

VERTICALLY INTEGRATED PROJECTS FOR SUSTAINABLE DEVELOPMENT

A snapshot of the University of Strathclyde VIP4SD project portfolio

Long-term, multidisciplinary project teams connecting student learning with research, innovation and real-world sustainability challenges.

Prepared as a concise visual reference for sustainability curriculum design and practice.

VIP4SD: sustainability learning through sustained project work

The University of Strathclyde offers a portfolio of Vertically Integrated Projects for Sustainable Development (VIP4SD) open to students from different degree programmes and stages of study. The portfolio shows how a common educational model can be used across engineering, computing, education, business and the social sciences, while keeping a clear connection to the UN Sustainable Development Goals.

Across the projects, students work on authentic questions with a longer time horizon than a conventional class assignment. The themes range from clean energy and resilient cities to health technologies, inclusive STEM education, robotics, satellite data and community-facing digital solutions. This breadth makes the Strathclyde portfolio a useful example of how sustainability can become a setting for interdisciplinary learning, research participation and applied problem-solving.

SDG-connected Projects explicitly identify the Sustainable Development Goals they address.	Multidisciplinary Many projects bring together students and staff from several departments or faculties.
Vertically integrated Teams can include students from different years and, in some cases, postgraduate students.	Authentic Projects address live technical, social, educational, health or community challenges.
Research-linked Students contribute to work shaped by academic expertise and ongoing research interests.	Action-oriented Outputs include designs, software, interventions, data applications and implementation models.

Why this matters for curriculum greening. The portfolio demonstrates that sustainability does not need to sit inside a single specialist module. It can provide the organising context for disciplinary learning, collaboration and student contribution across a wide range of fields.

Projects | People, learning and enabling systems

Concise summaries based on the University of Strathclyde VIP4SD project pages.

Achieving Equity & Equality in STEM

SDGs 4, 5, 8, 10, 17 | Equity, inclusion and STEM participation

Students examine evidence of under-representation in STEM, investigate mechanisms of exclusion, and design inclusive outreach activities. The project includes evaluation of interventions and, for final-year students, a small-scale action research component.

Energy for Development

SDG 7 | Renewable energy access and rural electrification

A multidisciplinary project focused on renewable mini- and microgrids for rural communities in Sub-Saharan Africa. Students contribute to the development of a minigrid design tool through software development, programming, interface design and energy-system design.

Enterprise

SDG 4 | Enterprise and sustainable innovation

A flexible enterprise-oriented VIP that connects sustainability challenges with business thinking. Examples presented by Strathclyde include business planning for solar water desalination and exploring business cases for digital technologies applied to the Sustainable Development Goals.

Intercultural Learning for Sustainability

SDGs 3, 4, 17 | Teacher identity, storytelling and intercultural learning

Students explore their place in a global community of educators and the relevance of Learning for Sustainability to children and young people. Participatory and arts-based approaches support reflection on teacher identity and intercultural connection.

Integrated Systems for Decarbonising Aviation

SDGs 9, 13 | Low-carbon aviation and integrated engineering

A COP26 legacy project exploring resilient integrated electrical-structural systems for weight-critical applications. It addresses lightweighting and electrification as routes to lower fuel use and greenhouse-gas emissions in aviation.

Projects | Technology, data and health

Concise summaries based on the University of Strathclyde VIP4SD project pages.

Powering Rural Agriculture in Low Resource Settings

SDG 7 | Productive use of renewable energy

The project investigates decentralised renewable energy for low-resource settings, with particular attention to agriculture-based economies. Students consider productive-use technologies alongside the design of off-grid renewable energy systems.

RoProHand - Robotic Prosthetic Hand Design

SDG 3 | Accessible biomedical engineering

A multidisciplinary engineering project addressing the high cost of advanced prosthetic hands. Students contribute to the design and development of robotic prosthetic-hand technologies with accessibility and practical use in view.

RoVER - Robotic Vehicles for Education and Research

SDG 9 | Autonomous robotics and smart environments

Students design and develop autonomous robotic vehicles for environmental sensing, interaction and future smart-city applications. Project goals evolve over time, allowing students from different years and disciplines to contribute to control, navigation, communication and intelligent systems.

Satellite Data for Sustainable Development

SDGs 1, 2, 6, 7, 11 | Earth observation, big data and the SDGs

Students investigate how satellite and other large-scale data can support the 2030 Agenda. The project seeks innovative ways to use globally accessible, impartial data to address one or more sustainability challenges.

Smart Voice

SDG 3 | AI-enabled health monitoring

The project develops a machine-learning mobile application and cloud infrastructure for analysing voice recordings. Its aim is to support non-invasive health assessment in rural settings where specialist medical expertise and technical capacity may be limited.

Projects | Energy, cities and community action

Concise summaries based on the University of Strathclyde VIP4SD project pages.

Solar Microgrids for Sustainable Development

SDG 7 | Energy access, planning and delivery models

Students work on the technical and implementation challenges of solar microgrids for remote communities. The project considers not only technology, but also planning methodologies and delivery models needed for sustainable energy access.

STEM Education and Public Engagement

SDGs 4, 5 | Science literacy and participation

This education-focused VIP addresses participation in science and technology and the role of schools and teachers in building scientific literacy. It connects public engagement, future study and career aspirations with wider questions of inclusion.

Sustainable & Resilient Cities for the Global North & Global South

SDGs 1, 6, 7, 11, 12, 13, 15 | Urban sustainability and resilience

Students work with partner cities and commercial partners to analyse urban sustainability and resilience challenges, understand community and political priorities, and explore appropriate delivery and financing models.

Apps4Good

SDGs 1, 2, 3, 6, 16 | Digital solutions for community needs

A community-facing digital project in which students design and develop a mobile application to help Homeless Project Scotland provide support to homeless and vulnerable people and families more effectively.

Community Power Hub

SDGs 4, 7, 11, 13 | Community energy and productive use

The project explores decentralised renewable-energy solutions led by communities. It draws on off-grid solar contexts in Scotland and Malawi and considers productive-use technologies that can support energy access and wider development goals.

What can be transferred to other universities?

The strongest transferable feature of the Strathclyde example is not any single project topic, but the architecture of the portfolio. A university can build VIP-style sustainability learning around locally relevant research, community needs and institutional strengths while keeping a small number of common design principles.

Start from an authentic sustainability challenge

Choose a problem that can sustain work over several semesters and can be approached from more than one disciplinary perspective.

Build continuity into the team

Allow new students to join while experienced students retain knowledge, mentor peers and take on greater responsibility.

Connect projects to academic expertise

Anchor each team in faculty research or professional expertise so student work contributes to a credible longer-term agenda.

Use the SDGs as a navigation layer

Make the sustainability connection explicit, but allow the project itself to remain grounded in the language and methods of its disciplines.

Create space for external relationships

Where appropriate, involve communities, public bodies, charities or industry partners so that students encounter real needs, constraints and users.

Assess learning as well as outputs

Capture disciplinary learning, collaboration, research practice, reflection, leadership and the quality of students' contribution to the project.

Source and use note

This document is an independently prepared summary based on the University of Strathclyde VIP4SD project pages. Project titles, SDG mappings and descriptions should be checked against the official site for current availability and details:
<https://www.strath.ac.uk/studywithus/verticallyintegratedprojectsforsustainabledevelopment/ourprojects/>

University of Strathclyde is the source of the project information. This summary does not imply endorsement of GREENUS or the GREEN LEAF framework by the University of Strathclyde.