URBAN MENUS Educational:

Dialogue with a Resilient Future

Course Syllabus October 2025
trainingresilience.eu

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1. Course Description

This course is designed to equip participants with future-proof skills for urban resilience through an innovative blend of online, blended, and immersive learning methods. It integrates state-of-the-art tools, foresight strategies, and stakeholder engagement practices tailored to address the challenges of sustainable urban development. The course is divided into two major parts: 1) self-paced online learning modules and 2) immersive workshops on AR and VR applications in urban planning.

2. Target Audience

This course is designed to cater to a broad and diverse audience involved in urban resilience, sustainable development, and forward-looking planning processes. Its inclusive framework ensures accessibility and relevance for professionals and stakeholders across various sectors.
The course is ideal for urban planners, decision makers and staff (planning, implementing) in area development (city districts, campus areas etc.) respectively in larger real estate projects (e.g., company areas, mobility hubs or commercial or even multifunctional centres) policymakers, and vocational education and training (VET) trainers who are directly involved in shaping and implementing urban development strategies. It is also highly relevant for researchers and academics seeking to expand their understanding of practical applications in resilience planning and sustainable development. Civil society representatives, including NGOs and community leaders, will benefit from gaining insights into participatory approaches and stakeholder engagement strategies.
Private sector professionals, such as sustainability consultants, urban technology innovators, and investors interested in Environmental, Social, and Governance (ESG) principles, will find the course particularly useful for aligning their projects with modern resilience standards. Additionally, this program is valuable for students and early-career professionals looking to build expertise in resilience frameworks, AR/VR applications in planning, and data-driven decision-making.

By fostering cross-sector dialogue and collaboration, the course also targets stakeholders in public-private partnerships, think tanks, and international organizations working toward sustainable urban futures.

3. Prerequisites

There are no prerequisites to enroll in this course. It is designed to accommodate participants from diverse professional backgrounds and varying levels of experience. The curriculum is structured to provide foundational knowledge in key areas while offering advanced insights for

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those already familiar with urban resilience concepts. Participants need only a commitment to actively engage with the materials, complete the assignments, and collaborate with peers during on-site and online sessions.

4. Skills Trained

4.1 Regulatory and Data Management Skills

- Manage and organize resilience-related data effectively using advanced data research methods and databases.
- Create a comprehensive data collection, validate data quality, and prepare it for subsequent analysis.
- Form basic and advanced indicators for assessing urban resilience projects.

4.2 Analytical and Critical Thinking Skills

- Analyze the impact of policy frameworks on urban resilience and assess the effectiveness of the European Green Deal in promoting sustainable urban development.
- Critically evaluate best policy practices and case studies for urban resilience.
- Policy and Research Skills
- Conduct detailed policy analyses to identify opportunities for integrating urban resilience into government policies.
- Research and access European funding opportunities for resilience-focused projects.
- Evaluate urban development projects' contributions to Sustainable Development Goal (SDG) achievement.

4.3 Problem-Solving and Participatory Decision-Making Skills

- Address policy implementation barriers with creative problem-solving approaches.
- Lead and motivate stakeholders in multi-stakeholder decision-making processes using participatory techniques.
- Handle coordinated data collection efforts with clear frameworks to ensure stakeholder alignment.

4.4 Leadership and Argumentation Skills

- Form strong arguments for the necessity of effective data management in urban resilience projects.
- Mobilize and integrate diverse stakeholders to drive change in urban development policies.

4.5 Resilience Framework Application Skills

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- Apply the "Dialogue for a Resilient Future" concept, considering sustainability dimensions, basic location typologies, and societal values.
- Assign and analyze indicators across sustainability dimensions, location typologies, and societal values to establish a strong foundation for resilience projects.

4.6 Technical and Extended Reality (XR) Skills

- Differentiate between current digital tools and their application areas in urban resilience planning.
- Leverage extended reality tools (AR and VR) to enhance community engagement and promote unbiased decision-making by immersing participants into varied stakeholder perspectives.
- Foresight and Strategic Development Skills
- Simulate and understand resilient urban environments using AR and VR tools.
- Develop and present future-focused resilience strategies tailored to urban development challenges.

5. Course Structure

Part I (Pre Diploma) Self-paced online learning

5.1 Data Module 1: Resilience Policies - Green Deal, Taxonomy & Co

Overview: This module introduces the foundations of urban resilience and the policy frameworks that shape it across Europe and globally. It explains how the concept of resilience has evolved from ecological and engineering roots into today's multidimensional approach integrating social, economic, environmental, physical, and institutional dimensions. Learners examine the European Green Deal, the EU Taxonomy, multilevel governance, ESG frameworks, the Leipzig Charter, and key EU funding instruments. The module shows how policies guide resilience planning, how different levels of government share responsibilities, and how stakeholders can advocate for sustainable and forward-looking urban development.

Lesson 5.1.1: What is Urban Resilience? What role do Policy Frameworks play in shaping it?

Summary: This lesson introduces the concept of urban resilience, tracing its evolution from early ecological and engineering definitions to today's multidimensional, sustainability-oriented understanding. Learners explore the core components and capacities of resilient cities and examine why policy frameworks are essential for guiding resilience strategies at local, regional, and national levels.

Knowledge: Understands key concepts and terminology related to urban resilience; recognizes the different dimensions (social, institutional, economic, environmental, physical); understands how policy frameworks influence resilience planning.

Skills: Can analyze the impact of policy frameworks on resilience; can explain conceptual shifts such as from "bouncing back" to "bouncing forward."

Responsibility and Autonomy: Can articulate and explain the meaning of urban resilience; can independently interpret how resilience concepts apply in practical policy contexts.

Lesson 5.1.2: What is European Green Deal and how does it contribute to enhancing urban resilience?

Summary: This lesson presents the European Green Deal (EGD) as the EU's overarching climate and sustainability framework. Learners examine its objectives, its governance logic, and its implications for cities, including climate neutrality, clean energy transitions, sustainable mobility, biodiversity protection, circular economy measures, and the Just Transition Mechanism. The lesson highlights how the EGD connects directly to resilience goals.

Knowledge: Understands the aims, pillars, and instruments of the European Green Deal; recognizes how EGD policies shape urban climate adaptation and mitigation strategies.

Skills: Can evaluate the relevance of EGD policies to resilience planning; can relate Green Deal priorities to concrete urban challenges.

Responsibility and Autonomy: Can explain major EGD components; interprets policy objectives and their implications for local and regional actors.

Lesson 5.1.3: How can governments (local, regional, national) promote urban resilience through policy integration?

Summary: This lesson explains multilevel governance and the shared roles of local, regional, and national authorities. Local governments implement day-to-day resilience actions, regional authorities coordinate across municipalities, and national governments provide regulatory frameworks and funding. Learners study examples from Europe, Japan, and South America to understand how coordinated governance strengthens resilience outcomes.

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Knowledge: Understands governance tiers and their functions.
Skills: Can identify opportunities to align policies across government levels.
Responsibility & Autonomy: Engages proactively with stakeholders across governance levels.

Lesson 5.1.4: ESG: Environmental, Social, and Governance Criteria in Urban Development

Summary: This lesson introduces ESG as a decision-making framework for shaping investment and policy choices. It highlights how environmental performance, social inclusion, and governance quality influence resilience. Learners examine common implementation challenges—data gaps, political fragmentation, funding limitations—and explore strategies to overcome them.

Knowledge: Understands ESG criteria and barriers to policy implementation.
Skills: Can diagnose implementation challenges and propose solutions.

Responsibility & Autonomy: Works effectively with stakeholders to support ESG-aligned resilience planning.

Lesson 5.1.5: Principles and Strategies for Sustainable Urban Development: The Leipzig Charter

Summary: This lesson examines the 2007 Leipzig Charter and its 2020 update, which introduced the Just City, Green City, and Productive City principles. It explains why integrated, place-based, and participatory approaches have become central to European urban policy. Learners study challenges—unequal local capacities, funding gaps, institutional inertia—and opportunities for future development, including green infrastructure, technological innovation, and inclusive urban regeneration.

Knowledge: Understands the evolution and core principles of the Leipzig Charter.
Skills: Can connect Charter principles to real urban resilience issues.
Responsibility & Autonomy: Interprets EU strategic guidelines for local adaptation.

Lesson 5.1.6: European Policy Instruments and Funding Mechanisms

Summary: This lesson introduces key EU institutions (European Commission, Parliament, Council) and policy instruments shaping urban resilience. Learners examine EU directives, regulations, and major funding programmes such as ERDF, Cohesion Fund, Horizon Europe, and the EU Solidarity Fund. The lesson highlights how to access and leverage EU support for resilience projects.

Knowledge: Familiarity with EU policy instruments and funding mechanisms.

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Skills: Can identify and access EU funding opportunities.
Responsibility & Autonomy: Can collaborate with institutional partners to secure funding.

Lesson 5.1.7: How can the Sustainable Development Goals (SDGs) be integrated into Urban Planning?

Summary: This lesson presents comparative case studies from Europe (Rotterdam, Basel, RESIN), Africa (Durban, Cape Town), Latin America (Medellín, Mexico City), Australia (Melbourne), and Japan (Sendai). Learners explore how different regions integrate resilience into planning through climate strategies, social equity initiatives, disaster preparedness, and cross-sector partnerships.

Knowledge: Understands diverse resilience strategies worldwide.
Skills: Can analyze and compare context-specific resilience approaches.
Responsibility & Autonomy: Draws lessons to inform local policy strategies.

Lesson 5.1.8: What are some best policy practices and successful case studies in Green Urban Development?

Summary: The final lesson explores how stakeholders – communities, private actors, local authorities – can advocate for sustainable development. It introduces participatory and bottom-up approaches, public-private partnerships, adaptive planning, experimentation, and Urban Living Labs. Learners study how collaborative innovation strengthens resilience and supports long-term transformation.

Knowledge: Understands participatory and partnership-based advocacy.
Skills: Leadership and mobilization skills for stakeholder engagement.
Responsibility & Autonomy: Can advocate effectively for sustainable policy choices.

Lesson 5.1.9 How can stakeholders advocate for sustainable urban development?

Summary: This lesson introduces three main means to enhance stakeholders' involvement in sustainable urban development: participatory and bottom-up approach, public-private partnerships and adaptive and experimentation-based planning. Finally, the lesson explores the aims of the so-called urban living labs and presents successful examples of their development.

Knowledge: Understanding of the role of stakeholders in advocating for sustainable urban development - Knowledge of strategies for effective advocacy

Skills: Leadership skills to mobilise stakeholders and drive change in urban development policies

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Responsibility & Autonomy: Ability to advocate on the importance of sustainable urban development to stakeholders

Data Module 1 Assessment

Assessment for this module is carried out exclusively through multiple-choice questions (MCQs) placed at the end of each lesson. Each MCQ contains four answer options, only one of which is correct, and learners must select the option that best reflects the content covered. The number of questions varies by lesson depending on its length and complexity, typically ranging from five to ten MCQs per lesson. These questions evaluate learners' understanding of the evolution of urban resilience, the links between resilience and sustainability, and the major policy frameworks shaping resilience planning, including the European Green Deal, the EU Taxonomy, ESG principles, and multi-level governance. The MCQs ensure that learners can recognize relevant policy tools and interpret the regulatory and strategic frameworks that influence resilience-oriented urban development.

5.2 Data Module 2: Database Creation - Curating Resilience Data

Overview: This module introduces the foundations of data for urban and regional resilience planning. Learners explore what data is, how it supports analysis, planning, and monitoring, and how it is transformed into meaningful information for decision-making. The module explains why reliable data is essential for forward-looking development, introduces existing resilience data tools and their limitations, and then presents a more holistic framework for data collection. Learners examine the architecture of resilience data – indicators, parameters, key figures – and learn how to prepare, collect, validate, organize, and collaborate on data in multi-stakeholder environments. By the end of the module, learners will understand how to curate data using structured models that support resilience planning, cross-sector dialogue, and evidence-based decision-making.

Lesson 5.2.1: Definition of resilience data

Summary: This lesson introduces the concept of resilience data and explains the difference between raw data and meaningful information. It clarifies quantitative and qualitative data types, explores how data is structured into indicators, parameters, and key figures, and explains how these inform resilience planning. Learners understand that data is more than numerical values; it also includes text, images, and context-driven observations that help assess status quo, monitor progress, and support future-oriented development.

Knowledge: Understands data types, indicator structures, and their role in resilience planning.
Skills: Can form simple indicators and select relevant parameters.
Responsibility & Autonomy: Can independently present basic indicators for a resilience project.

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Lesson 5.2.2: The role of data in future-proof development

Summary: This lesson explains why reliable data is necessary to navigate uncertainty, risk, and complex future challenges such as climate change, pandemics, regulatory shifts, or investment risks. Learners explore the concept of VUCA (Volatility, Uncertainty, Complexity, Ambiguity) and understand how data helps reduce guesswork, prevent risky investments, and support sound, forward-looking planning. The lesson also highlights regulatory pressures, including EU Taxonomy reporting, and connects robust data management to environmental, social, and governance (ESG) compliance.

Knowledge: Understands risks of inadequate data foundations and VUCA implications.
Skills: Can justify the need for structured data management to stakeholders.
Responsibility & Autonomy: Can defend data needs in multi-stakeholder discussions.

Lesson 5.2.3: Current approaches to resilience data management

Summary: This lesson introduces existing international tools for resilience assessment, ranging from economic risk models to disaster preparedness and climate solutions. While these tools offer valuable insights, they often focus on single sectors or operate at large-city scale and fail to capture interdependencies between urban systems. Learners analyze the fragmented nature of current approaches and understand why resilient development requires integrated, accessible, and holistic data frameworks that can support day-to-day planning as well as long-term transformation.

Knowledge: Understands current tools, sectors covered, and their limitations.
Skills: Can distinguish tools based on purpose and application area.
Responsibility & Autonomy: Can identify tool requirements for specific resilience projects.

Lesson 5.2.4: Holistic Alternative: Toward Integrated Resilience Data

Summary: This lesson proposes a holistic resilience data framework that integrates ecological, social, and economic aspects of sustainability with location typologies and societal values such as happiness, safety, innovation, profitability, and circularity. Learners explore how resilience is more than shock-proofing – it is a multidimensional construct that requires participatory data collection, multiple stakeholders, dynamic indicators, and context-based adaptation. The lesson introduces the Dialogue with a Resilient Future concept as a comprehensive approach to guiding data-driven resilience planning.

Knowledge: Understands holistic approaches and integrated frameworks for resilience of data.
Skills: Can describe resilience across sustainability dimensions, typologies, and societal values.

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Responsibility & Autonomy: Can examine a project using a holistic resilience framework.

Lesson 5.2.5: Data Collection Framework: Indicators, Dimensions, and Context

Summary: This lesson introduces a structured data collection schema based on the Dialogue with a Resilient Future Framework. Learners explore how indicators can be clustered by sustainability dimensions, typology (ecology, urbanity, density), and societal values, while aligning with green policy frameworks such as the EU Green Deal, Leipzig Charter, and UN-SDGs. The lesson demonstrates how to bridge raw data and strategic analysis and teaches how to plan for monitoring, context specificity, and stakeholder relevance.

Knowledge: Knows which data to collect in a resilience project across dimensions and interests.
Skills: Can assign indicators to sustainability dimensions, typologies, and societal values.
Responsibility & Autonomy: Can derive monitoring schemes based on status-quo and target data.

Lesson 5.2.6: Data Collection Techniques in Practice

Summary: This lesson introduces practical methods for primary and secondary data collection, including surveys, interviews, instrumentation, open databases, and satellite resources. It explains the role of research questions, tools, data governance, and data management plans (DMPs). Learners explore how to plan and execute data collection systematically, considering timing, human resources, security, and FAIR principles (findable, accessible, interoperable, reusable).

Knowledge: Understands data sourcing methods and governance principles.
Skills: Can develop a research concept and apply different sourcing techniques.
Responsibility & Autonomy: Can define scope, timing, and stakeholder roles for data collection.

Lesson 5.2.7: Multi-Stakeholder Data Sourcing

Summary: This lesson explores how data collection becomes stronger when multiple stakeholders contribute their perspectives, knowledge, and responsibilities. Learners examine the concept of a social contract for data, built on value, trust, and equity, and learn how data intermediaries help consolidate, validate, and manage shared datasets. The lesson also explains how to align governance rules, roles, confidentiality, and collaboration methods.

Knowledge: Understands stakeholder roles and ethical considerations in collaborative data sourcing.
Skills: Can organize and motivate stakeholders for coordinated data collection.
Responsibility & Autonomy: Can share responsibility while maintaining data quality and impact.

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Lesson 5.2.8: Data validation

Summary: This lesson explains what makes data trustworthy. Learners are introduced to key quality principles including source credibility, structure, completeness, plausibility, consistency, and metadata documentation. They examine the “Garbage in, garbage out” principle, and learn practical strategies to identify and correct errors or omissions to ensure reliable, usable, and traceable results.

Knowledge: Knows essential data quality indicators.
Skills: Can validate data using a structured quality assessment model.
Responsibility & Autonomy: Can identify data gaps and differentiate between reliable and incomplete data.

Lesson 5.2.9: Database creation

Summary: This lesson shows how to build databases that make resilience data usable, searchable, and integrable across stakeholders. Learners understand how tables, metadata, mind maps, and governance practices help transform unstructured data into a resilient, accessible system. The lesson introduces basic database concepts, including relationships, SQL queries, and the role of data intermediaries in maintaining structured, updatable databases.

Knowledge: Understands basic database principles and organization strategies.
Skills: Can structure unorganized data into searchable formats.
Responsibility & Autonomy: Can independently design basic data structures for collaborative use.

Data Module 2 Assessment

Assessment is based exclusively on multiple-choice questions (MCQs) at the end of each lesson. Each question has four answer options, with one correct answer. Lessons include between five and ten MCQs to evaluate understanding of data types, frameworks, governance principles, stakeholder collaboration, quality assessment, and basic database structuring.

5.3 Data Module 3: Impact Assessment of Resilience Scenarios

Overview: This module introduces the techniques and processes used to analyse resilience data, compare development scenarios, and assess their impacts. Learners explore methods ranging from basic data filtering to advanced modelling, and learn how to integrate multiple stakeholder perspectives into analysis. They further examine qualitative and quantitative scenario comparison, impact calculation frameworks, and principles for selecting the optimal scenario. The module concludes with techniques for validating analysis results, communicating findings to diverse audiences, and monitoring the system over time using structured workflows. By the end,

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learners will be able to analyse complex datasets, develop scenario-based insights, and support informed and inclusive decision-making in resilience planning.

Lesson 5.3.1: Data Analysis Techniques

Summary: This lesson introduces the foundations of data analysis in resilience planning. Cities and regions function as complex adaptive systems and analysing them requires breaking large datasets into meaningful clusters. Learners explore descriptive, inferential, causal, and predictive analysis methods, and understand when and how to apply techniques such as historical, regional, spatial, network, exploratory, and regression-based analysis. The lesson emphasises the need for systematic filtering, sampling, and eliminating irrelevant information while maintaining accuracy and avoiding bias. It also introduces basic tools - from spreadsheets and SQL to machine learning - and highlights the importance of preparing clean and structured data for subsequent scenario assessment.

Knowledge: Understands key analysis methods, their logic, and appropriate sequences.
Skills: Can cluster, sample, diagnose patterns, and prepare datasets for further analysis.
Responsibility & Autonomy: Can filter and interpret data independently and prepare it for impact analysis.

Lesson 5.3.2: Multi-Stakeholder Perspectives in Analysis

Summary: This lesson explains how to integrate multiple stakeholder viewpoints into the analysis process. Because stakeholders operate with different expertise, priorities, and analytical traditions, the analyst must ensure that all perspectives are represented fairly. Learners explore methods such as focus groups, workshops, and the Delphi method to build consensus, align indicator logic, and harmonise sector-specific analysis methods. The lesson also addresses data governance rules for the analysis phase, strategies for stakeholder-specific sampling, and approaches for consolidating results through shared databases and intermediary-facilitated processes. By fostering structured collaboration, learners enable more complete, legitimate, and comparable analysis outcomes.

Knowledge: Understands stakeholder integration methods and consensus-building tools.
Skills: Can establish a shared understanding of indicators and coordinate multi-stakeholder analysis.
Responsibility & Autonomy: Can involve stakeholders in a structured, transparent, and equitable way.

Lesson 5.3.3: Scenario Comparison

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Summary: This lesson introduces techniques for building and comparing future development scenarios. Learners explore the role of scenarios in clarifying impacts, simplifying complexity, and identifying appropriate solutions across sectors. They study qualitative comparison tools—visualisations, narratives, SWOT analysis—and quantitative methods, including parametric analysis and preliminary calculations. The lesson also presents structured scenario development processes such as forecasting, backcasting, and the scenario matrix model. Learners examine how to identify, prioritise, rank, and describe scenarios using frameworks such as the Dialogue with a Resilient Future. By combining qualitative insight with quantitative evidence, scenario comparison provides the basis for rigorous impact analysis.

Knowledge: Understands how to characterise and compare scenarios qualitatively and quantitatively.
Skills: Can define comparable scenario elements, conduct scenario ranking, and prepare scenario fact sheets.
Responsibility & Autonomy: Can present scenarios clearly using a shared parameter framework.

Lesson 5.3.4: Impact Calculation

Summary: This lesson focuses on calculating the impact of development scenarios using a structured indicator and measurement evaluation systems. Learners revisit frameworks introduced earlier—such as the resilience function formula from Module 2—and learn how to contextualise numerical values by analysing both absolute and relative data. The lesson introduces a step-by-step approach based on recognised scorecard systems (e.g., UNDRR), including KPI questions, rating scales, improvement needs, and rationales. Learners analyse both current and target states, identify measures to improve resilience performance, and calculate potential effects of interventions. Results may be visualised through lists, spider diagrams, or other formats depending on stakeholder needs.

Knowledge: Understands methodologies for impact calculation and evaluation frameworks.
Skills: Can develop impact chains, evaluate indicators, and quantify scenario effects.
Responsibility & Autonomy: Can calculate scenario impacts and compare them with target values.

Lesson 5.3.5: Discerning the Optimal Scenario

Summary: This lesson teaches how to select the most resilient and stakeholder-responsive scenario after impact analysis. Learners examine resilience principles - such as anticipation, robustness, flexibility, diversity, and learning - and evaluate scenarios against these criteria. They also reflect stakeholder priorities, trade-offs, co-benefits, and unintended side effects, ensuring that no solution disproportionately harms other resilience goals ("Do No Significant Harm"). The lesson emphasises collaborative decision-making, empathy, and transparent trade-off management. Learners use comparative tools such as spider charts and scenario narratives to support consensus.

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Knowledge: Understands decision-making methods and resilience principles.
Skills: Can differentiate between scenarios and moderate consensus-building.
Responsibility & Autonomy: Can guide groups toward identifying the most appropriate scenario.

Lesson 5.3.6: Analysis Validation

Summary: This lesson explains how to validate both the analysis process and its results. Learners explore methodological validation tools—such as historical comparison, calibration, sensitivity analysis, and Monte Carlo simulations—and understand how to test the robustness of analytical models. The lesson also introduces validation methods for impact results, including data quality checks, data triangulation, researcher triangulation, peer review, and checking process integrity and storyline consistency. By applying these validation layers, learners strengthen the reliability, transparency, and scientific credibility of scenario assessments.

Knowledge: Understands validation tools for methodologies and impact results.
Skills: Can assess robustness, cross-check findings, and identify inconsistencies.
Responsibility & Autonomy: Ensures the quality and credibility of analysis outcomes.

Lesson 5.3.7: Result Communication

Summary: This lesson focuses on how to communicate data-heavy results in clear, accessible, and engaging ways. Learners explore visual and narrative techniques—maps, diagrams, dashboards, storytelling, animations, network graphs—and examine both digital and in-person communication formats. The lesson highlights the importance of two-way communication, co-creation of visions, and transparent public engagement. Learners also explore hybrid communication strategies, formats for broad dissemination, and approaches for maintaining consistency across channels. Effective communication is essential for stakeholder acceptance, political legitimacy, and successful implementation.

Knowledge: Understands visualisation and storytelling techniques for presenting impact results.
Skills: Can translate complex analysis into clear narratives for diverse audiences.
Responsibility & Autonomy: Can communicate findings independently and inclusively.

Lesson 5.3.8: Monitoring Workflow

Summary: This final lesson introduces monitoring as a continuous, iterative process for tracking progress toward resilience goals. Learners explore monitoring frameworks, KPIs, data governance rules, risk mitigation strategies, and feedback loops based on the PDCA (Plan–Do–Check–Act) principle. The lesson explains how to use dashboards, reports, and digital tools to visualise progress, and how to adjust parameters or models in response to new data. It also

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emphasises the importance of documenting communication and integrating public feedback - for example, through sentiment analysis - into ongoing monitoring processes.

Knowledge: Understands monitoring tools, KPI structures, and data governance for tracking progress.
Skills: Can conduct monitoring, interpret deviations, and adjust measures.
Responsibility & Autonomy: Can ensure continuous improvement and maintain alignment with resilience targets.

Data Module 3 Assessment

Assessment for this module consists exclusively of multiple-choice questions (MCQs) at the end of each lesson. Each MCQ includes four answer options, with one correct answer. Lessons typically contain five to ten MCQs, testing learners' ability to apply analysis techniques, integrate stakeholder perspectives, compare scenarios, calculate impacts, validate results, communicate findings, and monitor progress.

5.4 Data Module 4: Data Gap Management

Overview: This module introduces the concept of data gaps and explains how missing, outdated, biased, or fragmented data affects evidence-based decision-making in urban planning. Learners examine types of data gaps, the biases embedded in common data sources, and the consequences these gaps have for equity, resource allocation, environmental protection, and crisis response. The module explores tools for detecting and filling data gaps—ranging from GIS and crowdsourcing to machine learning—and shows how emerging technologies, scenario approaches, and data-driven strategies can support resilient and future-proof decision-making.

Lesson 5.4.1: Understanding Data Gaps

Summary: This lesson introduces data gaps and their relevance for urban resilience. Fast-changing urban environments demand accurate, timely, and comprehensive data. Data gaps arise when essential information is missing, outdated, underused, or of poor quality. Such gaps distort the understanding of urban conditions, compromise transparency, and undermine the ability of urban stakeholders to design effective, equitable, and future-oriented strategies. Learners explore how data gaps disadvantage vulnerable communities, weaken trust in public institutions, and complicate long-term planning.

Knowledge: Understands what data gaps are and why they matter.
Skills: Can detect missing, outdated, or incomplete information.

Responsibility & Autonomy: Can recognise how incomplete data affects planning quality and public accountability.

Lesson 5.4.2: Types of Data Gaps

Summary: This lesson presents a classification of the most common data gaps affecting urban policy: unavailable or incomplete data, outdated data, inaccurate data, low-granularity data, and data silos. Learners examine challenges linked to data quality, data management, and the lack of transdisciplinary collaboration. They analyse how missing environmental metrics, outdated census data, poorly validated datasets, or fragmented institutional data can lead to misinformed decisions. The lesson clarifies how low spatial granularity obscures the needs of neighbourhoods, while data silos prevent cross-sectoral understanding of complex challenges.

Knowledge: Understands different gap types and their implications.

Skills: Can classify data gaps and match them to planning challenges.

Responsibility & Autonomy: Recognises the risks of fragmented or low-quality data.

Lesson 5.4.3: Data Sources: Biases and Limitations

Summary: This lesson explores biases embedded in data collection, processing, and interpretation. Learners examine source bias (unrepresentative datasets), spatial bias (uneven geographic coverage), temporal bias (outdated information), confirmation bias (selective interpretation), political bias, and situational bias. They study how biases distort urban trend analysis and policy choices, especially when data comes from digital platforms, incomplete surveys, or politically influenced reporting. The lesson concludes with strategies for mitigating biases through transparent methods, cross-validation, and interdisciplinary collaboration.

Knowledge: Recognises bias types and their influence on decisions.

Skills: Can critically evaluate data sources, identify bias, and assess limitations.

Responsibility & Autonomy: Can ensure ethical, transparent, and balanced use of data.

Lesson 5.4.4: Impact of Data Gaps on Urban Planning

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Summary: This lesson explains the real-world consequences of data gaps. Missing or poor-quality data leads to misallocation of resources, ineffective infrastructure planning, and widening social inequalities. Environmental risks may go undetected, and long-term strategies may fail to anticipate emerging issues. The lesson uses the COVID-19 pandemic to illustrate challenges: rapidly shifting data relevance, predictive uncertainty, the digital "infodemic," fragmented reporting systems, and the need for decentralised and contextualised data. Learners compare negative cases—such as inconsistent data transmission in major U.S. cities—with positive examples like Phoenix, which successfully used neighbourhood-level data for targeted communication and testing.

Knowledge: Understands how data gaps shape urban outcomes.

Skills: Can analyse case studies and derive planning implications.

Responsibility & Autonomy: Recognises the societal and ethical stakes of incomplete data.

Lesson 5.4.5: Methods for Data Gap Detection

Summary: This lesson introduces practical tools to detect data gaps, including data audits, inventories, and structured data gap analyses. Learners explore GIS-based geospatial analysis for identifying spatial coverage gaps, and examine how crowdsourcing, big data analytics, and machine learning reveal missing patterns in temporal or behavioural data. Participatory mapping enables communities - especially marginalised ones - to contribute to ground-level insights, while remote sensing offers continuous environmental and land-use information. The lesson demonstrates how combining these tools strengthens the reliability, inclusiveness, and completeness of urban data systems.

Knowledge: Understands methods for detecting incomplete or weak datasets.

Skills: Can apply tools such as GIS, audits, or ML-based diagnostics.

Responsibility & Autonomy: Can evaluate data completeness in real planning situations.

Lesson 5.4.6: Filling Data Gaps

Summary: This lesson explains strategies for addressing and preventing data gaps through robust data management frameworks. Learners examine how centralised data repositories, shared

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governance structures, and standardised collection protocols improve consistency and reduce fragmentation. They explore the integration of spatial, environmental, socioeconomic, and infrastructure datasets, and how Earth Observation (EO) data helps monitor physical and environmental conditions across multiple scales. The lesson introduces key data management principles - spatial and temporal granularity, full geographic coverage, multi-sectoral integration, and accessibility - to support resilient and equitable planning.

Knowledge: Understands frameworks for closing data gaps.

Skills: Can apply extrapolation, forecasting, and data integration methods.

Responsibility & Autonomy: Can design data systems that support reliable decision-making.

Lesson 5.4.7: Emerging Technologies: OSINT, AI, ML

Summary: This lesson explores how open-source intelligence (OSINT), artificial intelligence (AI), and machine learning (ML) can mitigate data gaps. Learners examine the OSINT intelligence cycle and how publicly available information contributes to data-rich urban governance. They study the 3Vs of big data - volume, variety, velocity - and analyse how sensor technologies, automated processing, predictive modelling, and pattern recognition enhance data completeness and quality. The lesson discusses benefits - speed, automation, trend detection, bias reduction - and challenges, including black-box models, skills gaps, ethical concerns, and interoperability requirements. Case studies illustrate AI-driven predictive maintenance and OSINT-enhanced smart city ecosystems.

Knowledge: Understands emerging technologies and their roles in data enhancement.

Skills: Can evaluate and apply digital tools to detect and fill data gaps.

Responsibility & Autonomy: Can weigh benefits and limitations when adopting new technologies.

Lesson 5.4.8: Scenario Planning to Prevent Data Gaps

Summary: This lesson introduces major scenario approaches—forecasting, visioning, backcasting, scenario planning, and exploratory scenario planning (XSP)—and explains how they help identify information needs and uncover missing data. Learners explore mixed methodological approaches, combining qualitative and quantitative data as well as participatory processes, both highlight data gaps and strengthen long-term strategic thinking. The five-step scenario-building process - agenda setting, data collection and analysis, developing qualitative scenarios, modelling, and assessment - is presented as a structured method for planning under uncertainty, improving resilience, and revealing data blind spots.

Knowledge: Understands scenario logic and how scenarios expose missing information.

Skills: Can create robust scenarios using diverse tools and methods.

Responsibility & Autonomy: Can integrate uncertainty and stakeholder perspectives into planning.

Lesson 5.4.9: Data-Driven Strategies to Overcome Data Gaps

Summary: This final lesson presents advanced strategies to overcome data gaps through data-driven policy simulation, collaborative data platforms, and predictive analytics. Learners explore decision support systems (DSS) that model policy impacts and support proactive planning, using examples from Helsinki. Collaborative platforms - such as Seoul's Open Data Plaza - demonstrate how multisectoral data sharing enhances transparency and coordinated action. Finally, real-time data integration and predictive analytics illustrate how cities anticipate challenges, optimise resources, and respond dynamically to emerging issues, as exemplified by Transport for London's predictive mobility management.

Knowledge: Understands advanced strategies for strengthening data ecosystems.

Skills: Can evaluate data practices and propose continuous improvement measures.

Responsibility & Autonomy: Can design adaptive, learning-oriented data systems.

Data Module 4 Assessment

Assessment consists exclusively of multiple-choice questions (MCQs) following each lesson. Each MCQ includes four options with one correct answer. Lessons contain five to ten questions, designed to evaluate learners' ability to:

– identify and classify data gaps

– detect biases and analyse limitations

– assess impacts of incomplete data

– apply detection and mitigation tools

– use emerging technologies responsibly

– integrate scenario thinking to uncover missing information

– evaluate data-driven strategies for continuous improvement

Part II (Diploma) Interactive online learning and AR/VR training

5.5 Participation Module 1: Engaging stakeholders with purpose

Overview: This module emphasizes the proactive involvement of stakeholders in urban planning, covering key concepts like stakeholder mapping, necessary competencies for effective participation, and the impact of governance models. It also focuses on identifying stakeholder needs, communication strategies, and selecting appropriate methods for co-creation and decision-making across various stakeholder groups.

Lesson 5.5.1: Who are stakeholders and how to identify them

Summary: This lesson explores the meaning of the stakeholders concept. The five key stakeholder categories in urban development are presented (public, private, society, academia, and investors), each contributing to a project's success through regulation, funding, social impact, research, and financial support.

Knowledge: understanding the criteria for identifying stakeholders

Skills: developing analytical skills to categorize stakeholders into five distinct groups

Responsibility & Autonomy: demonstrating the ability to attract stakeholders from various categories to drive the success of initiatives

Lesson 5.5.2: How to conduct a stakeholders analysis

Summary: the lesson focuses on stakeholder analysis, emphasizing the importance of identifying all relevant stakeholders through methods like brainstorming, community feedback, and learning from similar projects. It also introduces useful tools like SWOT analysis and stakeholder matrices to assess stakeholders' interests, power, and influence, aiding in prioritization and tailored engagement strategies.

Knowledge: gaining familiarity with key methods for identifying stakeholders and analyzing their attributes

Skills: employing methodological and analytical techniques to evaluate stakeholders effectively

Responsibility & Autonomy: Prioritizing stakeholders strategically to ensure the success of initiatives

Lesson 5.5.3: How to identify stakeholder's needs and expectations

Summary: the lesson focuses on identifying stakeholders' needs and expectations by staying proactive and aligning project goals with current and future political and social trends to improve stakeholder management and public participation. It also explores tools like policy analysis, surveys, and social media analytics to gather insights, as well as strategies like mapping stakeholder needs, creating personas, and tracking trends to ensure projects meet evolving expectations effectively

Knowledge: recognizing the significance of political agendas, policy analysis, and communication trends in stakeholder management

Skills: enhancing analytical and technical abilities to identify and address stakeholders' expectations and needs

Responsibility & Autonomy: applying customized strategies to assess and respond to stakeholders' needs and expectations

Lesson 5.5.4: How to send invitations to stakeholders

Summary: the lesson covers different ways to invite stakeholders: in-person meetings, phone calls/online meetings, and written invitations. It also highlights the importance of clear, personalised communication and a strong call to action to encourage stakeholder participation through practical insight on how to develop an invitation.

Knowledge: understanding the key distinctions among different types of collaboration invitations

Skills: Tailoring invitations to align with stakeholders' specific characteristics

Responsibility & Autonomy: crafting compelling invitations encourages participation and fosters long-term collaboration

Lesson 5.5.5: From Stakeholder Management to Stakeholder Engagement

Summary: the lesson explores how to effectively shift from stakeholder management to engagement for navigating better challenges. It outlines a seven-phase process for effective

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stakeholder engagement, the importance of adapting strategies and fostering meaningful relationships to align stakeholder input with project outcomes.

Knowledge: understanding the main traits and challenges of stakeholder collaboration

Skills: applying analytical skills to define stakeholder management and engagement strategies

Responsibility & Autonomy: strengthening stakeholder relationships to improve management and engagement outcomes

Lesson 5.5.6: How to communicate effectively with stakeholders

Summary: the lesson focuses on effective stakeholder communication, emphasizing the importance of tailoring messages based on audience characteristics and project phases. It highlights the need for clear communication to overcome challenges like information overload and cultural differences, with strategies including feedback systems and technology tools to enhance engagement and transparency.

Knowledge: recognising the essential elements of effective communication

Skills: mastering communication approaches tailored to project phases and stakeholders' unique attributes.

Responsibility & Autonomy: building and nurturing connections through a well-crafted communication strategy

Lesson 5.5.7: The necessary participation competencies of stakeholders

Summary: the lesson presents the essential competencies for effective stakeholder participation, such as sharing power, openness to dialogue, teamwork, emotional intelligence, negotiation skills, and accountability. These qualities help foster collaboration, resolve conflicts, and ensure stakeholders contribute to the project's success.

Knowledge: identifying the participation competencies necessary for stakeholders

Skills: evaluating stakeholders' participation capabilities with precision

Responsibility & Autonomy: promoting participative collaboration by fostering trust, mutual respect, and shared decision-making environments.

5.6 Participation Module 2: Co-creation in practice

Overview: This module explores involvement and co-creation in decision-making, covering definitions, goals, and principles of participation. It examines different participation types, decision-making methods, and techniques to measure influence and avoid bias. The module also highlights the importance of clear communication, negotiation, and the impact and responsibility associated with co-creation.

Lesson 5.6.1 – The Goals of Participation

Summary: This lesson focuses on how public participation empowers communities to shape decisions, fostering resilience, inclusivity, and trust. It highlights the importance of incorporating diverse perspectives, resolving conflicts, and achieving sustainable, locally informed, and economically beneficial outcomes.

Knowledge: Understanding the role of public participation in fostering resilience in urban planning and development.

Skills: Designing and managing participatory processes effectively to achieve their key objectives.

Responsibility & Autonomy: Upholding transparency, advocating for inclusivity, and prioritizing long-term sustainability.

Lesson 5.6.2 – How to Actively Enhance and Mediate Public Participation

Summary: This lesson examines how varying levels of participation across different project stages (early, midway, and post-project) influence urban resilience outcomes, emphasizing distinct goals and challenges. It also delves into core principles of effective moderation, including conflict resolution, active listening, neutrality, and flexibility, as essential tools for fostering resilience through constructive discussions.

Knowledge: Familiarity with the pyramid of participation, the interplay between project stages and participation, and mediation techniques.

Skills: Designing and implementing participatory processes that align project goals with community needs at different stages.

Responsibility & Autonomy: Empowering communities to take an active role in shaping their environment while equipping participants to lead these efforts effectively.

Lesson 5.6.3 – The Main Participatory Approaches

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Summary: This lesson explores diverse participatory approaches that engage communities in decision-making, ranging from public hearings and citizen advisory committees to more interactive methods like citizen juries and alternative dispute resolution. Participants learn to evaluate and apply these tools effectively to build urban resilience.

Knowledge: Understanding various participatory approaches, their mechanisms, benefits, challenges, and application contexts.

Skills: Designing and implementing participatory tools while enhancing capabilities in moderating discussions, resolving conflicts, conducting surveys, and organizing public education campaigns.

Responsibility & Autonomy: Selecting appropriate participatory methods and leveraging their findings to inform decisions and promote equitable outcomes.

Lesson 5.6.4 – Breaking Silos for Urban Resilience: The Power of Multidisciplinary Collaboration

Summary: This lesson analyzes the challenges posed by organizational silos and explores strategies to foster multidisciplinary collaboration, enhancing the capacity of urban systems to address interconnected challenges such as climate change, social justice, and urbanization.

Knowledge: Insights into the causes and impacts of organizational silos in urban resilience initiatives.

Skills: Identifying silo-related challenges and designing strategies to overcome them through cross-sectoral collaboration.

Responsibility & Autonomy: Implementing practices that promote shared goals, equitable participation, and continuous organizational learning to tackle multidisciplinary urban challenges.

Lesson 5.6.5 – Mastering the Negotiation Process

Summary: This lesson introduces negotiation as a structured process involving strategic discussions to achieve mutual agreements. It emphasizes the cultural, emotional, and justice dimensions of negotiation, exploring their influence on outcomes. Participants learn to integrate relational and analytical approaches to address challenges, build trust, and ensure enduring agreements.

Knowledge: Understanding negotiation as a strategic process, including its stages, dimensions, and approaches.

Skills: Applying analytical skills to define stakeholder management and engagement strategies.

Responsibility & Autonomy: Advocating for solutions that align with shared values and maximize benefits for all parties.

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Lesson 5.6.6 – Decision-Making in the Context of Participation

Summary: This lesson examines decision-making frameworks crucial for participatory urban resilience initiatives. It introduces consensus-building, voting, and delegated decision-making methods, emphasizing their practical applications and associated challenges.

Knowledge: Understanding decision-making methods, including consensus-building, voting, and delegation, and their relevance to participatory processes.

Skills: Implementing and analyzing structured methods to balance efficiency with stakeholder engagement.

Responsibility & Autonomy: Ensuring diverse and equitable representation in decision-making processes.

5.7 Participation Module 3: Why participation matters: Understanding its value

Overview: This module examines the benefits of different forms of participation in governance, including their definitions, best practices, and methods for measuring impact. It shows how participation enhances internal governance and identifies gaps, illustrated by case studies from the public, private, societal, academic, and investment sectors. The module also introduces the URBAN MENUS model as a comprehensive framework.

Lesson 5.7.1: Strengthening Urban Resilience Through Good Governance

Summary: This lesson examines how good governance, underpinned by transparency, accountability, and inclusivity, contributes to urban resilience. It addresses challenges like financial constraints, political disinterest, and inequality, offering solutions for more effective participatory governance.

Knowledge: Understanding the role of governance in resilience-building.

Skills: Analyzing governance frameworks to design inclusive participation strategies.

Responsibility & Autonomy: Advocating for ethical and resilient governance practices.

Lesson 5.7.2: Measuring the Influence and Impact of Participation

Summary: Participants will learn methods for evaluating participatory processes, focusing on quantitative, qualitative, and outcome-based metrics. Practical tools like data analysis, stakeholder feedback, and GIS mapping will be explored to assess the effectiveness of participation.

Knowledge: Understanding evaluation frameworks and metrics.

Skills: Designing comprehensive participatory assessments using diverse methodologies.

Responsibility & Autonomy: Leveraging evaluation results to refine participatory strategies.

Lesson 5.7.3: Exploring Case Studies in Participatory Approaches

Summary: This lesson presents real-world examples of participatory initiatives, categorizing them based on stakeholder involvement and analyzing their outcomes. Participants will gain insights into effective practices and learn how to adapt them to local contexts.

Knowledge: Understanding stakeholder dynamics in participatory initiatives.

Skills: Designing and implementing context-sensitive participatory processes.

Responsibility & Autonomy: Driving innovative solutions for sustainable development.

Lesson 5.7.4: Urban Menus

Motivation: Urban areas face unprecedented complexity, including climate change, social inequality, economic volatility, and rapid technological advancements. Traditional, siloed planning processes have fallen short of delivering outcomes that balance environmental sustainability, social inclusion, and economic viability.

URBAN MENUS emerges in response to this challenge by integrating multi-sectoral participation and comprehensive parameterisation into a single framework. This approach recognises that lasting urban transformation requires the coordinated input of public institutions, private investors, academia, civil society, and citizens themselves.

By co-creating scenarios based on local data and aligned with European policy frameworks (e.g., the New European Bauhaus, the EU Green Deal, the SDGs), URBAN MENUS aims to:

- Bridge the gap between planning theory and measurable implementation.
- Democratise decision-making through transparent digital tools.
- Accelerate consensus-building and reduce project risk.
- Ensure that urban interventions simultaneously generate positive social, environmental, and economic benefits.

Methodology

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- Understanding the place
- Hypothesis testing think tank
- Consensus workshop
- Local community engagement
- Long-term partnership

5.8 Participation Module 4: Do You Speak Future

Overview: This module introduces learners to the foundations of futures thinking and strategic foresight as essential tools for navigating uncertainty in urban and regional development. Through a step-by-step exploration of key concepts – including VUCA and BANI environments, horizon scanning, scenario building, back casting and strategic implementation – participants learn how to frame long-term questions, identify early signals of change, and co-create resilient pathways for future-proof urban development. The module helps learners understand how foresight complements participation, policy design, and data-driven decision-making. Throughout the module, learners apply their insights to contemporary resilience challenges and reflect on how these methods can inform policy choices, governance models, and collaborative planning processes.

Lesson. 5.8.1 Why is it important to Think of Different Futures?

Summary: This lesson introduces the evolution of frameworks for understanding uncertainty—from the VUCA model (volatility, uncertainty, complexity, ambiguity) to the BANI lens (brittle, anxious, nonlinear, incomprehensible). Learners examine how these concepts help interpret today's rapidly changing social, environmental, technological, and economic landscapes. The lesson establishes why futures thinking is essential for planning resilient cities and communities.

Knowledge: Understands the meaning and purpose of VUCA and BANI as interpretative frameworks. Recognizes how these frameworks apply to urban governance, resilience planning, and decision-making. Understands why futures thinking is a necessary competency for navigating uncertainty.

Skills: Can identify VUCA/BANI characteristics in real-world cases. Can use these frameworks to describe uncertainty in an urban development context. Can reflect critically on how different kinds of uncertainty influence planning.

Responsibility and Autonomy: Works independently to interpret uncertainty using appropriate frameworks. Recognizes the implications of uncertainty for responsible planning and decision-making.

Lesson 5.8.2: A Change of Perspective

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Summary: This lesson explores how shifting from asking “What will happen?” to “What futures do we want?” can reshape urban resilience strategies. It highlights the importance of a holistic perspective—encompassing cultural, ecological, and economic factors—and shows how narratives and imagination can inspire collective commitment to more inclusive and sustainable futures.

Knowledge: Explain how holistic perspectives, narratives and imagination shape preferred futures.

Skills: Can distinguish between different types of futures and identify examples for each. Can articulate the value of foresight for urban and regional development. Can explain how foresight supports long-term strategic choices.

Responsibility and Autonomy: Reflects independently on long-term implications of choices. Demonstrates awareness of ethical dimensions in planning for the future.

Lesson 5.8.3: Basic Definitions & Introduction to Futures & Foresight

Summary: This lesson introduces the first stages of a foresight process: framing the scope of inquiry, identifying guiding questions, and conducting horizon scanning. Learners explore how to detect signals of change, trends, drivers, and uncertainties, and how to critically assess their relevance.

Knowledge: Understands the role of framing and horizon scanning in a foresight process. Knows how to differentiate between signals, trends, drivers, and uncertainties. Understands how scanning supports informed and proactive planning.

Skills: Can frame a foresight question related to a real-world planning challenge. Can conduct basic horizon scanning and identify meaningful signals of change. Can categorize signals into trends, drivers, or uncertainties.

Responsibility and Autonomy: Conducts scanning activities independently and accurately. Evaluates the relevance of information and uses it responsibly for planning insights.

Lesson 5.8.4: Exploration and Mapping in Futures & Foresight

Summary: This lesson covers the steps of framing and scanning within Futures & Foresight. Framing establishes the scope, objectives, and questions that guide exploration, ensuring a clear focus. Scanning uses methods such as environmental and horizon scanning to identify drivers of change, megatrends, trends, signals, and weak signals. Various frameworks—like STEEP, PESTLE, or VERGE—help organise data and highlight emerging opportunities or risks. Tools such as the Futures Wheel allow practitioners to map direct and indirect consequences of a trend or event, offering deeper insights into how shifts may evolve. Ultimately, these techniques enable

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more informed, proactive decision-making and strengthen urban resilience strategies.

Knowledge: Identify drivers, megatrends, trends, signals and weak signals, using STEEP/VERGE frameworks.

Skills: Conduct environmental and horizon scanning and map impacts with the Futures Wheel.

Responsibility and Autonomy: Supervise scanning exercises, organise findings and refine approaches amid uncertainty.

Lesson 5.8.5: Scenarios – Envisioning Futures

Summary: This lesson introduces scenario development as a structured method for exploring uncertainty. Learners examine different types of scenarios and practice developing simple scenarios using trends, drivers, and uncertainties identified earlier. They also reflect on the strengths and limitations of scenarios in planning and governance.

Knowledge: Understands what scenarios are and why they are useful for decision-making. Knows the difference between exploratory, normative, and strategic scenarios. Understands how scenarios relate to trends, drivers, and uncertainties.

Skills: Can develop simple scenarios using scenario axes or narrative approaches. Can identify how different assumptions lead to alternative futures. Can evaluate scenarios for relevance, plausibility, and usefulness.

Responsibility and Autonomy: Takes responsibility for producing coherent and realistic scenario drafts. Reflects independently on the implications of different futures.

Lesson 5.8.6: Translating Scenarios into Strategies

Summary: This lesson helps learners identify pathways from desired futures back to the present. Through backcasting exercises, participants define strategic steps, milestones, and enabling conditions necessary to achieve a preferable future. The lesson links foresight to practical, participatory, and policy-driven action.

Knowledge: Understands the purpose of backcasting and how it differs from forecasting. Knows how to identify milestones, interventions, and enabling conditions. Understands the value of backcasting for resilience planning and governance.

Skills: Can develop a basic backcasting pathway from a selected scenario. Can identify short-, medium-, and long-term actions to reach a desired outcome. Can link foresight into policy and planning decisions.

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Responsibility and Autonomy: Applies foresight outputs responsibly to identify realistic and ethical pathways forward. Works independently to outline coherent strategic steps.

Lesson 5.8.7: Skills for the Future

Summary: The final lesson introduces UNESCO's concept of Futures Literacy and explores how individuals and organizations can continuously improve their capacity to anticipate, imagine, and adapt. Learners reflect on their own assumptions, biases, and expectations about the future and gain clarity on how foresight can support inclusive, participatory, and resilient planning.

Knowledge: Understands the concept of Futures Literacy and its relevance to governance. Knows why reflexivity is essential in futures thinking and decision-making. Understands how assumptions shape expectations and behavior.

Skills: Can identify personal and organizational assumptions about the future. Can apply reflexive tools to assess expectations and biases. Can connect Futures Literacy to participatory and strategic planning processes.

Responsibility and Autonomy: Takes responsibility for ongoing learning and critical reflection. Demonstrates autonomy in recognising how personal assumptions influence strategic choices.

5.9 Augmented Reality (AR) Training

Overview: The Augmented Reality (AR) Training introduces participants to the use of AR as a practical tool for exploring and communicating resilience measures in real urban development contexts. Building on the concepts and methods covered in the Data and Participation Modules, participants work with URBAN MENUS "Innovation Cards" enriched with AR features that allow them to visualise different interventions directly in relation to real or modelled urban environments. This hands-on format makes resilience strategies more tangible by overlaying possible solutions - such as green infrastructure, mobility options, or public-space improvements - onto the built environment, supporting informed discussion of trade-offs, synergies, and stakeholder priorities.

Knowledge: Comprehend resilience concepts and the structures that support them. Explore the hidden layers of urban infrastructure. Discover how integrating technologies like Augmented Reality (AR) can enhance structural knowledge and open up transformative possibilities in planning, real-time decision-making, and public engagement.

Skills: Use AR for data, hidden layers, infrastructure visualisation, and scenario simulation. Engage in communication and negotiation.

Responsibility & Autonomy: Collaborate with stakeholders, lead negotiations, and use AR visualisations to drive resilient urban developments.

5.10 Virtual Reality (VR) Training

Overview: The Virtual Reality (VR) Training brings resilience scenarios to life through immersive storytelling and experiential exploration. VR enables participants to step directly into possible future environments, making abstract concepts tangible and emotionally resonant. By experiencing scenarios spatially and interactively, learners gain a deeper understanding of how resilience measures affect daily life, urban systems, and stakeholder priorities. Immersive techniques - such as world building, artefacts from the future, subtle narrative cues, and the "future mundane" - help transform complex ideas into relatable, human-centred experiences. This supports richer dialogue, more inclusive engagement, and more grounded decision-making in the context of future urban development.

Immersion Workshop

Participants are introduced to VR technologies and guided through a series of immersive future scenarios. They explore how systems might evolve, how resilience challenges may manifest, and how different interventions shape the lived experience of urban spaces. The workshop builds familiarity with VR as a tool for learning, reflection, and communication, while helping participants emotionally connect with potential futures.

Role-Play Workshop:

In this workshop, participants negotiate and deliberate both in virtual and real environments while adopting stakeholder roles. By inhabiting different perspectives, they discuss trade-offs, identify shared priorities, and collectively shape future-proof pathways. The workshop strengthens negotiation, empathy, and decision-making skills by placing learners inside the very futures they are discussing.

Together, the VR workshops create an interactive setting where future scenarios can be explored, questioned, and compared - supporting deeper understanding, more informed debate, and more resilient urban development strategies.

Knowledge: Understand how urban resilience concepts translate into lived experience; gain insight into future scenarios; recognise how VR can enhance communication and understanding of resilient development.

Skills: Use Virtual Reality tools to visualise and analyse scenarios, communicate ideas, and engage in negotiation and collaborative problem-solving.

Responsibility & Autonomy: Engage proactively with diverse stakeholders; take initiative in VR-supported negotiations; apply insights from immersive scenarios to inform responsible, resilience-oriented decisions today.

6. Assessment and Certification

Assessment in this course is designed to evaluate knowledge acquisition, practical application, and the ability to engage in reflective, collaborative, and future-oriented planning processes. Each component of the course - self-paced online modules, blended participation modules, AR/VR workshops, and the final Diploma assignment - contributes to a comprehensive evaluation of the learner's progress. The assessment structure ensures that all participants demonstrate a solid understanding of resilience concepts, can apply analytical and participatory methods in practice, and are able to communicate and justify decisions in a structured and responsible manner.

6.1 Online Data Modules (Self-Paced)

Each Data Module concludes with a mandatory multiple-choice questionnaire (MCQ) designed to test comprehension of the concepts, frameworks, and methods introduced in the lessons. Each MCQ includes four answer options, with one correct answer. Lessons typically contain between five and ten questions. Completion of all MCQs in Modules 1–4 is required before accessing the Diploma component.

6.2 Participation Modules (Blended Learning)

The Participation Modules assess learners' ability to apply methods for stakeholder engagement, negotiation, conflict management, and futures thinking. Assessment consists of:

- **MCQs** at the end of each lesson, structured in the same format as the Data Modules.
- **Short asynchronous exercises**, such as scenario sketches, stakeholder mappings, or reflective tasks, completed individually or in groups.

These exercises prepare learners for the final Diploma assignment and ensure that they can translate conceptual understanding into practical skills.

6.3 AR Training Workshop

The Augmented Reality workshop is **assessed** through active participation and engagement. Learners must demonstrate the ability to use AR tools to visualise resilience measures, compare intervention options, and discuss trade-offs using the Dialogue with a Resilient Future framework. Participation is mandatory, and completion is recorded through attendance and contribution to group tasks.

6.4 VR Training Workshop

The VR workshop assessment focuses on the learner's ability to navigate immersive environments, engage in collaborative dialogue, and reflect on future scenarios. During role-play exercises, learners are expected to take initiative, adopt stakeholder perspectives, and contribute to negotiations on urban development challenges. Assessment is based on participation, reflective engagement, and the ability to apply insights from immersive scenarios to resilience decision-making.

6.5 Diploma Assignment (Group Work)

The Diploma constitutes the final integrative assessment of the course. Working in groups, participants analyse a case study using data, participation methods, AR/VR insights, and foresight techniques learned throughout the programme. The assignment consists of:

- **A written or visual group output**, presenting the selected scenario, its rationale, and implications for resilience.
- **A short group presentation**, summarising findings and explaining key decisions. This component evaluates the team's ability to integrate data, stakeholder perspectives, and strategic foresight into a coherent resilience strategy.

6.6 Oral Examination (Individual)

Each participant completes a short individual oral examination at the end of the course. The oral exam assesses:

- Understanding of key concepts across the Data and Participation Modules
- Ability to explain methodological choices from the Diploma project

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- Capacity to reflect on personal learning and future application of skills The oral exam ensures that each learner demonstrates individual competency, independent reasoning, and accountability.

6.7 Certification

To successfully complete the programme and receive the **Certificate in Resilient Urban Development**, participants must:

1. Complete all MCQs in Data Modules 1–4 and Participation Modules 1–4
2. Attend both AR and VR workshops
3. Contribute meaningfully to the group Diploma assignment
4. Pass the individual oral examination

Learners who fulfil all requirements will receive a certificate issued by the consortium, confirming the knowledge, skills, and competencies acquired across the course.

7. Course Policies

This section outlines the expectations and policies applicable to participants in the blended VET course, addressing both online and on-site training components.

Attendance

For the online modules, participants are required to complete all lessons and activities by the specified deadlines. Progress will be monitored through the learning platform. Failure to complete all the checkpoints may result in ineligibility to attend the blended training modules or workshops. For on-site sessions, full attendance is mandatory for all training and workshops. Participants must arrive punctually and stay for the entire session. Exceptions will only be granted for documented emergencies with prior approval from the course coordinator. Hybrid attendance is possible and must be confirmed prior to the training date.

Participation

For online participation, participants are expected to actively engage in discussions, complete assignments, and provide feedback on group projects. Respectful and professional communication in discussion forums and online interactions is required at all times. During on-site sessions, participants are required to actively engage in group exercises, simulations, and discussions. Collaboration with peers and constructive engagement are essential, and participants must adhere to the group norms established during the first session.

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Technology Use

For online modules, participants must have access to a reliable internet connection, a device capable of running the required software, and optionally additional tools specified for AR/VR workshops. Participants are responsible for troubleshooting their technical issues and are encouraged to contact the technical support team for assistance when needed. During on-site sessions, mobile phones and other devices should only be used for course-related activities. AR/VR equipment provided during workshops must be handled responsibly, and any damages caused by negligence may incur a replacement fee.

Academic Integrity

All participants are expected to adhere to the highest standards of academic honesty. Plagiarism, cheating, or any form of academic dishonesty in online or on-site activities will result in immediate disqualification from the course. Collaboration is encouraged, but submissions must reflect individual effort unless specified otherwise.

Accommodations for Disabilities

The course is committed to providing an inclusive learning environment. Participants requiring accommodations for disabilities should notify the course coordinator at least two weeks before the course begins. Support may include adjustments to deadlines, access to assistive technologies, and physical accessibility arrangements for on-site training.

8. Support and Accessibility

This course is committed to ensuring that all participants have access to the resources and assistance they need to successfully complete the program, whether they are engaging in online modules, blended training, or immersive workshops. Below are the support and accessibility services available to all participants.

Academic Support

Participants will have access to a dedicated course coordinator who will provide guidance on

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academic requirements, deadlines, and resources. For specific questions related to course content, participants can contact their module instructors through the learning platform or during designated office hours. Additionally, supplementary materials, including recommended readings, video tutorials, and case studies, will be made available on the course platform to reinforce learning.

Technical Support

For online modules, a technical support team will be available to assist participants with any platform-related issues, including login problems, navigation difficulties, or troubleshooting AR/VR tools. A comprehensive technical guide will also be provided at the start of the course, covering system requirements, best practices for online learning, and tips for accessing AR/VR features. For on-site sessions, technical staff will be present to provide assistance with AR/VR equipment and any other technology used during workshops or training.

Accessibility Services

The course is designed to be inclusive and accessible to participants with diverse needs. Participants requiring accommodations should notify the course coordinator at least two weeks before the start of the program. Possible accommodations include:

- Adjustments to assignment deadlines to account for specific needs.
- Provision of materials in alternative formats, such as large print or screen reader-compatible documents.
- Physical accessibility arrangements for on-site sessions, including wheelchair access and preferential seating.
- Assistive technologies for AR/VR components and online learning modules.

Communication Channels

Participants can reach the support team through multiple channels:

- Email Support: A dedicated email address will be provided for technical and academic queries.
- Live Chat: A live chat feature will be available on the course platform during business hours for immediate assistance.
- Helpdesk at On-Site Locations: During blended training and workshops, an on-site helpdesk will be staffed to address real-time issues.

Feedback and Continuous Improvement

Participants are encouraged to share feedback on the support and accessibility services

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throughout the course. Anonymous feedback forms will be available to ensure that all voices are heard, and improvements can be made promptly.

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