STATEMENT FOR A RESPONSIBLE SPACE SECTOR

SUSTAINABILITY TALKS

INTERNATIONAL SPACE UNIVERSITY

INTERNATIONAL SPACE UNIVERSITY | October 23 2025

Examples of sustainability education for the space sector

How ISU embeds sustainability into what we teach, how we teach, and who we partner with.

Who we are.

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Founded in 1987

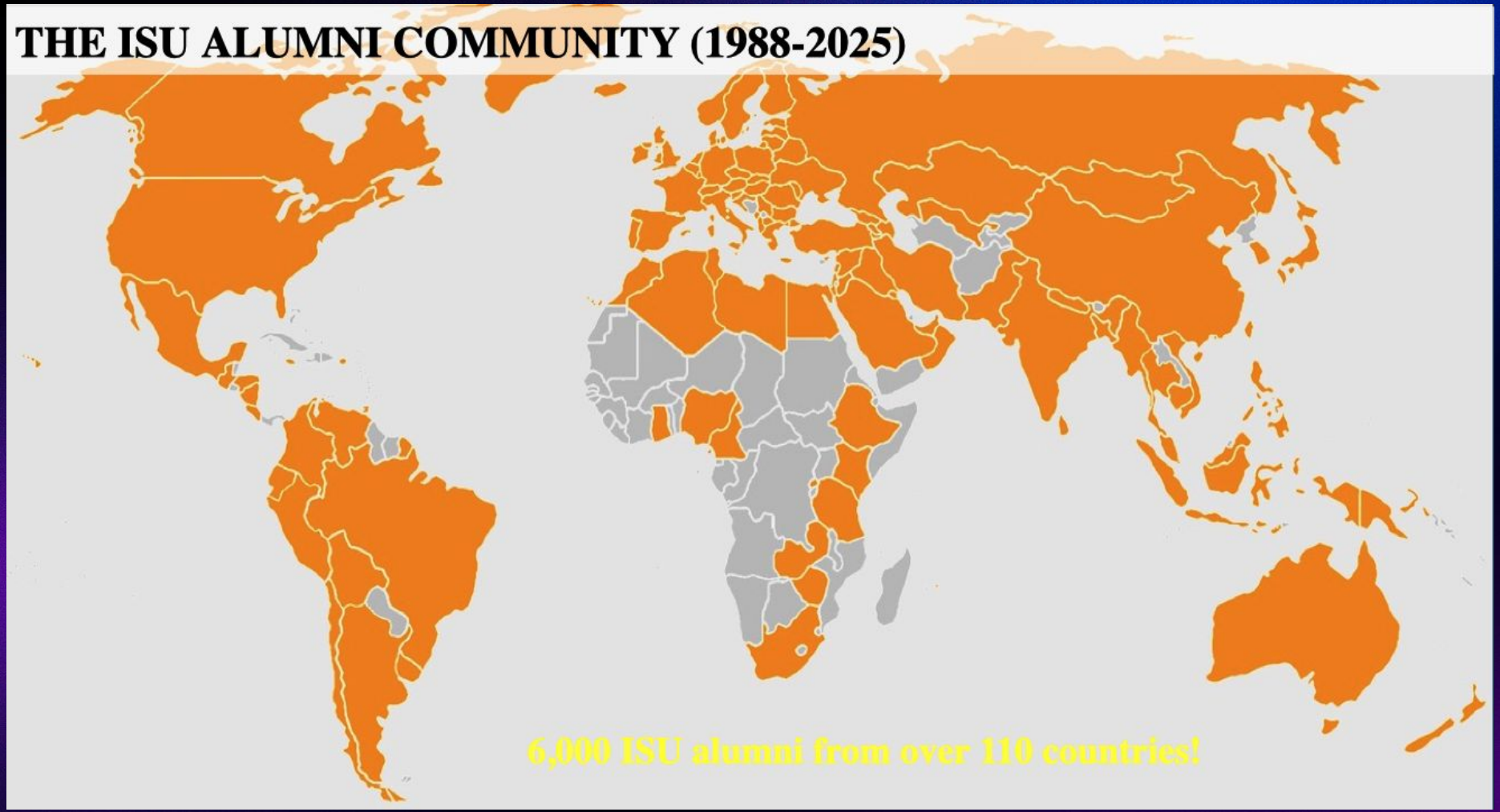
5,600+ alumni
from 110+ countries

ISU: Space Education for a Changing World

Our mission is to prepare individuals with the technical and soft skills necessary to respond to the evolving demands of the space sector and promote the development and application of space solutions in a rapidly changing world.

300+ faculty experts from space agencies, industries and academia from 30+ countries

THE ISU ALUMNI COMMUNITY (1988-2025)



- International
- Intercultural
- Interdisciplinary

The 3 I’s of ISU

ISU Program Overview

Program	Format / Duration	Location	Key Features
Space Studies Program (SSP)	8-week intensive (annual)	Various global hosts	Multidisciplinary core, workshops, professional visits & team projects
Southern Hemisphere Program (SHSSP)	4-week program	Adelaide, Australia	Joint ISU & Adelaide University course emphasising 3-I learning and up-skilling
Executive Space Courses (ESC)	~1-week intensive	On-site & Various global hosts	Lectures & experiential workshops culminating in a concurrent engineering project
Masters Programmes - Space Studies and Space Science (MSS/MSc)	3-semester MSc / 2-semester MSS and Internship	ISU Central Campus Strasbourg, France	Foundation & principles modules, interdisciplinary team project, followed by thesis or internship
Advanced Studies (link)	1–2-week specialised	ISU Central Campus Strasbourg, France	Short courses on topics like astrobiology, entrepreneurship, omics & CubeSats; interactive workshops & white papers

[1] [2] [3] [4] [5]

SSP: A unique space professional development program

The ISU Space Studies Program **#SSP** facilitates the development of technical knowledge, skills, and professional network in its one of a kind ISU 3Is setting - interdisciplinary, intercultural, and international.

Since its inception in 1988, SSP has been conducted **36** times in **17** different countries across **5** continents.

The program brings together...

over **300** attendees

representing **40+** countries

for **8 weeks** to the host country

Click here if you want to learn more about SSP

→ **Locations of SSP host sites (1988-2024)**

Team Projects

Part of the curriculum, students of the Master program (MSS) and participants or the Space Studies Program (SSP) and the Southern Hemisphere Space Studies Program (SH-SSP) have to work in groups on Team Projects. Team Projects are intended to be an academic, educational exercise to simulate working on a real life space agency or industry project.

Teams Poll

In one word, what does ‘sustainability in space sector’ mean to YOU?

The Three Big Ideas

What are effective methods for integrating sustainability into space programs?

How can interdisciplinary collaboration enhance sustainability outcomes?

What skills/mindsets are most critical for future space professionals?

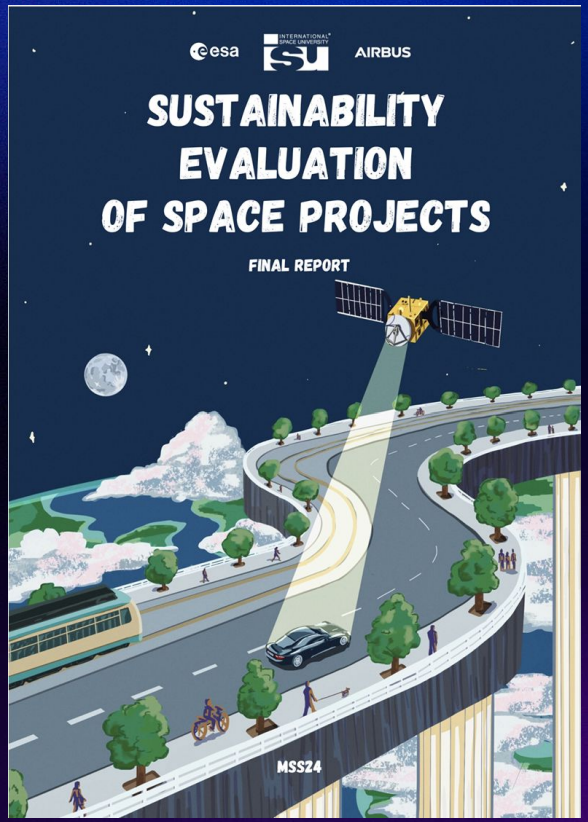
Sustainability evaluation of space projects

Sustainability Development Goals (SDGs)

https://isulibrary.isunet.edu/index.php?lvl=notice_display&id=12062

"The Vitruvian Space Assessment (VSA)"—a specific methodology created by the students to quantify the positive (handprint) and negative (footprint) impacts of space missions across environmental, economic, and social pillars

Thank you to key partners like the European Space Agency (ESA) and Airbus, who were sponsors for the MSS24 project..



Team Members

Nationality	Author	Background
	Niranjana Ajithkumar	Aerospace Engineering
	Anjali Amarkumar	Engineering Physics
	Germán León Azzi	Industrial Engineering
	Srishti Bansal	Aerospace Engineering
	Aude Benk-Fortin	Physics Engineering
	Francesc Casanovas Gasso	Aerospace Engineering
	Prève Chobert-Passot	Architecture
	Aleix Díaz Sancho	Aerospace & Telecommunications Engineering
	Varvara Kut'yina	French Public Law
	Robin Leichtnam	Astrophysics
	Styliani Louvitaki	Aeronautical Engineering
	Alvin Michael Mulumba	Telecommunications Engineering
	Robert Franz Rochel	Architectural Engineering
	Alicia Sanjurjo Barrio	Aerospace Engineering
	Oliver Swainston	Climate Change
	Bianca Tacconi	Chemistry
	Apurva Vichare	Mechanical Engineering

One planet, one problem

use of satellite data for climate change adaptation and resilience strategies.

https://isulibrary.isunet.edu/index.php?lvl=notice_display&id=12276

- Earth-observation & GNSS data inform adaptation strategies in Rwanda and South Korea
- Integrates local knowledge with global climate datasets
- Triple bottom line: People—empowering communities; Planet—monitoring environmental change; Profit—cost-effective adaptation measures

2.7 Recommendations: South Korea

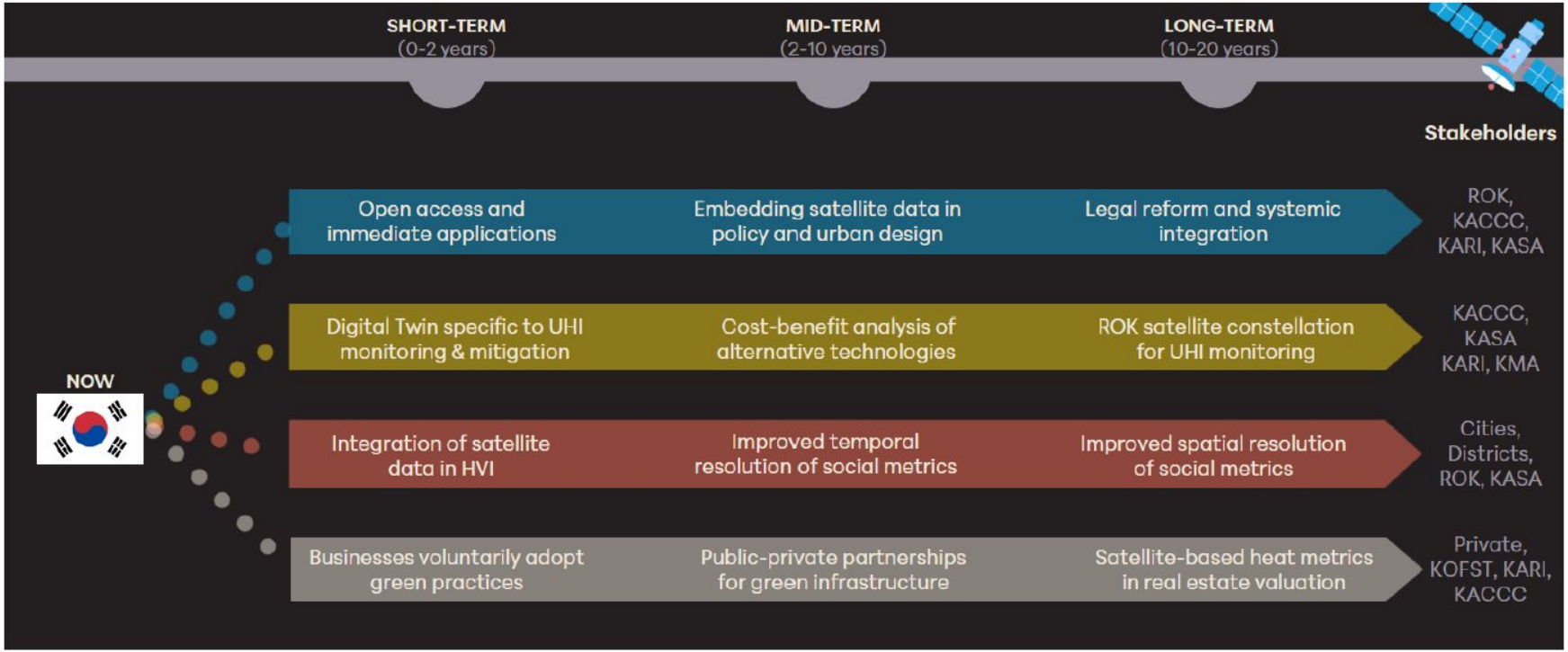


Figure 21: Recommendation roadmap for South Korea

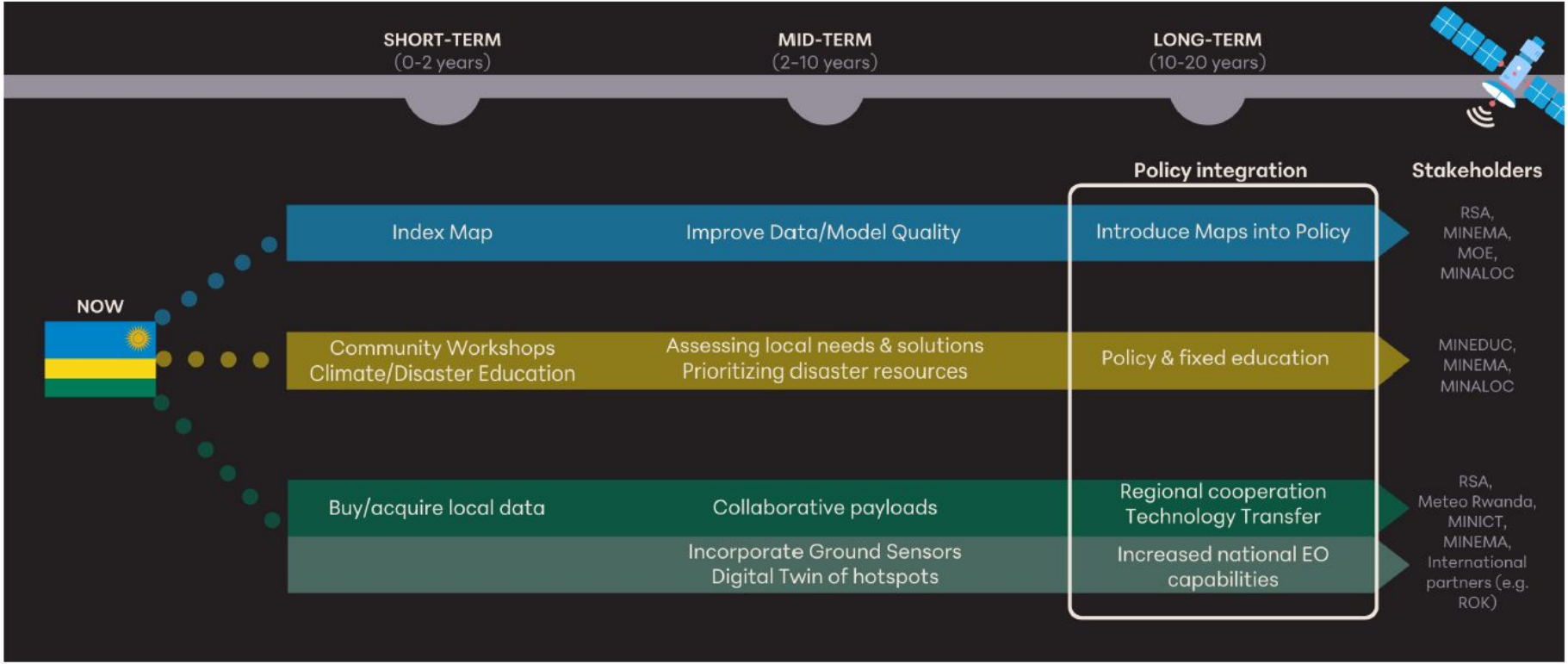


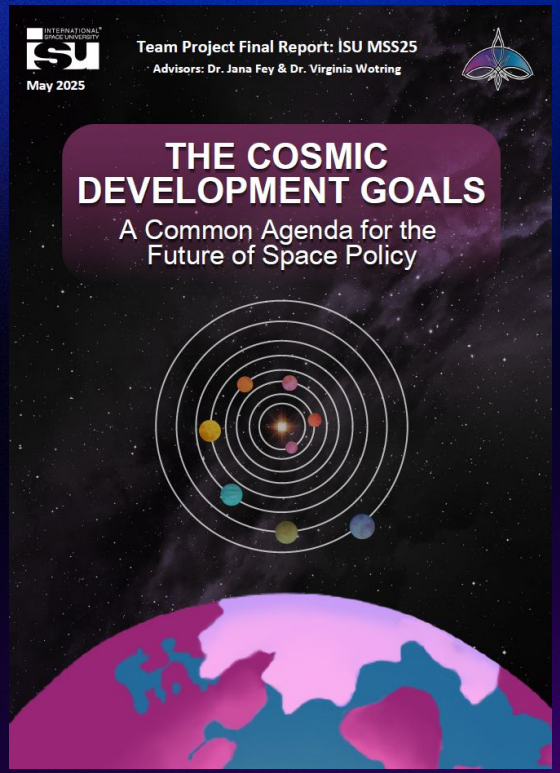
Figure 41: Rwanda recommendation roadmap

The cosmic development goals

A common agenda for the future of space policy

https://isulibrary.isunet.edu/index.php?lvl=notice_display&id=12273

- Aligns space activities with sustainable development goals
- Emphasises social inclusiveness, environmental stewardship and economic prosperity
- Triple bottom line: People—equitable access and benefits; Planet—preservation of orbital environments; Profit—long-term viability of space enterprises



COSMIC DEVELOPMENT GOALS

1) HEALTH & SAFETY FOR SPACE

2) COLLABORATION & COOPERATION

3) ORBITAL DEBRIS & ETHICAL STEWARDSHIP

4) RESPONSIBLE SPACE RESEARCH & DEVELOPMENT

5) SOCIETY, HERITAGE, AWARENESS, REPRESENTATION & EQUITY (SHARE)

6) RESILIENT SPACE ECONOMY

7) SPACE FOR PEACE

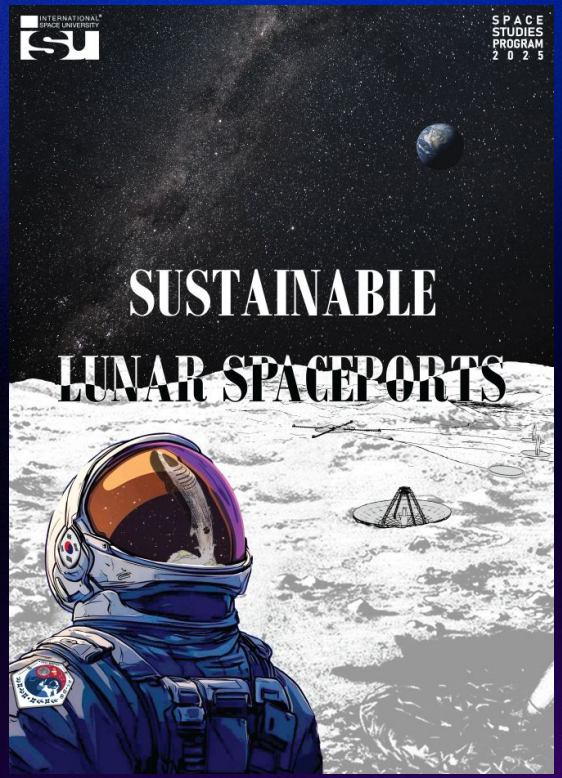
8) OPEN ACCESS TO ALL SPACE RESOURCES

Sustainable lunar spaceports

Designing reusable and resilient lunar infrastructure

https://isulibrary.isunet.edu/index.php?lvl=notice_display&id=12277

- Focus on reusability, in-situ resource utilisation and human factors
- Considers environmental impacts on the Moon and sustainable operations
- Triple bottom line: People—astronaut safety & wellbeing; Planet—minimal disturbance of lunar surface; Profit—efficient logistics & resource cycles



Teams Poll

What TP topic would you like to see ISU do?

Sustainability education as part of the Master of Space Studies/MSc

Interdisciplinary workshop, 2025:

- 1 European credit: 28 h
- Introduction by Andrea Vena, Aurélie Trur (space debris)
- Examples by Ikuko KURIYAMA (JAXA, head of the environmental Management)
- Matthieu Derrey and Eliott Marceau: Space Fresco

Electives (Advanced Studies), 2023:

- 3 ECTS: 75 h
- ESG developments in the space sector
- Earth observations for characterisation and mitigation
- Speakers: Andrea, signatories reps (Thomas Marceau, Sabrina Alam, Emmanuel Fleury), academics, Melania Guerra: Director of Science Strategy at Planet

Lectures in disciplinary courses:

- LCA, space debris in ENG
- ECLSS in Human Performance in Space
- Greenhouse effect in Space Sciences
- EO in Applications
- Ethics in Humanities

Individual Research Report:

- 3.5 ECTS, 100h
- Students choose their own topic
- E.g. water resources in own country
- Space debris mitigation from a technical or policy point of view

ESC Copernicus

https://www.isunet.edu/esc/

October 27–29 in Strasbourg

How and why use Copernicus data

Morning introductory lectures on, remote sensing capabilities, the future satellites: Ana Isabel Bolea (ESA), Cristina Ananasso (ECMWF)

Workshop Sentinel-1/2 Imagery to Map and Monitor Water Surfaces by Sabrine Amzil (SERTIT)

Supported by a CNES grant: free.

https://www.isunet.edu/esc25-space-and-sustainability/

EXECUTIVE SPACE COURSE

8-12 December 2025
|France, Strasbourg

https://www.isunet.edu/esc25-space-and-sustainability/

8-12 December 2025
|France, Strasbourg

- The ISU Executive Space Course “Space and Sustainability” engages professionals in hands-on labs and real case studies
- Participants learn to apply EO data, policy frameworks and systems thinking
- 8–12 December 2025, Strasbourg, France (ESC25)

https://www.isunet.edu/esc25-space-and-sustainability/

8-12 December 2025
|France, Strasbourg

- Definition of concepts: Andrea Vena
- Remote sensing: introduction and workshops: Anwar
- ESA programs: Giuseppe Ottavianelli (ESA)
- Applications: academic/economic points of view
- Policy: Jean-Claude Worms (COSPAR), Vera Pinto (EU)
- Green financing: Fani Kallianou de Jong (EBRD)
- Conference on Thursday as part of the plenary session
- Space Fresco (TBC!): Matthieu Derrey
- Interaction with signatories, master students, alumni

Takeaways

- Building up on the interdisciplinarity and internationality of ISU
- Diversity of sustainability-related education in academic and professional development program, interdisciplinary and specialized
- ISU goals:
  - Raise awareness among its students and alumni communities
  - Help the sector to train the professionals
- How can we use the forum of the Responsible Space Sector Statement to:
  - Organize joint educational programs?
  - Better answer the needs of the industry?

Questions?

The Space Sector needs people who can think across systems, cultures, and timescales.

Sustainability education is about fostering that mindset.

Thank you!