Project Objectives
6 sustainable goals

For 6GMethodology 6G Systems

1. Identify and understand sustainability needs and values
2. Define methodologies for sustainability definition and assessment
3. Enhance integration of vertical UCs with 6G and enabling technologies to jointly reduce footprint and maximise handprint
4. Enhance 6G technologies to reduce footprint and increase handprint
5. Validate, evaluate, and demonstrate sustainability value
6. Impact generation, sustainability guidelines and strategic roadmap

Objectives of SUSTAIN-6G:
Advancing Sustainability in 6G Systems

Project Motivation
6 dimensions

Sustainability with a holistic approach

> TO OVERCOME THESE SHORTCOMINGS, SUSTAIN-6G WILL LEAD THE WAY TOWARDS A HOLISTIC PERSPECTIVE OF SUSTAINABILITY IN THE CONTEXT OF 6G.

The current work in research and standards towards sustainability in 6G systems has a set of key shortcomings:

1st and 2nd order effects cannot be targeted in isolation	**Sustainability needs a holistic approach** • Jointly "Sustainable 6G" and "6G for Sustainability" • E2E from device to service across network domains • Consider full lifecycle for all sustainability areas • Validate, evaluate, and proof solutions SUSTAIN-6G	Incomplete coverage of sustainability by current solutions
Strong interrelation / trade-offs between ICT and vertical systems		E.g., only energy efficiency during operational phase
Most current solutions have limited domain scope		Sustainability-related solutions are not yet applicable
E.g., RAN, NTN, transport - scattered landscape		E.g. KVI process, metrics definition, standards

SUSTAIN-6G Motivation:
Sustainability needs a holistic approach

- **Comprehensive Sustainability Approach:** Addresses six dimensions of sustainability (environmental, societal, and economic) across both, "Sustainable 6G" technology, and "6G for Sustainability" in vertical scenarios.
- **End-to-End Perspective:** Covers the entire network scope, from devices (e.g., sensors, vehicles, handhelds) to services (e.g., augmented reality, forecasting).
- **Lifecycle Consideration:** Includes all stages of assets, from design, planning, and deployment to operation, phase-out, and disposal.
- **Standardised Metrics:** Develops processes to define sustainability metrics and evaluate trade-offs and gains effectively.

Project Scope
6 cross-points

Methodology for 6G Systems

ALIGNING WITH GLOBAL SUSTAINABILITY GOALS

SUSTAIN-6G integrates global sustainability goals, values, regulatory and standards frameworks, and vertical sector-specific needs across at least agriculture, e-health, and smart energy to guide 6G technology collection and requirements identification.

ESTABLISHING SUSTAINABILITY METRICS AND PROCESSES

Standardised metrics and methodologies, including ECO-design and responsible innovation concepts, are developed to assess and enhance sustainability quantitatively and qualitatively in 6G systems.

6G AS A SUSTAINABILITY ENABLER

By addressing vertical sector needs, SUSTAIN-6G leverages 6G technologies to enable more sustainable practices in agriculture, energy, and e-health through innovative connectivity and data solutions.

ADVANCING SUSTAINABLE 6G TECHNOLOGIES

The project expands on promising technologies across network domains, including energy-efficient RAN, core and cloud, optical networks, security and privacy, AI-native solutions, and responsible AI for sustainable 6G systems.

PROOF-OF-CONCEPT AND VALIDATION

Through PoC collaborations, SUSTAIN-6G evaluates the sustainability impact of solutions and methodologies, ensuring practical implications for various verticals.

CONSOLIDATION AND GUIDELINE DEVELOPMENT

Insights and proven practices will be compiled into guidelines, roadmaps, and standards to embed sustainability into 6G and vertical ecosystems, fostering societal, economic and environmental improvements.

Project Consortium

24 partners & 10 European countries

Coordinator

Technical manager

Contact details

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SUSTAIN-6G

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