brainstorm any necessary changes. Just represent brief ideas – this is only meant to inspire thinking around a more in-depth review in the future.

	[Insert Course 1 title]	[Insert Course 2 title]	[Insert Course 3 title]	[Insert Course 4 title]
Systems Thinking				
Futures Thinking				
Values Thinking				
Strategic Thinking				
Interpersonal				
Intrapersonal				
Implementation				
Integrated Problem Solving (All the above)				



Tracing the Pathway to Accreditation (2011-2026)



2011

Synthesis: lists > framework
(Wiek et al, 2011)



2016

Operationalize learning objectives
(Wiek et al., 2016)

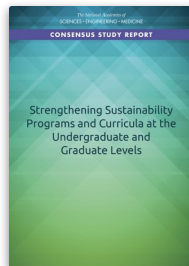
16
OPERATIONALISING
COMPETENCIES IN HIGHER
EDUCATION FOR SUSTAINABLE
DEVELOPMENT

Ariane Wiek, Michael Brundiers, Roger M. G. J. van der Grinten, Gert
Vogel, Thomas J. Schwaninger, Rüdiger Kopp, and
Larsen Hoffmann-Kühn

Introduction
The need for higher education to contribute to sustainable development is increasingly evident. This book provides a framework for operationalising competencies in higher education for sustainable development (HESD). The framework is based on the concept of competencies, which are defined as the combination of knowledge, skills, and attitudes that enable individuals to act effectively in a given situation. The framework is designed to be used by higher education institutions to develop and implement HESD programs. The framework is based on the concept of competencies, which are defined as the combination of knowledge, skills, and attitudes that enable individuals to act effectively in a given situation. The framework is designed to be used by higher education institutions to develop and implement HESD programs.

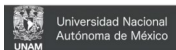
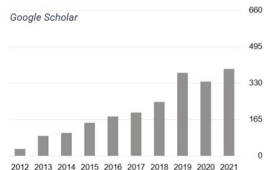
2020

**Call for program-level
guidance (NASEM, 2020)**



2021

Studies on qual. (Brundiers et al, 2021) and quant. agreement (Redman & Wiek, 2021)



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Global Council for Science
and the Environment



**Scholarly Exchange
and Training**

**Adaptation & Uptake of
KCS**

Council of Environmental Deans and Directors (CEDD)

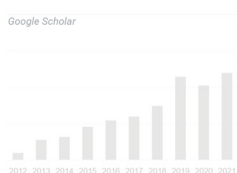
2011-2020

2011

Synthesis: lists > framework
(Wiek et al, 2011)



Google Scholar



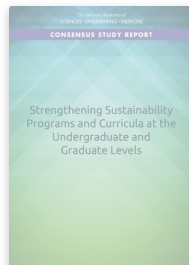
2016

Operationalize KCS framework
(Wiek et al, 2016)



2020

Call for program-level guidance
(NASEM, 2020)



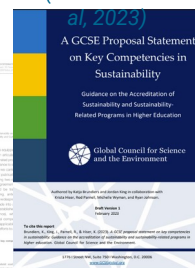
2021

Studies on qual. (Brundi et al, 2021) and quant. agreement (Redman & Wiek, 2021)



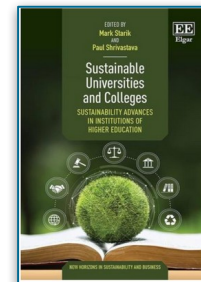
2023

Proposal on Convergence
(Brundi et al, 2023)



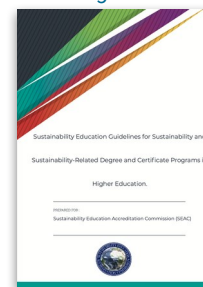
2024

Needs & Opportunities
(Brundi et al, 2024)



2026

Guidelines for Sust. & Sust.-Related Programs



UNAM
Universidad Nacional Autónoma de México

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Global Council for Science
and the Environment

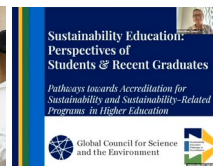


**Scholarly Exchange
and Training**

**Adaptation & Uptake of
KCS**



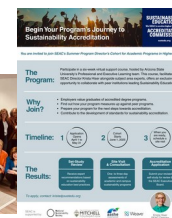
**Community of
Practice on S.E.**



**Roundtables on
S.E.**



**DC Workshop -
draft standards**



**Program Directors
Cohorts**



**Site Visits (6) for
Accreditation**

Council of Environmental Deans and Directors (CEDD)

GCSE "Pathways to Accreditation"

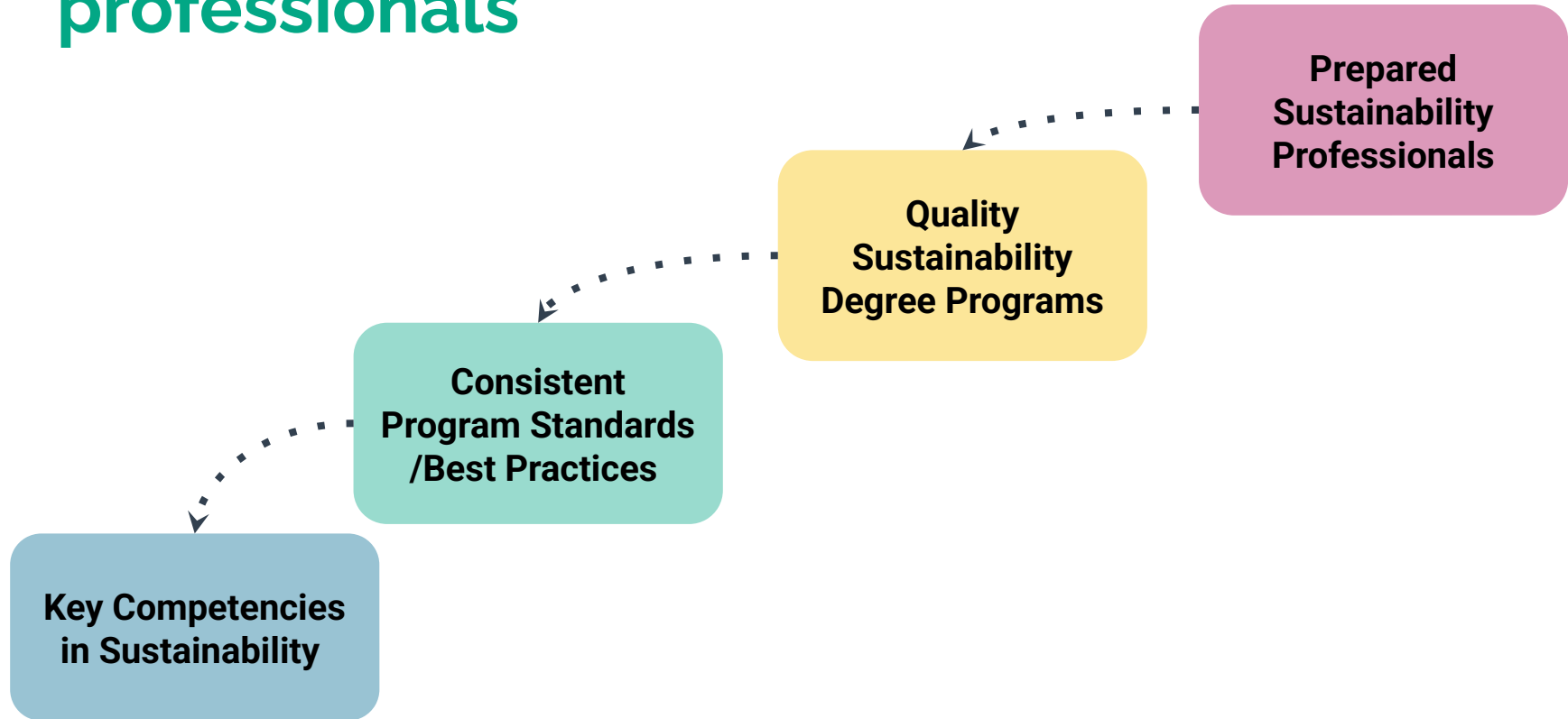
**Sustainability Education Accreditation
Commission (SEAC)**

2011-2020

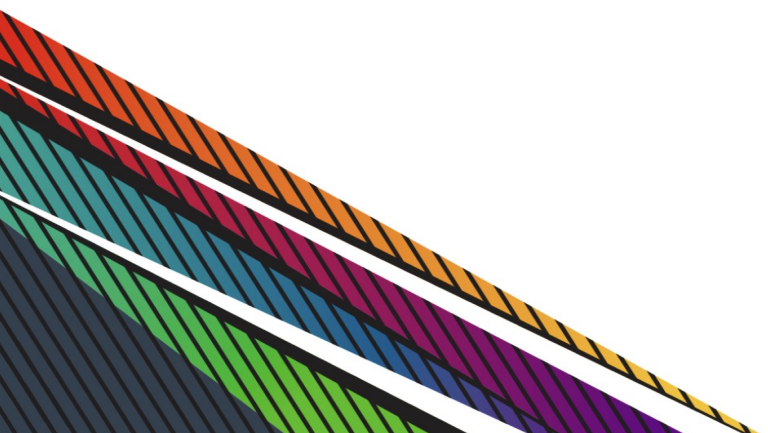
2021-2023

2024-2026

Backwards design for sustainability professionals



Transformational Accreditation for Sustainability Degree Programs



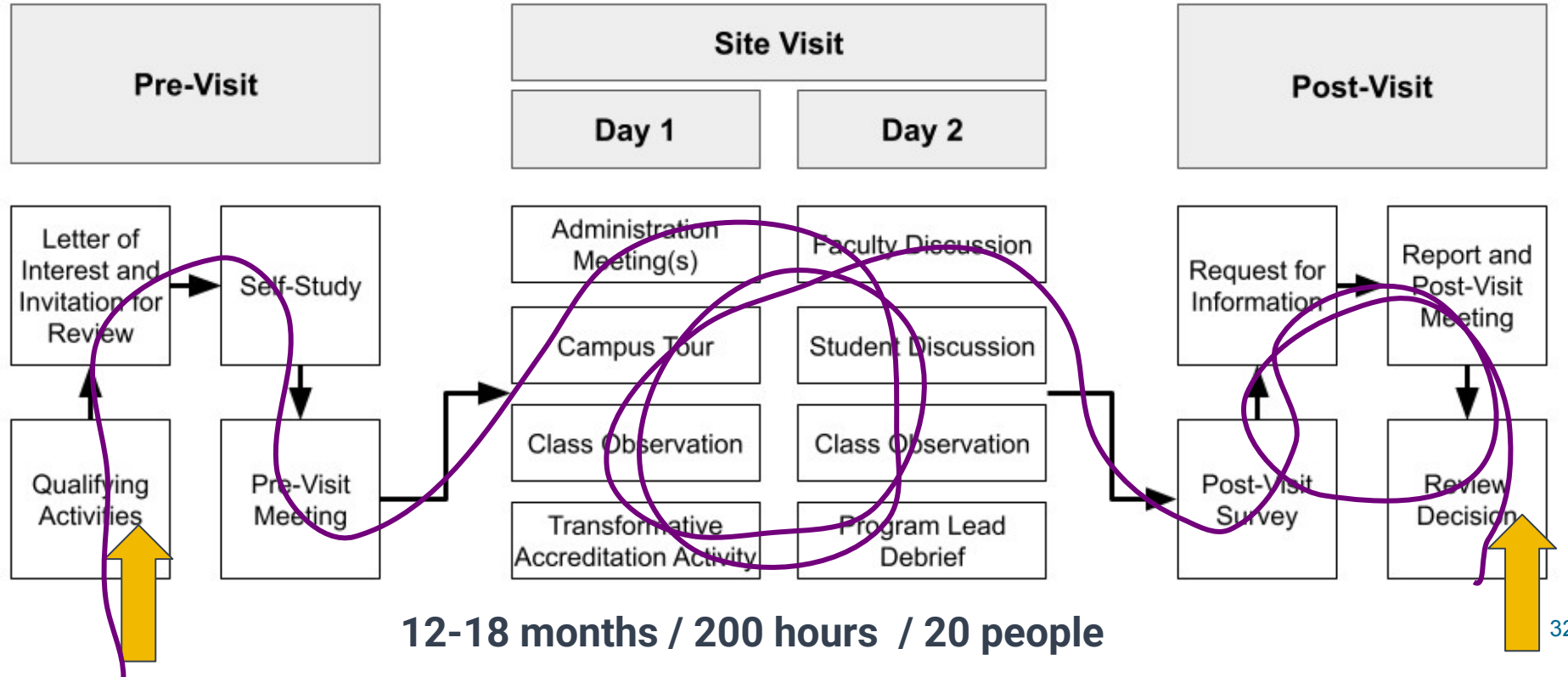
Pilot

- 19 Peer Evaluators = recruited and trained
- 6 site visits in 2026 : 3 Bachelor's, 3 Master's

→ Application for CHEA recognition in 2027



The SEAC accreditation process: *relational, regional, developmental*



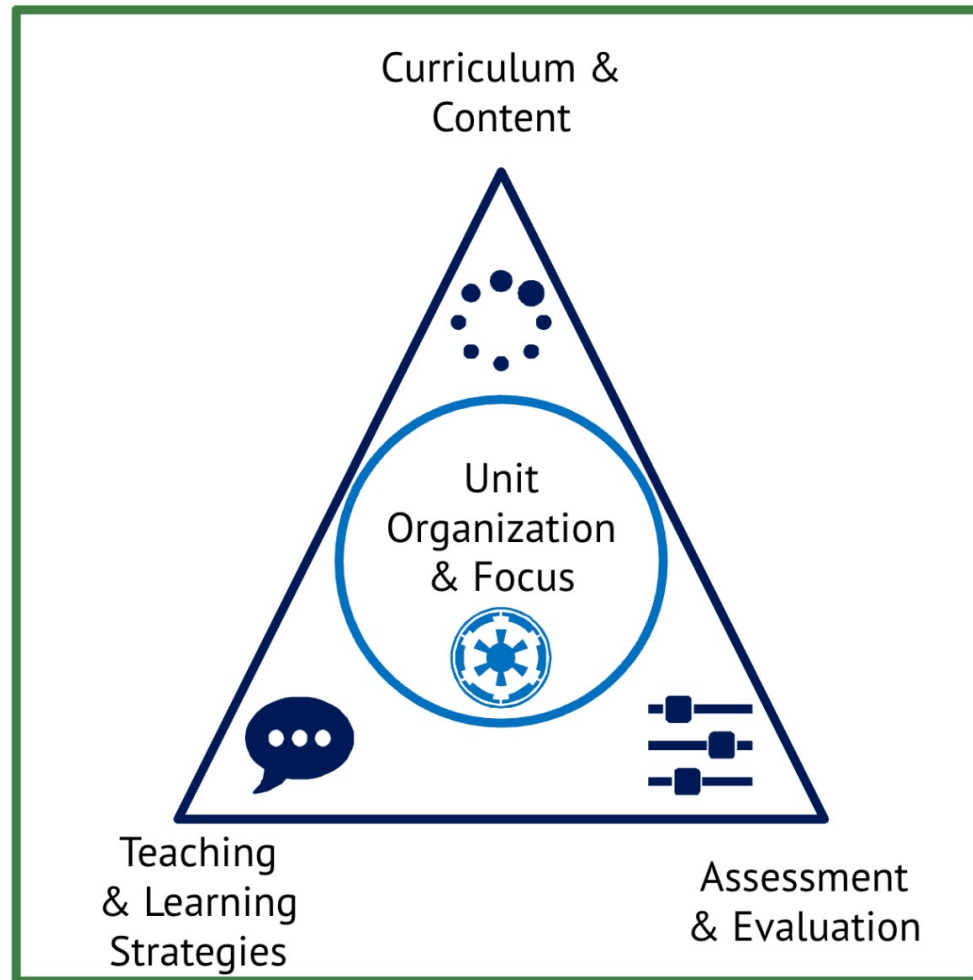
Leadership
& Mission



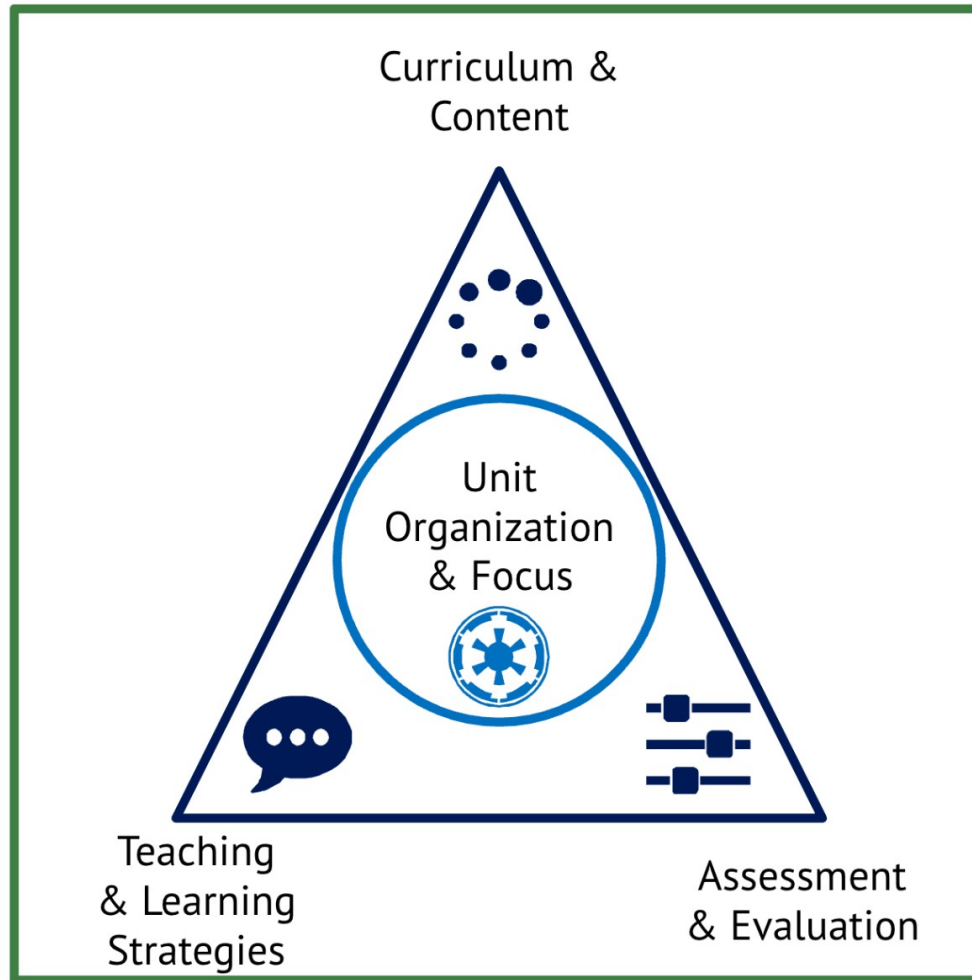
Campus &
Community



Faculty
Support

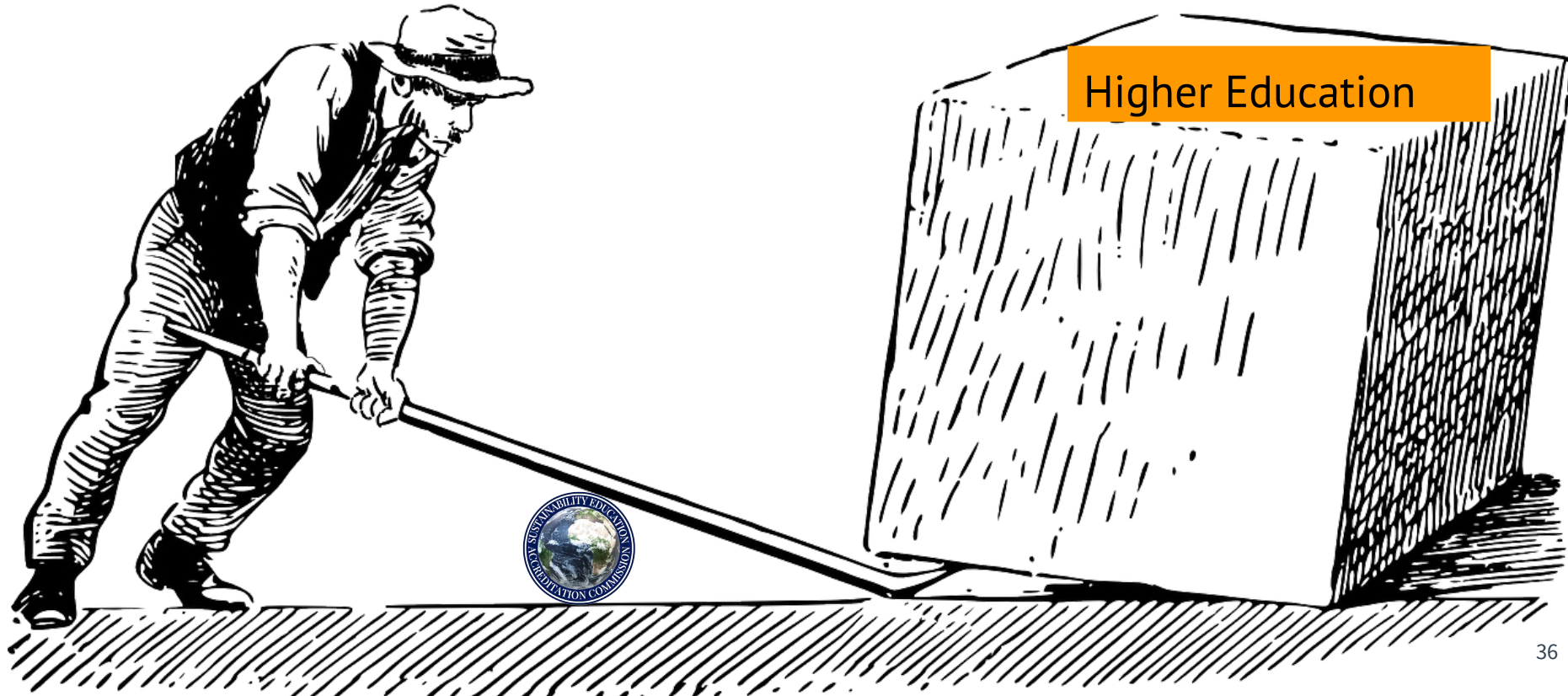


Student
Support

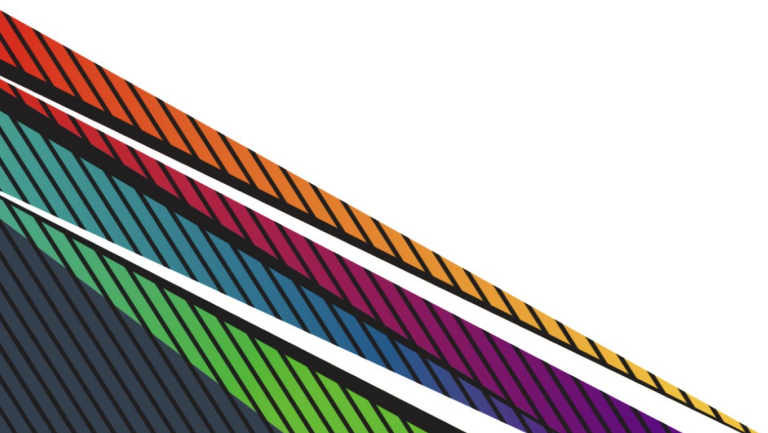


CORE 1: Curriculum & Content Areas	CORE 2: Teaching & Learning	CORE 3: Assessment & Evaluation	CORE 4: Unit Organization & Focus
1.1 Key Competencies in Sustainability	2.1 Key Competencies: Pedagogies	3.1 Ongoing Student Assessment	4.1 Program-level Mission Statement
1.2 Living curricula	2.2 Experiential, Applied, and Living Laboratory learning	3.2 Holistic Program Evaluation	4.2 Program Director & Resourcing
1.3 Learning Materials	2.3 Multiple Perspectives	3.3 Faculty Development	4.3 Reciprocal Partnerships & Articulation
1.4. Learning Environments	4.4 Place-Based & Regional learning	3.4 Formative & Summative	4.4 Informed Student Agency

Transformative Accreditation

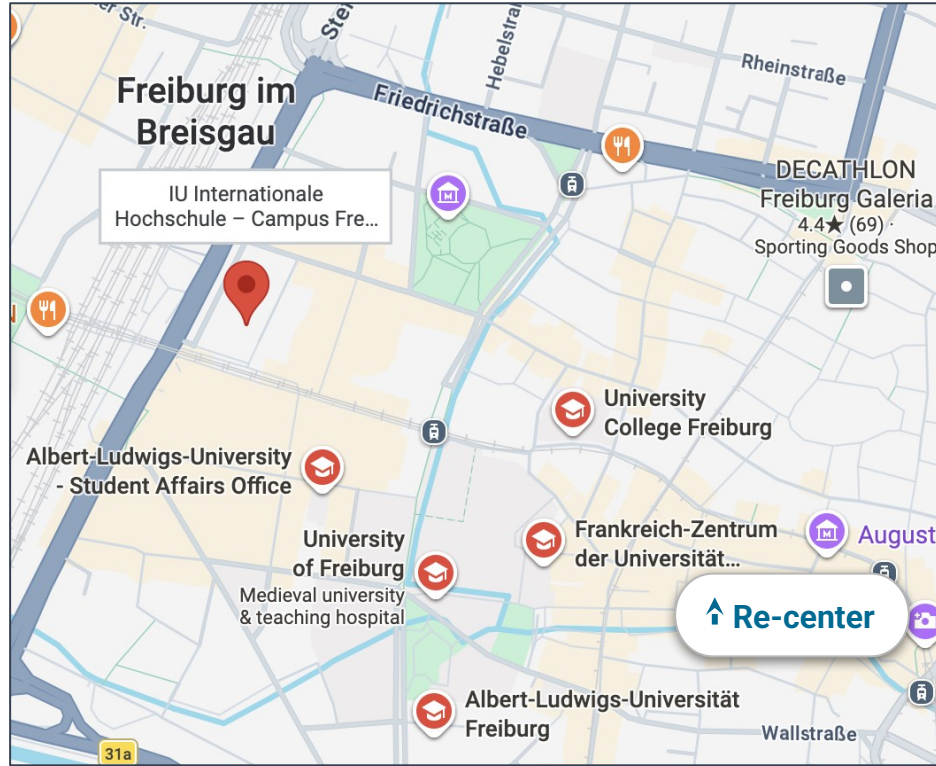


Conclusion & Discussion





Takeaway 1: iterate, don't proliferate



Takeaway 2: from the edge, to the center

Danke!



LinkedIn

Krista Hiser, Ph.D., Director and Founder
Sustainability Education Accreditation Commission (SEAC)
krista@sustedu.org
www.sustedu.org

Discussion

- **Yes! But**
- **A shared reference framework as a tool to facilitate communication and coordination**
- **Application - different applications for students, faculty, coordinators, administrators. What is your role and experience - how to connect?**

Invitations - please mention your name and institution to support community building and connection.

Sustainability is not just an area of study or research or job employment – it is an old process of caring for land and others that includes whole-thinking - body/mind/spirit – even within this modern society.

This is a cultural process, a deeply enriching and meaningful one, and it is awakening our world to regenerative actions tied to continuity.

Let us ask better questions of how people shape their programs, and why? With whom? How?

Let the systems of their own excellence get outlined with their own ontological and epistemological yardstick.

–Dr. Manulani Aluli Meyer, SEAC advisor



Takeaway 3: “Collective transformation through individual excellence”

Thank you and see you soon!



“IKoNE” – DAS INTEGRATIVE KONZEPT NACHHALTIGER ENTWICKLUNG UND SEIN POTENZIAL FÜR DIE NACHHALTIGKEITSBILDUNG

Einladung zu Vortrag und Diskussionsrunde

Jürgen Kopfmüller (ITAS) stellt das **Integrative Konzept nachhaltiger Entwicklung (IKoNE)** vor, das Anfang der 2000er Jahre als wissenschaftlich fundiertes Nachhaltigkeitskonzept und Gegenentwurf zu anderen damals bestehenden Konzepten entwickelt wurde. Im Mittelpunkt stehen die Motivation, Grundidee und Architektur von IKoNE, seine Positionierung in zentralen Kontroversen der konzeptionellen Nachhaltigkeitsdebatte, ein Vergleich mit den SDGs sowie einige grundlegende Aspekte für valide Nachhaltigkeitsanalysen und -bewertungen. Abschließend werden Gelingensbedingungen für eine angemessene Unterstützung von Nachhaltigkeitstransformationen skizziert.

Anna König und Volker Stelzer (ITAS/KAT) geben kurze Einblicke in die praktische Anwendung des Konzepts: Vorgestellt werden ein auf IKoNE basierendes Tool zur Nachhaltigkeitsbeurteilung kommunaler Maßnahmen sowie ein Best-Practice-Seminar, das die Anwendung von IKoNE in der Hochschullehre veranschaulicht.



Referent: Jürgen Kopfmüller



Koordinator ITAS-
Querschnittsaktivität
Nachhaltigkeit

ANMELDUNG

Um sich anzumelden, senden
Sie bitte eine E-mail an:

Sophie.fribus@kit.edu

Zoom infos:

Meeting-ID: 518 501 3586

Kenncode: 8@.U7i#K

<https://kit-lecture.zoom.us/j/https://my.susannegerstberger?pwd=czy2Sj8VdDZ3Rl>

DIENSTAG, 7.7.26

14:00 - 15:30

SPARK, Kaiserstrasse 24

Moderation: Dr. Susanne Gerstberger,
Co-Projektleitung ICN TTNB, KIT

Questions & Responses

1. How expensive is it to do the site visit? Is it difficult to get administrative buy-in to invest in this process?

Expenses for a two-day site visit (travel, accommodation) are conservatively estimated around \$5000. We are considering hybrid site visit models, but find value in classic, multi-day, in-person, team-driven evaluation. When administrators shift their perception of Sustainability programs toward a professional workforce, programmatic accreditation (and its cost) actually elevate administrative view towards the program. Employers and partners are important external bodies to get buy-in.

Our onboarding process is a collaborative cohort that doubles as valuable professional development. Program evaluation is usually an afterthought and must be improved. So, it is not just a cost, it is also a capacity building and organizational development opportunity. The process will take 12-18 months and 200 hours over this time, but these are hours well spent strengthening program networks.

2. There are 2792 sustainability programs with sustainability in the title – how do you ensure you don't leave programs behind that don't have sustainability in the title?

There are multiple program census research queries at the moment, following the last 2017 GCSE census tracking interdisciplinary environmental studies and energy programs (see, e.g., Scope of Interdisciplinary Environmental, Sustainability, and Energy Baccalaureate and Graduate Education in the United States, GCSE, 2017). Manual, human review of program websites at 4,000 HEIs is daunting but feasible. AI-driven research is more nimble but depends on the search terms that we apply to identify sustainability programs (sustainability, resilience, justice/just, and so forth). We will forward relevant research upon its publication and encourage you to think about framing of programs in your own network of institutions.

This number, 2792, is unpublished and just our first pass – it also only only includes four-year public institutions. The number does indicate, however, that sustainability programs continue to thrive in U.S. institutions.

3. I have a question focusing more on general quality management: You mentioned in the beginning that as enrollments decline, accreditation is changing in the US. Is there a national university ranking (or something similar) which takes into account different criteria such as accreditation or the integration of sustainability? I am wondering if this is something potential students specifically look to choose their study program.

To clarify: institutional accreditation is required in the US. Institutional accreditation is linked to financial aid that students can qualify for. It is becoming more market-driven with institutions being able now to choose their accrediting body. People think of it as a kind of “compliance” accreditation. On the other hand, programmatic accreditation can be linked to certification (ie: you must graduate from an ABET-accredited program to sit for an engineering license).

However, the “*roots*” of accreditation are voluntary. There is no mandatory licensing for Sustainability; thus, our accreditation is purely voluntary and thus can be designed as an opportunity for innovation and improvement. Students are savvy and will find our directory of accredited sustainability programs.

Yes, there are systems for ranking universities in the US. One is called the “Times Higher Education Sustainability Impact Ratings/Rankings”, which is also relevant for German Universities. This is well-known by students and prospective faculty looking for sustainability in teaching and research. There is currently no connection between the new sustainability accreditation and the ranking, but we would assume that eventually it will be factored in rankings, as is [AASHE STARS](#). But, consider what is valuable to an employer: the Times ranking doesn't matter to an employer, but the quality and learning outcomes of a specialized program DO matter.

4. Are there any professional associations of employers on sustainability in the US? If yes, how /what did they contribute to the process of developing the Guidelines of Accreditation?

Yes, there are several. The National Sustainability Society ([NSS](#)) is a newer organization (~3 years) attempting to fill this need and connect employers and academics. The NSS is the fiscal sponsor of the SEAC and has “incubated” the accreditation process. Prior to the NSS, the Global Council for Science and the Environment hosted Roundtables with employers to ascertain the professional skill sets and standards. (“Roundtables”): <https://youtu.be/2Tf4CTNFJwA?si=ax5cMsH5ainOHx8K>

There is also the International Society of Sustainability Professionals ([ISSP](#)). The ISSP has created a professional licensure for Sustainability with some uptake in the U.S. However, the complex nature of Sustainability and the multiple contexts of Sustainability problem-solving make it difficult to capture proficiency in a “test”.

The primary characteristic of sustainability degree programs is a transdisciplinary capstone project where students gain “real-world” implementation experience with feedback and evaluation from stakeholders.

5. We need academic pathways to help build new sustainability champions and help them not to burn out. What is needed in your opinion to prevent them from burning out? How can a university contribute to equip future change makers with the mental strength that they will need?

Relationship and network building is an important goal of our effort. Be in community! I have mentioned our 5 week Program Director's Cohort, offered each spring, where sustainability program directors/faculty gather to exchange and coach one another through change processes.

The SEAC standards themselves are an attempt to “recenter” the innovative developments of sustainability champions and make new ideas and methods the new standard of program excellence. We hope that investing in this effort is a way of stabilizing resourcing for precarious programs, and creating that academic pathway for the next generation of sustainability faculty. Part of our goal is creating academic positions for PhDs in Sustainability.

Addressing climate anxiety is one example that directors might discuss in relationship to helping students develop “intrapersonal” competency.

6. How does the process of getting people all on the same page look, what are the mechanics of this?

Lots and lots of meetings, virtual and in person. This is true for institutions preparing for accreditation, but has also been true of the accreditation development itself. Each standard has been drafted, reviewed, critiqued, and refined over the course of 5 years. What keeps us going is knowing that the (sometimes slow) process is teaching us so much along the way, and building our professional network.

In a recent Program Directors' Cohort meeting I heard a piece of advice, that administrators and faculty often work with different brains: their brain as a researcher/educator and as an administrator. Program directors need to develop both and use them together.

7. Regarding your comment on diversity in sustainable degree programs: what efforts are there to solve this problem?

One place we draw our inspiration from is “A New Green Learning Agenda (Kwauk & Casey, 2021).” We understand from this report that there are a number of factors that exclude/disincentivize broader participation in sustainability as an academic and career pathway. One co-author, Christina Kwauk, also co-founded a [social enterprise](#) dedicating to researching and addressing diversity in sustainability.

In both **Core** and **Support** areas of the [Sustainability Education: Guidelines for Sustainability & Sustainability-Related Degree and Certificate Programs in Higher Education](#), we weave in standards that help: 1) improve the diversity of teaching and learning content and approaches; 2) ensure financial and institutional support for students and faculty; 3) encourage transparent and fair student recruitment; and 4) overall increase the quality and value of sustainability degrees and their connection to good sustainability jobs.

We do not have a standalone “DEI” standard, but invite programs to articulate their own transformative theme – what kind of program do they want to be, and what students do they want to invite? This theme can be woven through curriculum, faculty policies, student support, campus and community....each standard.

8. A question on implementation competency: How realistic is it to develop this competency? Own experience shows that incorporating transdisciplinary learning activities that work towards sustainability solutions is challenging as it requires time, trust building with practice partners willing to test things out, and the testing can also be financially expensive in order to create impact. This cannot be done in a few weeks.

Yes, implementation competency is one of the most demanding competencies to build, as universities have not yet many courses on offer. However, strategically, the SEAC Guidelines focus on the program level, not on a course level. So the question is: how can we build towards implementation competency through a **sequence of courses**, over the course of 2-3 years in a program? We are looking at program-level learning outcomes that are demonstrated in a transdisciplinary capstone or internship context.

This shifts the question; how do individual courses *contribute* to each of the key competences that implementation draws on?