

SUSTAIN-6G

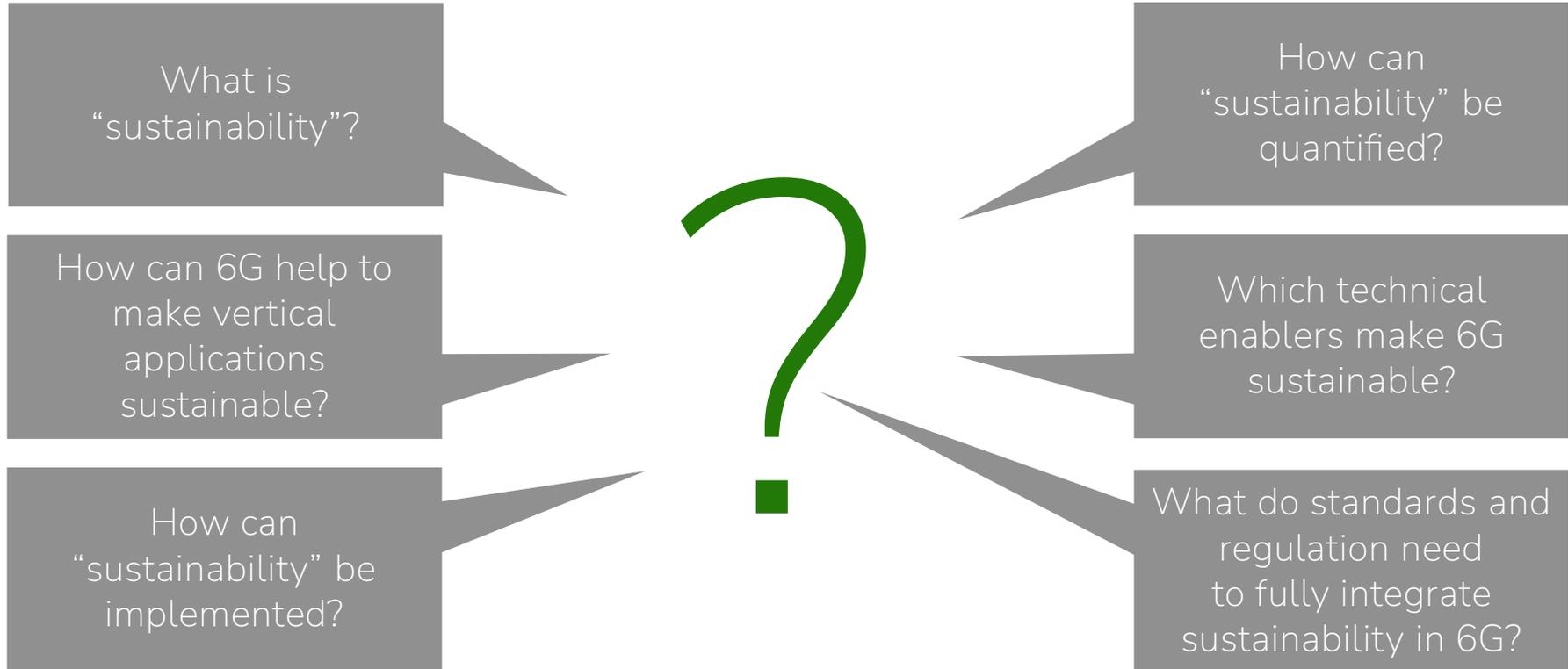
Sustainability Lighthouse – key ambitions and objectives

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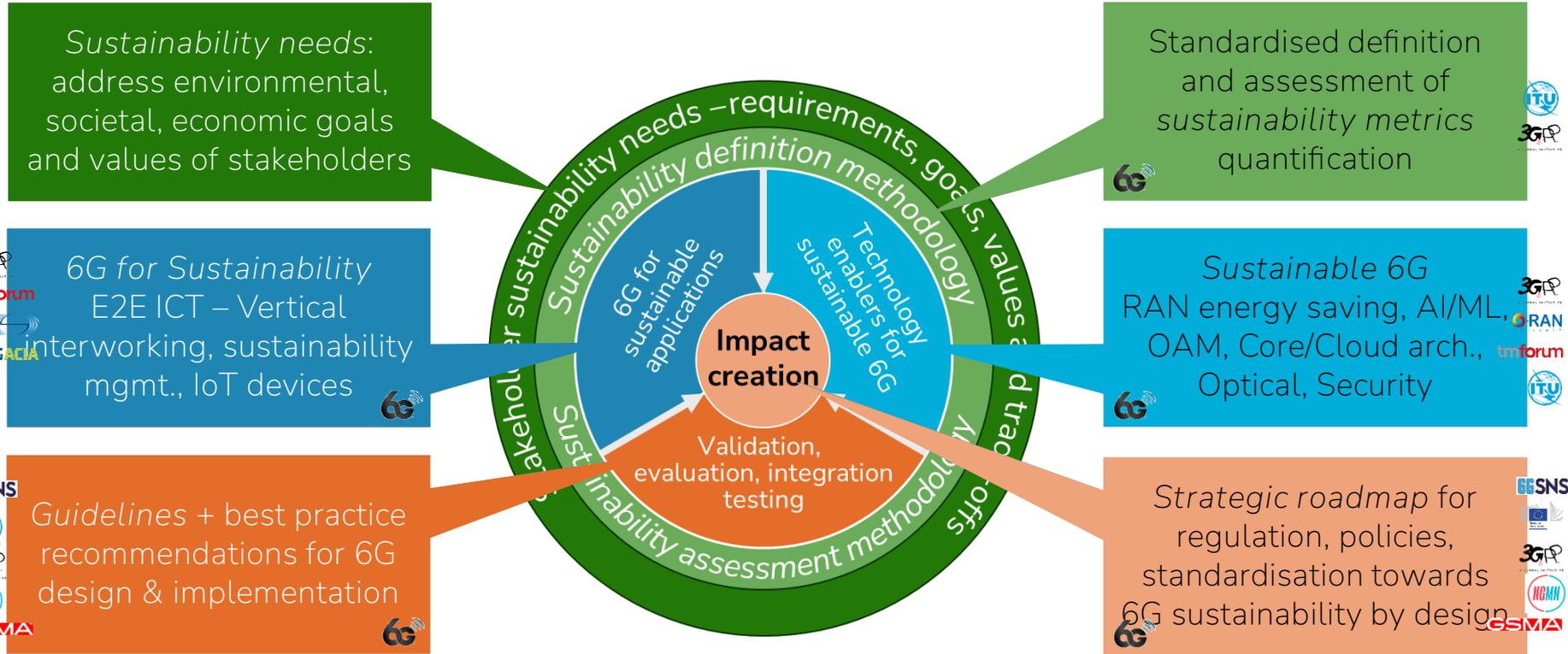
Motivation

Key questions on sustainability in the context of 6G



Motivation

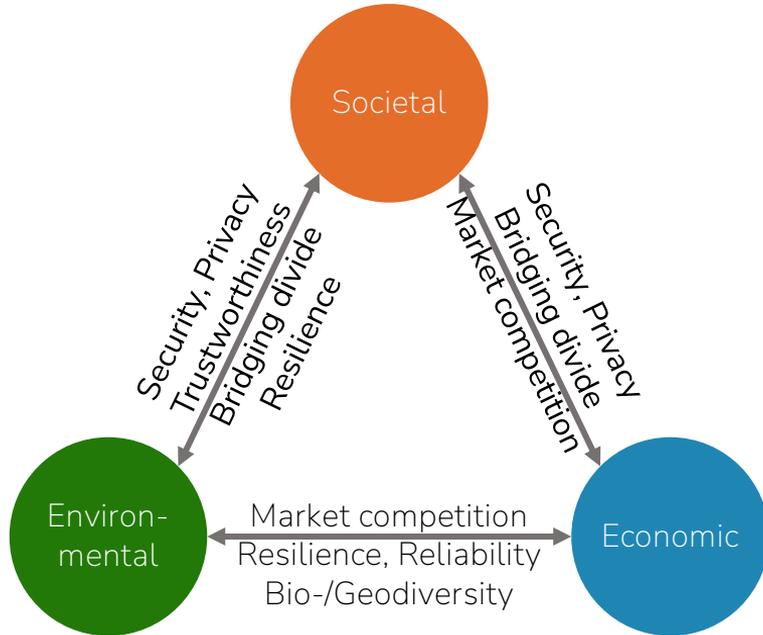
Sustainable 6G “by design” needs to look at the whole ecosystem



Key elements in sustainability storylines

Sustainability improvements in one dimension may impact other dimensions

Sustainability improvements in one dimension come at certain cost



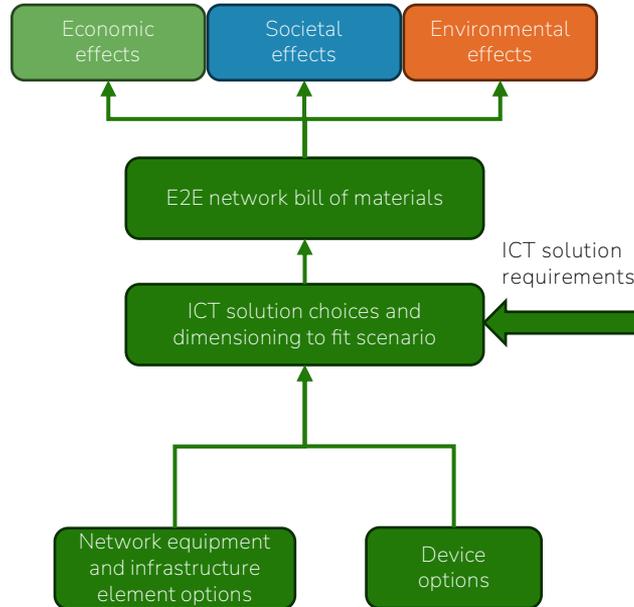
How to reflect potential trade-offs?

- Perspective needs to move away from ONLY looking at environmental (energy, GHG) measures
 - Prioritisation of sustainability metrics needs to be defined and accordingly reflected
 - Implementation needs guidance how to identify and handle trade-offs
 - Regulation should reflect such priorities by use case / service specific policies
- SUSTAIN-6G will be working on identifying key trade-offs and exemplarily evaluating them along a set of use cases

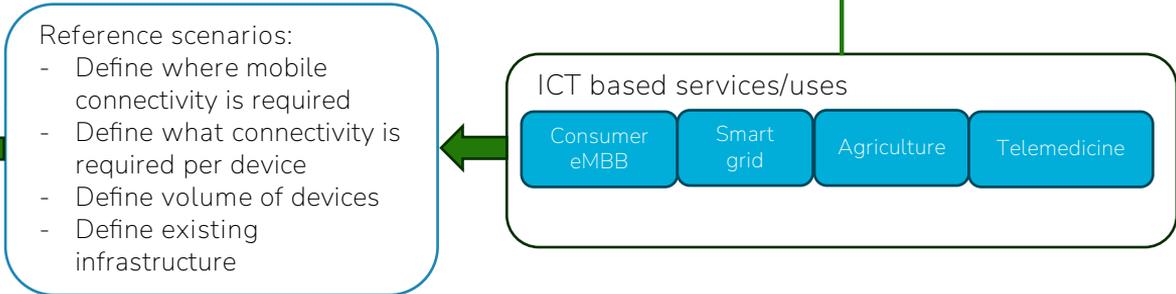
Key elements in sustainability storylines

Building compelling reference scenarios

First order effects – from existence of the ICT based solution



Second order effects –from usage of the ICT based solution

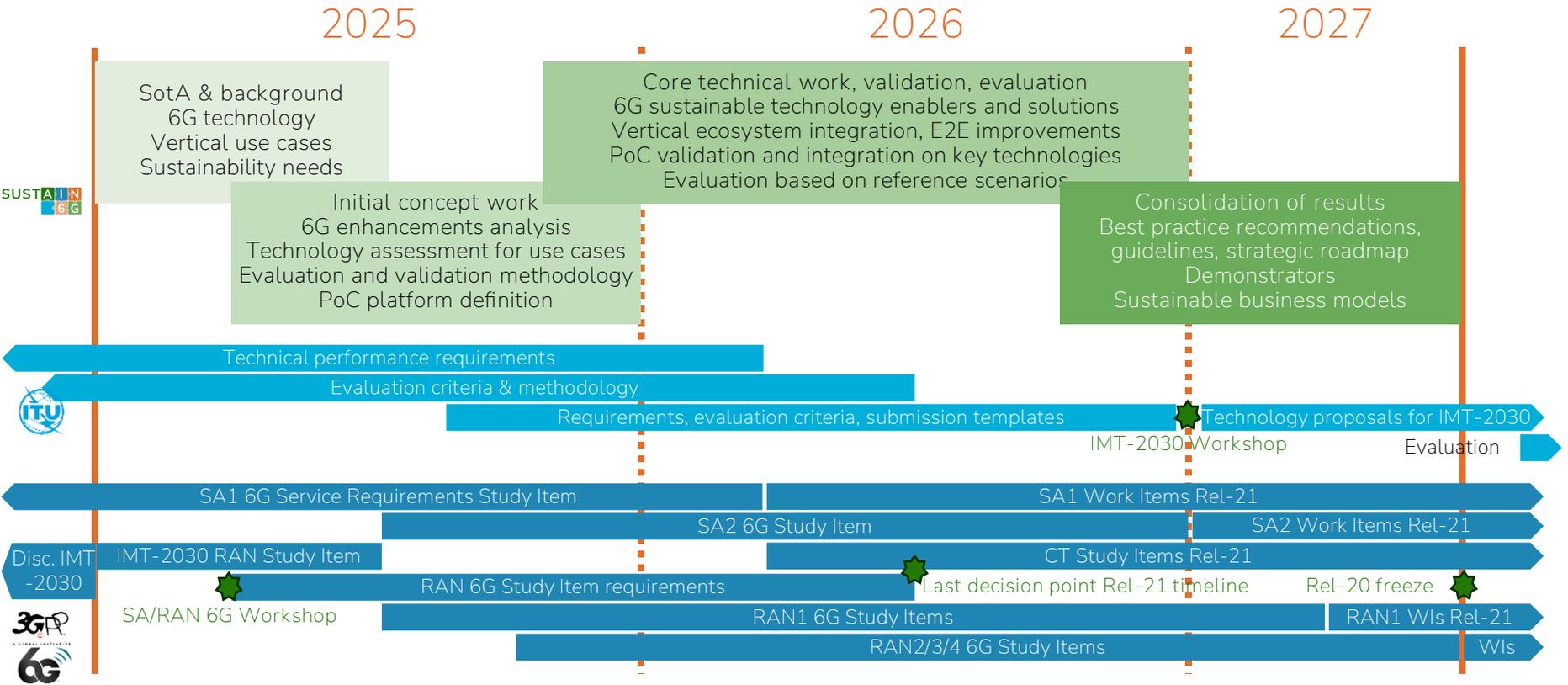


Reference scenarios:

- Define where mobile connectivity is required
- Define what connectivity is required per device
- Define volume of devices
- Define existing infrastructure

Timeline

Project phases & Standards timeline (ITU and 3GPP)



Standardisation activities

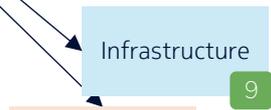
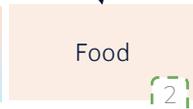
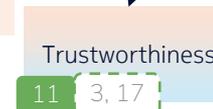
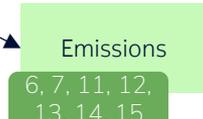
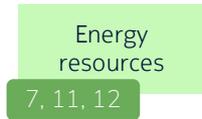
(Re-)proposing “global” Key Values in 3GPP

1 focus

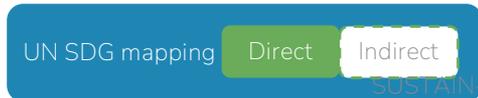


“ensuring that today’s actions do not limit the range of economic, social and environmental options to future generations” (IMT-2030)

2 pillars / aspects



Key Values
(or “sustainability” values)





<https://sustain-6g.eu>



<https://www.linkedin.com/company/sustain-6g/>



<https://www.youtube.com/@SUSTAIN-6GProject>



<https://cordis.europa.eu/project/id/101191936>

SUSTAIN 6G Disclaimer



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.



Facts & Figures

Project Management

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

Timeline

- 01.01.2025 – 30.06.2027 (2.5 years)

Budget & Effort

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

Consortium

- 24 partners from 10 European countries
- 7 telecommunication (operators and manufacturers), 4 large vertical industry, 5 academia (universities and research institutes), 8 SME (vertical and telecommunication sectors)

More

- EU Call: [SNS-2024-STREAM-B-01-07 Sustainability Lighthouse](#)
- Website: <https://sustain-6g.eu>
-  <https://www.linkedin.com/company/sustain-6g/>
-  <https://www.youtube.com/@SUSTAIN-6GProject>
-  <https://cordis.europa.eu/project/id/101191936>



Motivation

The “Six Dimensions” of Sustainability in the context of 6G

	Economic	Societal	Environmental
Sustainable 6G	<ul style="list-style-type: none"> Long-term business viability & scalability Market competition & innovation Industry collaboration & partnerships Cost efficiency & resource optimisation Economic growth Regulatory framework & policy support 	<ul style="list-style-type: none"> Bridging the digital divide (accessibility) Trustworthiness & Responsible AI Stakeholder engagement Ethical business practices Social well-being Cultural diversity Technology ethics 	<ul style="list-style-type: none"> Net zero network design, deployment and 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



6G for Sustainability	<ul style="list-style-type: none"> Digital transformation Innovative business models Workforce development Opportunities for SMEs Value network integration Global reach Social & economic inclusion 	<ul style="list-style-type: none"> Digital equity Services with high societal value Personal privacy and data protection Ethical business practices Reliable, resilient and accurate information Support for democratic values 	<ul style="list-style-type: none"> Vertical-specific environmental challenges Biodiversity & geodiversity impact Optimisation of natural resources Monitor & reduce emissions Supply chain improvements Smart energy management Sustainable mobility
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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

6

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

In relation to project objectives

