



UpSpace: Upcycling and Regeneration of Urban Space for Green Skills

Ref. number 2024-1-IT02-KA220-SCH-000249480

Urban Regeneration Guidelines for teachers

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Partners



CESIE ETS (Italy, coordinator)



Appworks Doo Beograd (Serbia)



Stimmuli For Social Change O.E (Greece)



Blended Learning Institutions Cooperative (Germany)



I. I. S. "Duca Abruzzi–Einaudi–Pareto" (Italy)



Osnovna Skola "Mihailo Petrovic Alas" (Serbia)



50 Gymnasio Thessalonikis (Greece)



Förderverein RUZ Reinhausen e.V. (Germany)

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Executive Summary

The *Urban Regeneration Guidelines for Teachers* have been developed within the Erasmus+ project **UpSpace – Upcycling and Regeneration of Urban Space for Green Skills** to support educators in implementing innovative, sustainability-oriented learning activities in schools. The guidelines provide a practical framework for establishing **Urban Regeneration Labs**, participatory learning environments in which students explore, analyse, and transform urban spaces through real-world sustainability projects.

Grounded in the European **GreenComp** framework, the document connects urban regeneration with the development of key sustainability competencies, including systems thinking, critical thinking, adaptability, collective action, and individual initiative. Urban regeneration is presented as a holistic process that integrates ecological, social, cultural, and economic dimensions to create more resilient, inclusive, and liveable communities. Particular attention is given to the role of green and blue infrastructure, biodiversity, climate adaptation, urban heritage, and the relationship between people and nature in urban environments.

The guidelines offer teachers a structured approach to project planning, implementation, and assessment. Through inquiry-based and project-based learning methods, students investigate local challenges, engage with stakeholders, co-design sustainable solutions, and develop practical interventions for their communities. A range of practical scenarios, including neighbourhood mapping, pocket park design, urban water management, participatory public space projects, and heritage-based regeneration activities, illustrate how the framework can be applied in different educational contexts.

By combining sustainability education with active civic engagement, the Urban Regeneration Labs empower students to become agents of positive change in their local environments. The guidelines therefore contribute not only to the development of green skills and sustainability competencies but also to the promotion of long-term environmental responsibility, social participation, and community resilience across Europe.

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Author Henrike Halekotte

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Urban Regeneration Guidelines for teachers

UpSpace brings schools in 5 countries together through Erasmus+

UpSpace is a European cooperation project funded under the Erasmus+ programme, Key Action 2 (KA220-SCH), which supports partnerships for innovation and exchange of good practices in the school education sector. It is co-funded by the European Union and coordinated by a consortium of schools and expert organisations from Germany, Greece, Italy and Serbia.

The Urban Regeneration Lab Guidelines aim to provide teachers and educational practitioners with a structured framework for implementing sustainable urban transformation projects in schools. These guidelines are grounded in the European GreenComp framework for sustainability competencies, ensuring that students not only learn about urban regeneration but also develop key skills for navigating complex sustainability challenges.

Urban regeneration is more than physical improvement of buildings or public spaces; it is a systemic process that enhances social, ecological, and economic functions of cities. Through well-structured interventions, schools can engage students in understanding urban ecosystems, co-creating solutions for green and blue infrastructure, and participating in community-based sustainability initiatives. These labs are designed to strengthen competencies in adaptability, research-oriented thinking, and acting for sustainability, aligning with the objectives of the European GreenComp framework.

By participating in Urban Regeneration Labs, students are encouraged to critically engage with urban environments, recognize the value of biodiversity and ecosystem services, and develop both cognitive and behavioral capacities to act as agents of sustainable change.

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1. Fundamentals of Urban Regeneration

Definition and Objectives

[Urban regeneration](#) refers to a systematic and integrative process for transforming urban spaces, based on the restoration and sustainable use of both physical and social resources. Its objectives include enhancing urban functionality, quality of life, and ecological resilience, while simultaneously promoting social cohesion, cultural identity, and economic vitality. Urban regeneration goes beyond building renovation, addressing the complex interactions between infrastructure, social networks, ecological systems, and economic processes.

Sustainable Dimensions

Sustainable urban regeneration integrates three main dimensions:

- **Ecological dimension:** Protecting and restoring ecosystems, promoting biodiversity, using resources efficiently, and minimizing environmental impacts.
- **Social dimension:** Participatory planning, inclusive engagement of diverse groups, education, and strengthening social cohesion.
- **Economic dimension:** Supporting local value creation, generating sustainable jobs, and fostering innovative business models.

Green and Blue Spaces

Green and blue infrastructure are central elements of sustainable urban planning:

- **Green spaces** such as parks, urban forests, community gardens, and green roofs contribute to climate adaptation, air purification, biodiversity, and mental and physical well-being.
- **Blue spaces** such as rivers, canals, lakes, or retention basins support urban water management, cooling, and flood protection while providing habitats for aquatic species.

Integrating these spaces promotes **ecosystem services** that are essential for resilient and livable cities.

Urban Human-Nature Resonance

The concept of urban human-nature resonance describes the qualitative relationships between humans and nature in urban contexts. It provides a theoretical and practical framework to understand how these relationships influence sustainable transformation processes. A strong human-nature resonance can enhance the acceptance and implementation of ecological measures, strengthen environmental awareness, and foster respectful interactions with natural resources. However, it is not an automatic feature of

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every urban regeneration initiative; rather, it represents a potential lever for sustainable implementation.

2. Concept of the Urban Regeneration Lab

2.1 Purpose and Learning Goals

The Urban Regeneration Lab is a participatory, hands-on environment where students engage directly with urban spaces. Its goals are to:

- Develop understanding of the social, ecological, and economic dimensions of cities.
- Foster environmental awareness, creativity, and problem-solving skills.
- Encourage active participation in community and urban decision-making.
- Promote collaboration with peers, teachers, experts, and local stakeholders.

2.2 Lab Structure and Approach

Labs consist of several sessions that build on one another in which students work collaboratively in teams to analyze, design, and implement sustainable interventions. The labs can be guided by the Design Thinking methodology, which can structure the learning process through defining challenges, brainstorming solutions, developing prototypes, and evaluating outcomes, depending on the specific focus of the lab.

Depending on the lab context and learning objectives, students will apply Inquiry-Based Learning by investigating urban environments through observation, data collection, and analysis, and apply creative thinking to generate innovative, context-sensitive solutions and alternative uses for urban spaces. Teachers and external experts provide guidance, facilitate teamwork, and support students in selecting and applying appropriate approaches.

2.3 Integration of Sustainability and Human-Nature Connections

Students evaluate environmental impacts, propose nature-based solutions, and consider long-term community benefits. The concept of human-nature resonance can inform projects by highlighting how urban biodiversity, green and blue spaces, and ecosystem services support human well-being and sustainable practices.

2.4 Heritage Considerations in Urban Regeneration Labs

Urban Regeneration Labs also integrate cultural and built heritage as an essential dimension of sustainable urban development. Students learn to identify historically significant sites, architectural features, and local cultural narratives, and to understand how these shape the identity and social cohesion of a neighbourhood. Heritage is not treated as a static artefact but as a dynamic element that interacts with ecological, social, and infrastructural systems. Through activities such as heritage walks, archival micro-research,

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or interviews with long-term residents, learners investigate how past and present urban layers overlap. This enables them to develop regeneration concepts that respect cultural continuity while responding to current environmental and social challenges.

2.5 Student Roles and Activities

Students act as active participants in the Urban Regeneration Lab. They learn to perceive urban spaces as **complex ecological systems**, not just built infrastructure, developing awareness of biodiversity, ecosystem functions, and ecological interdependencies. They observe and analyze urban areas, identify social and ecological challenges, co-design interventions, and implement small-scale prototypes or pilot projects. Students collaborate with peers, teachers, experts, and local stakeholders throughout the process. Through these activities, they develop **critical thinking, problem framing, political agency, and collective action**, while gaining a deeper understanding of sustainable urban practices.

2.6 Collaboration and Expert Support

Teachers, sustainability experts, local authorities, and NGOs provide methodological guidance, real-world perspectives, and technical knowledge, ensuring that students' projects are grounded in both scientific principles and practical feasibility.

3. Competency Framework for Urban Regeneration Labs (GreenComp)

Urban Regeneration Labs are structured learning environments designed to actively develop students' sustainability competencies summarised in the [European GreenComp framework](#). GreenComp provides a comprehensive set of **knowledge, skills, and attitudes** that young people need to navigate complex sustainability challenges and contribute meaningfully to a sustainable future. It emphasizes the development of cognitive, social, and behavioral competencies, including adaptability, research-oriented thinking, and the capacity for both individual and collective action.

In the context of Urban Regeneration Labs, GreenComp functions as a guiding framework that links practical, hands-on activities with broader sustainability learning outcomes. By embedding competencies within project-based interventions, students acquire not only **theoretical understanding** but also the **ability to apply sustainable practices** in real-world urban environments. This approach ensures that learners develop problem-solving skills, critical thinking, creativity, collaboration, and civic responsibility, while gaining awareness of the ecological, social, and technical interdependencies that shape urban spaces.

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GreenComp differentiates between:

- **Knowledge (K):** Theoretical understanding and awareness of sustainability issues, policies, and environmental, social, or technical systems.
- **Skills (S):** Practical and cognitive abilities that enable learners to act effectively, including analysis, problem-solving, collaboration, and creative thinking.
- **Attitudes (A):** Values, motivation, and mindset that drive learners to act responsibly and sustainably.

By integrating these competencies into Urban Regeneration Labs, students **learn by doing**, connecting theory to practice through concrete interventions in urban spaces, and developing the capabilities necessary to contribute actively to sustainable urban transformation.

3.1 Embodying Sustainability Values

3.1.1 Valuing Sustainability

Descriptor: To reflect on personal values; identify and explain how values vary among people and over time, while critically evaluating how they align with sustainability values.

Lab Activity Example:

Students reflect on their personal consumption habits and compare them with cultural and generational perspectives on resource use. They discuss which values promote sustainability and which may conflict with ecological goals.

Examples of Knowledge, Skills and Attitudes:

- **K:** Knows how personal and societal values influence sustainability decisions.
- **S:** Can evaluate actions and behaviors against sustainability criteria.
- **A:** Is willing to adjust personal behavior to align with sustainability values.

3.1.2 Supporting Fairness

Descriptor: To support equity and justice for current and future generations and learn from previous generations for sustainability.

Examples of Knowledge, Skills and Attitudes:

- **K:** Understands the intergenerational impacts of urban development decisions.

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- **S:** Can design projects that consider equity and social inclusion.
- **A:** Values fairness and equity in resource allocation and community participation.

3.1.3 Promoting Nature

Descriptor: To acknowledge that humans are part of nature; and to respect the needs and rights of other species and of nature itself in order to restore and regenerate healthy and resilient ecosystems.

Lab Activity Example:

Students map green and blue infrastructure in the neighborhood, assess biodiversity, and co-design interventions that enhance local ecosystems, e.g., urban pocket gardens or native plant corridors.

Examples of Knowledge, Skills and Attitudes:

- **K:** Understands humans are part of ecological systems and the importance of biodiversity.
- **S:** Can design interventions that restore and protect natural ecosystems.
- **A:** Is motivated to respect and promote the health of urban nature.

3.2 Embracing Complexity in Sustainability

3.2.1 Systems Thinking

Descriptor: To approach a sustainability problem from all sides; to consider time, space and context in order to understand how elements interact within and between systems.

Lab Activity Example:

Students analyze an urban site considering social, ecological, and infrastructural interactions, e.g., how water runoff, green space, and community use interconnect.

Examples of Knowledge, Skills and Attitudes:

- **K:** Knows urban ecosystems involve multiple interconnected elements.
- **S:** Can identify and analyze system interactions.
- **A:** Appreciates the complexity and interdependencies of urban sustainability.

3.2.2 Critical Thinking

Descriptor: To assess information and arguments, identify assumptions, challenge the status quo, and reflect on how personal, social and cultural backgrounds influence thinking and conclusions.

Examples of Knowledge, Skills and Attitudes:

- **K:** Knows sustainability claims without evidence may be misleading (greenwashing).
- **S:** Can evaluate information and assess sustainability arguments.
- **A:** Values evidence-based reasoning even when it challenges prior beliefs.

3.2.3 Problem Framing

Descriptor: To formulate current or potential challenges as a sustainability problem in terms of difficulty, people involved, time and geographical scope, in order to identify suitable approaches to anticipating and preventing problems, and to mitigating and adapting to already existing problems.

Lab Activity Example:

Students define a local urban challenge, e.g., loss of green space, identify stakeholders, and classify it as simple, complicated, or wicked, then propose mitigation or adaptation strategies.

Examples of Knowledge, Skills and Attitudes:

- **K:** Knows how to differentiate types of sustainability problems.
S: Can define and structure problems considering temporal, spatial, and social dimensions.
A: Is willing to explore multiple perspectives when framing problems.

3.3 Envisioning Sustainable Futures

3.3.1 Futures Literacy

Descriptor: To envision alternative sustainable futures by imagining and developing alternative scenarios and identifying the steps needed to achieve a preferred sustainable future.

Lab Activity Example:

Students co-create scenarios for a redeveloped urban space, imagining best-case, worst-case, and preferred outcomes for green infrastructure, biodiversity, and social cohesion.

Examples of Knowledge, Skills and Attitudes:

- **K:** Understands the potential futures and consequences of urban interventions.
- **S:** Can model and visualize alternative scenarios.
- **A:** Is open to envisioning innovative sustainable futures.

3.3.2 Adaptability

Descriptor: To manage transitions and challenges in complex sustainability situations and make decisions related to the future in the face of uncertainty, ambiguity and risk.

Examples of Knowledge, Skills and Attitudes:

- **K:** Knows that human actions have uncertain and complex environmental outcomes.
- **S:** Can adjust plans and solutions based on changing conditions.
- **A:** Is willing to try alternative strategies and discontinue unsustainable practices.

3.3.3 Exploratory Thinking

Descriptor: To adopt a relational way of thinking by exploring and linking different disciplines, using creativity and experimentation with novel ideas or methods.

Lab Activity Example:

Students experiment with combining green roofs, rain gardens, and art installations to test creative solutions for urban microclimates.

Examples of Knowledge, Skills and Attitudes:

- **K:** Knows sustainability problems require interdisciplinary approaches.
- **S:** Can integrate knowledge from multiple disciplines in solution design.
- **A:** Is committed to creative experimentation and open-minded exploration.

3.4 Acting for Sustainability

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3.4.1 Political Agency

Descriptor: To navigate the political system, identify political responsibility and accountability for unsustainable behaviour, and demand effective policies for sustainability.

Examples of Knowledge, Skills and Attitudes:

- **K:** Knows which policies assign responsibility for environmental damage (e.g., "polluter pays").
- **S:** Can identify relevant stakeholders to influence sustainable decisions.
- **A:** Demands accountability for unsustainable practices.

3.4.2 Collective Action

Descriptor: To act for change in collaboration with others.

Lab Activity Example:

Students organize a participatory redesign of a schoolyard or local park, collaborating with peers, community members, and local authorities.

Examples of Knowledge, Skills and Attitudes:

- **K:** Knows how to work with diverse participants for sustainability.
- **S:** Can facilitate inclusive, collaborative processes.
- **A:** Is willing to engage collectively to challenge unsustainable practices.

3.4.3 Individual Initiative

Descriptor: To identify own potential for sustainability and to actively contribute to improving prospects for the community and the planet.

Lab Activity Example:

Students monitor local biodiversity or water quality and implement small personal interventions, such as native planting or waste reduction campaigns.

Examples of Knowledge, Skills and Attitudes:

- **K:** Knows preventive actions are necessary for ecosystem protection (precautionary principle).
- **S:** Can act responsibly under uncertainty to reduce environmental impact.
- **A:** Is confident in influencing sustainable change individually.

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Integration of Student Role and GreenComp Competencies

The labs are designed so that every student activity explicitly maps onto the GreenComp competencies:

- Designing a green corridor or blue infrastructure links directly to research-oriented thinking and adaptability.
- Collaborative projects with community members develop collective action skills.
- Reflecting on ecological impacts and advocating solutions reinforce individual initiative and acting for sustainability.

This structured approach ensures that Urban Regeneration Labs are not just learning exercises but active, competency-driven experiences that prepare students to address complex, real-world sustainability challenges.

4. Planning and Implementing Urban Regeneration Lab Projects

This chapter provides guidance for teachers on designing, planning, and implementing Urban Regeneration Lab projects, integrating GreenComp competencies while ensuring meaningful student participation and real-world impact.

4.1 Project Planning and Context Analysis

Before starting a lab, it is crucial to understand the local urban context, including ecological, social, and infrastructural conditions. Teachers guide students in mapping local challenges and opportunities:

- Urban assessment: Identify green and blue infrastructure, public spaces, social networks, and community stakeholders.
- Problem framing: Determine sustainability challenges, such as inadequate public spaces, biodiversity loss, or social inequities.
- Stakeholder engagement: Engage local authorities, NGOs, and community members to co-define goals and opportunities.

This process develops research-oriented thinking, as students learn to collect, analyze, and synthesize data from multiple sources while connecting ecological, social, and technical perspectives.

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4.2 Project Design and Ideation

In the design phase, students collaboratively develop potential interventions. Teachers facilitate structured brainstorming, scenario planning, and iterative prototyping:

- Emphasize adaptability by encouraging students to consider alternative solutions, trade-offs, and uncertainties.
- Introduce human-nature resonance concepts to help students design interventions that enhance ecological awareness and strengthen connections between people and nature.
- Encourage creativity in linking green and blue infrastructure to local needs, e.g., rain gardens, pocket parks, or community-managed green roofs.

Here, skills (S) such as problem-framing, exploratory thinking, and collective action are exercised, while attitudes (A) of openness, flexibility, and ecological responsibility are nurtured.

4.3 Implementation and Urban Engagement

Students move from planning to action by testing, simulating, or presenting their interventions in real urban contexts. Activities may include pilot actions, environmental monitoring, or engagement with local actors and institutions. Through collective and individual responsibility, students experience civic participation and apply sustainability-related knowledge, skills, and attitudes in practice.

5 Practical Scenarios for Urban Regeneration Labs

Scenario 1: Neighborhood Mapping and Analysis

Students systematically map a local urban area, identifying green and blue spaces, public amenities, social hotspots, and infrastructural gaps. Using field observations, interviews, and GIS or sketch maps, they analyze ecological, social, and economic interdependencies. This activity strengthens research-oriented thinking and lays the groundwork for informed design proposals.

Scenario 2: Designing a Pocket Park

Students collaboratively design a small vacant plot as a pocket park, considering biodiversity, water management, accessibility, and community needs. Prototypes are created using upcycled materials, linking practical upcycling skills with ecological design. This scenario develops creativity, adaptability, and action for sustainability.

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Scenario 3: Urban Water Solutions

Students assess water flow, retention, and drainage issues within the school environment or local streets. They design and test interventions such as rain gardens, retention basins, or permeable surfaces using models or simulations. This promotes problem-solving, critical thinking, and iterative design skills, while fostering awareness of the ecological and social impact of urban water management.

Scenario 4: Participatory Public Space Projects

Students co-develop concepts for shared spaces in schools or neighborhoods, including urban gardens, flexible seating, or community art installations. They engage with peers, teachers, local stakeholders, and authorities to collect feedback and refine their designs. This scenario emphasizes collective action, civic engagement, and collaborative planning, showing how sustainable urban practices can be implemented in real contexts.

Scenario 5: Heritage Mapping & Adaptive Reuse Idea

Students conduct a heritage walk to identify culturally or historically significant sites (e.g., an old factory building, a former marketplace, or a traditional courtyard). They map the site's condition, collect brief narratives from residents, and analyse current uses and challenges. Based on this, they develop a adaptive-reuse idea—such as a community micro-garden, a temporary cultural space, or a low-impact public area—that respects the site's heritage while addressing present urban needs. Outputs include a simple map, a design sketch, and a short rationale connecting heritage, sustainability, and community value.

6. Assessment, Sustainability, and Teacher Guidance

Urban Regeneration Labs aim not only to convey knowledge but also to foster lasting changes in students' understanding, attitudes, and behaviors regarding sustainable urban development. This chapter addresses the assessment of learning outcomes, the long-term impact and sustainability of projects, and practical guidance for teachers.

6.1 Assessment and Evaluation

Assessment in Urban Regeneration Labs operates on multiple levels. Students reflect on their experiences and document their projects. Teachers observe teamwork, problem-solving processes, and the application of research and design methods in interventions and evaluate the extent to which the students have developed GreenComp-aligned competencies in Knowledge (K), Skills (S), and Attitudes (A). The goal is to make learning

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progress visible, recognize individual strengths, and identify areas for improvement, while fostering a reflective and adaptive learning culture.

In the annex is a **comprehensive assessment rubric** for Urban Regeneration Labs aligned with **all four GreenComp competence areas** and their sub-competencies.

It integrates **Knowledge (K), Skills (S), and Attitudes (A)** and can be used for project-based assessment, presentations, portfolios, or final lab reports.

6.2 Sustainability and Long-Term Impact

Sustainability in Urban Regeneration Labs goes beyond immediate project outputs. Students learn that their actions can influence urban ecosystems directly and that durable transformation requires collaboration, iterative refinement, and long-term commitment. Projects may extend into ongoing care for green and blue spaces, small-scale pilot implementations, or community-based initiatives. Even if external constraints—such as bureaucratic or financial barriers—limit full implementation, the developed concepts, designs, and strategies retain value as transferable models, informing policy, research, and future interventions.

6.3 Teacher Guidance

Teachers are central to the success of Urban Regeneration Labs. They provide methodological support, connect students with local experts, authorities, and NGOs, and translate scientific concepts into actionable learning experiences. Teachers also ensure that lab activities remain flexible and responsive to local conditions, accommodating differences in prior knowledge, resources, and unforeseen challenges. Best practices include establishing clear project objectives, promoting iterative and reflective processes, and integrating structured opportunities for student feedback and self-assessment.

6.4 Concrete Outputs and Conceptual Contributions

The culmination of an Urban Regeneration Lab is a set of well-documented project outputs that integrate ecological, social, and economic considerations. These include:

- Conceptual designs for green and blue infrastructure, such as parks, urban forests, rain gardens, or water retention systems.
- Participatory frameworks for sustainable public space use and community engagement.
- Integrated planning concepts addressing biodiversity, climate adaptation, and social inclusivity.
- Scenario-based strategies for resilient urban development under uncertainty and trade-offs.

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These outputs have enduring value beyond immediate implementation. They provide evidence-based, practice-informed insights that can guide subsequent projects, inform local policy, or serve as educational resources. By generating both tangible plans and conceptual knowledge, students contribute meaningfully to sustainable urban transformation, while consolidating competencies such as critical thinking, creative problem-solving, adaptive planning, and civic responsibility.

In sum, Urban Regeneration Labs produce dual outcomes: actionable conceptual solutions for urban sustainability and the development of student capacities to navigate, influence, and transform complex urban systems. This dual focus ensures that the labs serve both immediate educational purposes and longer-term societal relevance.

Annex

Assessment Rubric - Urban Regeneration Labs (GreenComp-Aligned)

Performance Levels

- 4 – Advanced:** Demonstrates comprehensive, integrated and reflective competence (K, S, A consistently visible).
- 3 – Proficient:** Demonstrates solid and coherent competence with minor gaps.
- 2 – Developing:** Demonstrates partial competence; application remains limited or inconsistent.
- 1 – Emerging:** Demonstrates minimal or fragmented competence.

Suggested Use in Urban Regeneration Labs

The rubric can be applied across the entire learning process within Urban Regeneration Labs. It may be used to assess project proposals, design concepts such as green corridors, blue infrastructure, or biodiversity interventions, as well as community presentations, reflective portfolios, final reports, and developed prototypes. In this way, assessment is not limited to final outputs but accompanies the full cycle of inquiry, design, implementation, and reflection.

Moreover, the rubric supports competency-based grading by making learning outcomes transparent and directly linked to the GreenComp framework. It can be used for self- and peer-assessment, encouraging students to reflect critically on their own development and collaborative processes. At the same time, it enables both formative assessment—providing ongoing feedback during the lab—and summative assessment at the conclusion of a project phase. By explicitly connecting student activities with GreenComp competencies, the rubric

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ensures constructive alignment between practical interventions in urban spaces and broader sustainability learning objectives.

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1. Embodying Sustainability Values

Competency	4 – Advanced	3 – Proficient	2 – Developing	1 – Emerging
Valuing Sustainability	Critically reflects on personal and societal values; clearly aligns decisions with sustainability principles and adjusts behavior accordingly.	Reflects on values and generally aligns project decisions with sustainability principles.	Shows basic awareness of sustainability values but limited reflection or alignment.	Limited recognition of sustainability values; no clear reflection.
Supporting Fairness	Integrates intergenerational justice, equity, and inclusion systematically into project design and decision-making.	Considers fairness and inclusion in most aspects of the project.	Mentions fairness but applies it inconsistently.	Little or no consideration of equity or justice.
Promoting Nature	Demonstrates deep ecological awareness; designs interventions that actively restore or regenerate ecosystems.	Designs interventions that protect or improve local ecosystems.	Acknowledges ecological aspects but with limited integration into design.	Minimal awareness of ecological interdependence.

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2. Embracing Complexity in Sustainability

Competency	4 – Advanced	3 – Proficient	2 – Developing	1 – Emerging
Systems Thinking	Thoroughly analyzes social, ecological, and technical interconnections across time and scale; identifies feedback loops and trade-offs.	Identifies multiple system interactions and explains key interdependencies.	Recognizes some interconnected elements but analysis remains linear.	Approaches problem in isolation without systemic consideration.
Critical Thinking	Critically evaluates evidence, identifies assumptions and greenwashing, and reflects on own biases.	Evaluates information and questions unsupported claims.	Accepts information with limited critique or reflection.	Shows little critical evaluation of information.
Problem Framing	Clearly defines sustainability challenges considering stakeholders, spatial/temporal scale, and complexity (simple/complicated/wicked)	Defines the problem with attention to context and stakeholders.	Defines the problem narrowly with limited contextual awareness.	Problem definition unclear or incomplete.

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3. Envisioning Sustainable Futures

Competency	4 – Advanced	3 – Proficient	2 – Developing	1 – Emerging
Futures Literacy	Develops multiple evidence-based future scenarios and articulates pathways toward a preferred sustainable future.	Develops plausible alternative scenarios with some strategic steps.	Envisions a single future scenario with limited justification.	Limited ability to imagine alternative futures.
Adaptability	Demonstrates flexibility; adjusts strategies in response to uncertainty, feedback, or new data.	Shows willingness to modify plans when necessary.	Adjusts plans reluctantly or only when prompted.	Rigid approach; resists change despite new information.

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Exploratory Thinking	Integrates interdisciplinary knowledge creatively; experiments with innovative and relational solutions.	Combines knowledge from different disciplines in solution design.	Limited interdisciplinary integration.	No evidence of creative or interdisciplinary thinking.
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4. Acting for Sustainability

Competency	4 – Advanced	3 – Proficient	2 – Developing	1 – Emerging
Political Agency	Identifies governance structures, responsibilities, and accountability mechanisms; proposes realistic advocacy or policy actions.	Recognizes key stakeholders and relevant policies.	Limited awareness of political responsibility or policy context.	No recognition of governance or accountability structures.

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Collective Action	Actively facilitates inclusive collaboration; demonstrates strong teamwork and shared responsibility.	Works effectively in teams and contributes to collaboration.	Participates in group work but with limited initiative.	Minimal engagement in collaborative processes.
Individual Initiative	Demonstrates proactive engagement; independently contributes meaningful sustainability actions beyond minimum requirements.	Takes responsibility and contributes reliably to project tasks.	Completes assigned tasks but shows limited initiative.	Relies heavily on others; minimal independent contribution.

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Contact

www.upspace-project.eu

Project Coordinator

CESIE ETS

Via Roma 94

Palermo, Italy

Tel: +39 091 616 4224

cesie.org

Consortium partners



OŠ „Mihailo Petrović Alas“,
Beograd



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