

# SUSTAIN-6G

SUSTainability Advanced and Innovative Networking with 6G

The European Lighthouse project

# Facts & Figures

#### Call

EU HORIZON-JU-SNS-2024-STREAM-B-01-07 Sustainability Lighthouse

## Project Management

- Coordinator: Christoph Schmelz, Nokia, Munich
- Technical Manager: Olivier Bouchet, Orange, FR
- Innovation Manager: Anastasius Gavras, Eurescom, DE

#### Timeline

- Project start: 1.1.2025
- Project runtime: 2.5 years (- 30.6.2027)

#### Consortium

• 24 partners (7 Telco, 4 Industry, 5 academia, 8 SME)

## Budget & Effort

- Total funding: 13 M€
- Total effort: ~40 full-time contributors over runtime



## SUSTAIN 66 G

# The "Six Dimensions" of Sustainability in the context of 6G

€\$¥£ Economic



Societal



Environmental

Long-term business viability & scalability
Market competition & innovation
Industry collaboration & partnerships
Cost efficiency & resource optimisation
Economic growth
Regulatory framework & policy support

Bridging the digital divide (accessibility)

Trustworthiness & Responsible AI

Stakeholder engagement

Ethical business practices

Social well-being

Cultural diversity

Technology ethics

operation

Use of renewable energy sources

Environmental data collection

Storage and analysis

Material usage and circularity

Environmental Total Cost of Ownership

Sustainable 6G "by design" needs a holistic approach



Digital transformation
Innovative business models
Workforce development
Opportunities for SMEs
Value network integration
Global reach
Social & economic inclusion

Digital equity
Services with high societal value
Personal privacy and data protection
Ethical business practices
Reliable, resilient and accurate information
Support for democratic values

Vertical-specific environmental challenges
Biodiversity & geodiversity impact
Optimisation of natural resources
Monitor & reduce emissions
Supply chain improvements
Smart energy management
Sustainable mobility

Sustainable 6G

# Objectives & expected outcome



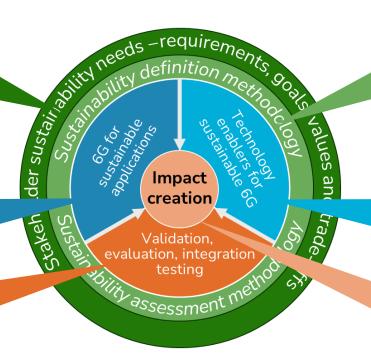
Sustainable 6G "by design" needs to look at the whole ecosystem

Sustainability needs: address environmental. societal, economic goals and values of stakeholders

6G for Sustainability E2E ICT – Vertical interworking: e-health, agriculture, smart grid (TU)

> Guidelines + best practice recommendations for 6G design & implementation

> > 63



Standardised definition and assessment of sustainability metrics quantification 63

Sustainable 6G RAN energy saving, Al/ML, RAN OAM, Core/Cloud arch., Inform Optical, Security

Strategic roadmap for regulation, policies, standardisation towards S sustainability by design

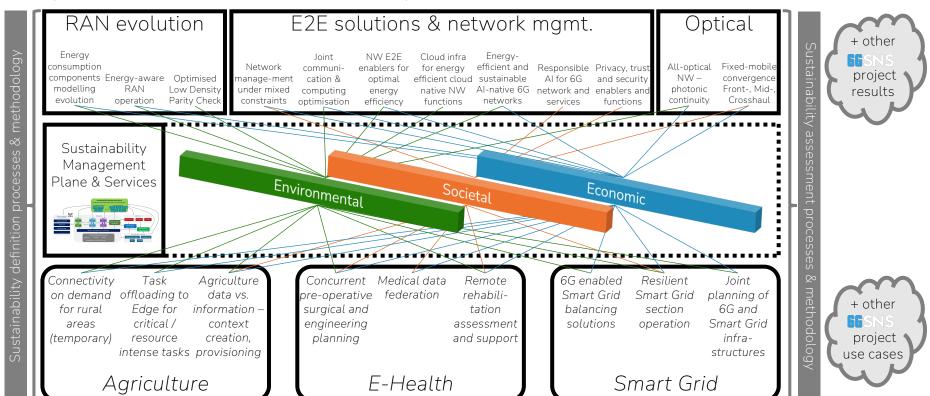
**EESNS** 

TU

# Technology domains & vertical scenarios



Key interrelations with sustainability dimensions



# Work Package Structure



In relation to project objectives



# PoC integration testing, validation, evaluation



Request to SNS projets

## SUSTAIN-6G Objectives:

- PoC Integration testing, evaluation, E2E evaluation of key technical solutions and use cases with sustainability impact including promising SNS Phase 1+2 technologies with targeted sustainability objectives / values
- Developing synergies towards a set of best practice recommendations and guidelines
- → SUSTAIN-6G will reach out to other projects (or already has) to get baseline information, reference to documentation, and contacts
- → Follow-up actions (e.g., detail questionnaire, or a dedicated workshop) will be planned based on the acquired input / information

Please support SUSTAIN-6G to consolidate SNS sustainability efforts! Contacts: Olivier Bouchet (TM, Orange) & Albert Banchs (UC3M, PoC lead)



# https://sustain-6g.eu

- in https://www.linkedin.com/company/sustain-6g/
  - https://www.youtube.com/@SUSTAIN-6GProject
  - https://cordis.europa.eu/project/id/101191936

# Objectives



1)

## Identify and understand sustainability needs and values

Review, consolidate and define sustainability goals, values, indicators based on stakeholder requirements
Build a comprehensive inventory of 6G and relevant vertical UCs' concepts, technologies, components including their relevant KPIs and sustainability indicators

2

## Define methodologies for sustainability definition and assessment

Review and enhance concepts, processes, methodologies, and tools for holistically defining and assessing sustainability

3)

## Enhance integration of vertical UCs with 6G to jointly reduce footprint and maximise handprint

Analyse, develop and deliver vertical UCs integrating 6G and enabling technologies to improve sustainability values
Develop and deliver Sustainability Management Plane (SMP) to enable E2E integrated sustainability-driven operation across network and vertical domains

4

### Enhance 6G technologies to reduce footprint and increase handprint

Develop and deliver solutions and enhancements for selected 6G technologies and components towards sustainability improvements, by reducing 6G footprint and increase handprint in vertical sectors

5

## Validate, evaluate, and demonstrate sustainability value

Validate 6G technologies on their impact to sustainability (positive / negative)
Evaluate and demonstrate methodologies, concepts, and solutions on applicability, implementability, and wrt. sustainability impact

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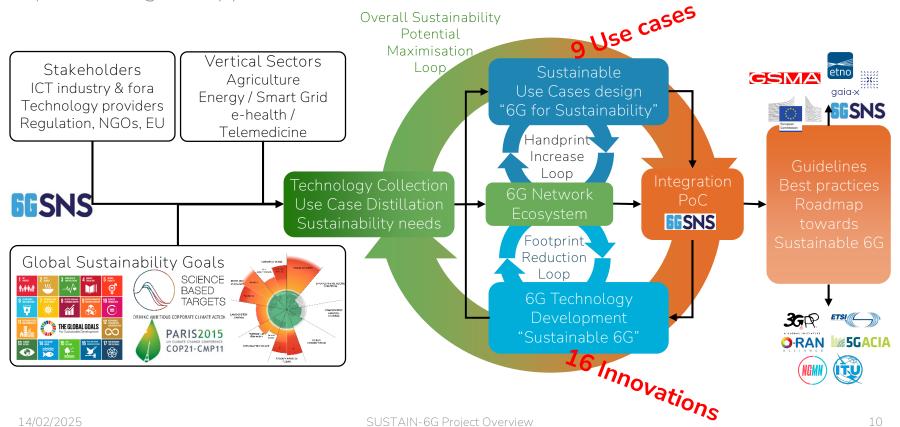
## Impact generation, sustainability guidelines and strategic roadmap

Create impact through dissemination, standardisation, exploitation, by consolidating outcomes towards guidelines, best practices, business models and a strategic (standardisation and regulation) roadmap, to drive the development of 6G in a sustainability-integrated direction

# Methodology



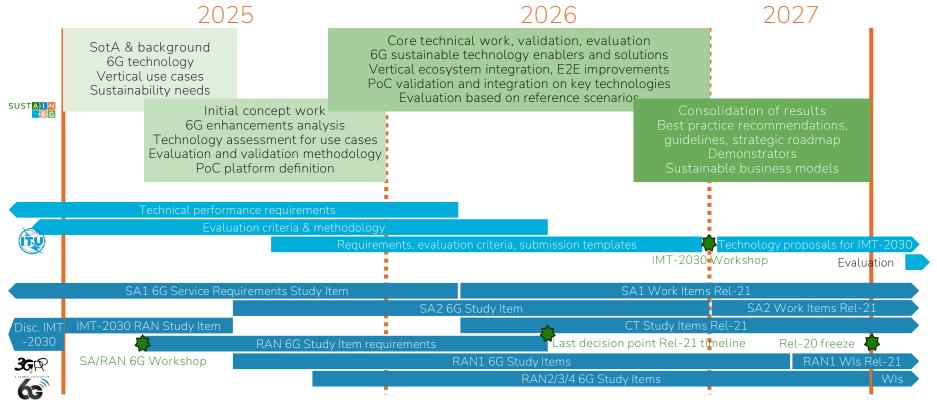
Implementing the approach



# Timeline



Project phases & Standards timeline (ITU and 3GPP)



# SUSTAIN Disclaimer



This work is Co-funded by the European Union under Grant Agreement 101191936. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of all SUSTAIN-6G consortium parties nor those of the European Union or the SNS JU (granting authority). Neither the European Union nor the granting authority can be held responsible for them.

