



Le réseau
de transport
d'électricité

Renewables
Grid Initiative 

Installation of a Recycled Aluminium Alloy Conductor on RTE's Grid

27th May 2026

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RTE in figures...



Europe's first
transmission system
operator in terms of
grid size and
investment



- **105,797 km** of power lines and **2,842** substations currently in operation
- **25,500 km** of optical fibers
- **37** cross-border connections



RTE in figures...



Europe's first
transmission system
operator in terms of
grid size and
investment



- **€ 6,131 M** in sales
- **€ 40 M€** annually committed to R&D
- **€ 110 M** of capital expenditure committed to interconnections
- **10,025** employees including 507 apprentices

RTE in figures...



1,282
customers

- **11** railway companies
- **391** market players
(balance responsible entities, adjustment actors, demand-side response operators, obligated parties or capacity-mechanism certification entity holders, etc.)
- **429** industrial consumers
- **317** power producers
- **134** distribution companies
(Enedis and tier-1 local distribution companies)



Our missions



OPERATING THE POWER TRANSMISSION SYSTEM

by innovating and transforming our industrial infrastructure for the benefit of our customers and local communities.



OPTIMIZING THE FRENCH ELECTRICITY SYSTEM

by combining efficiency, energy solidarity and environmental protection.

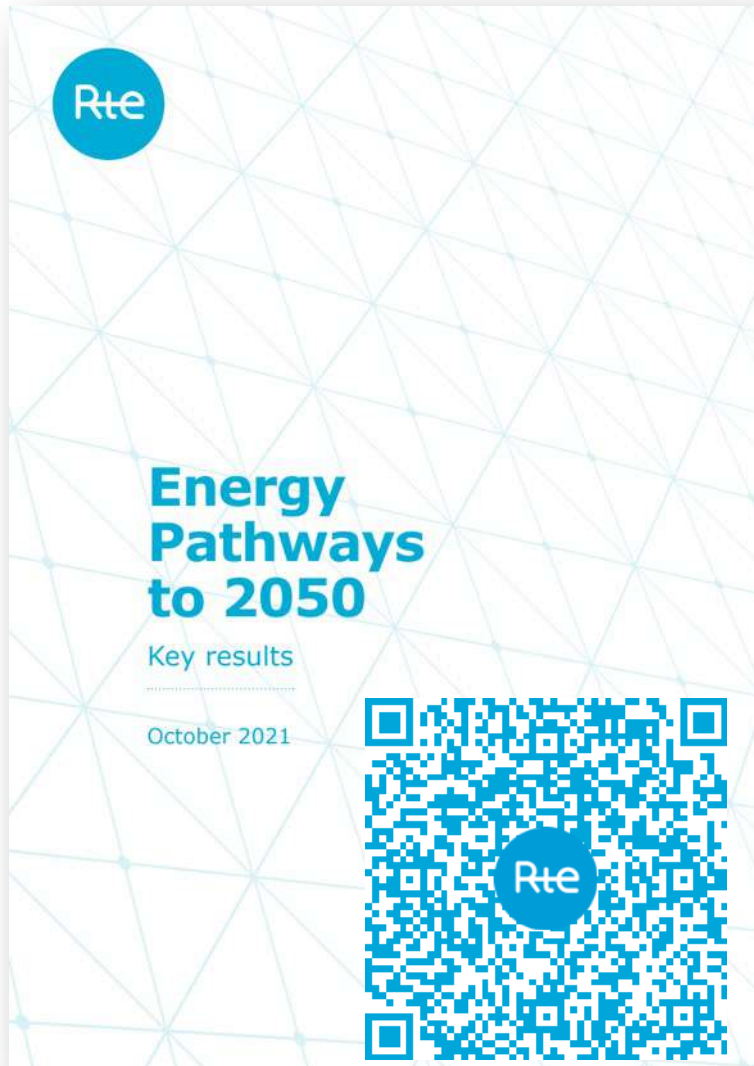


INFORMING THE PUBLIC DECISIONS

and choices made by local authorities and citizens, through our expertise and sense of anticipation.



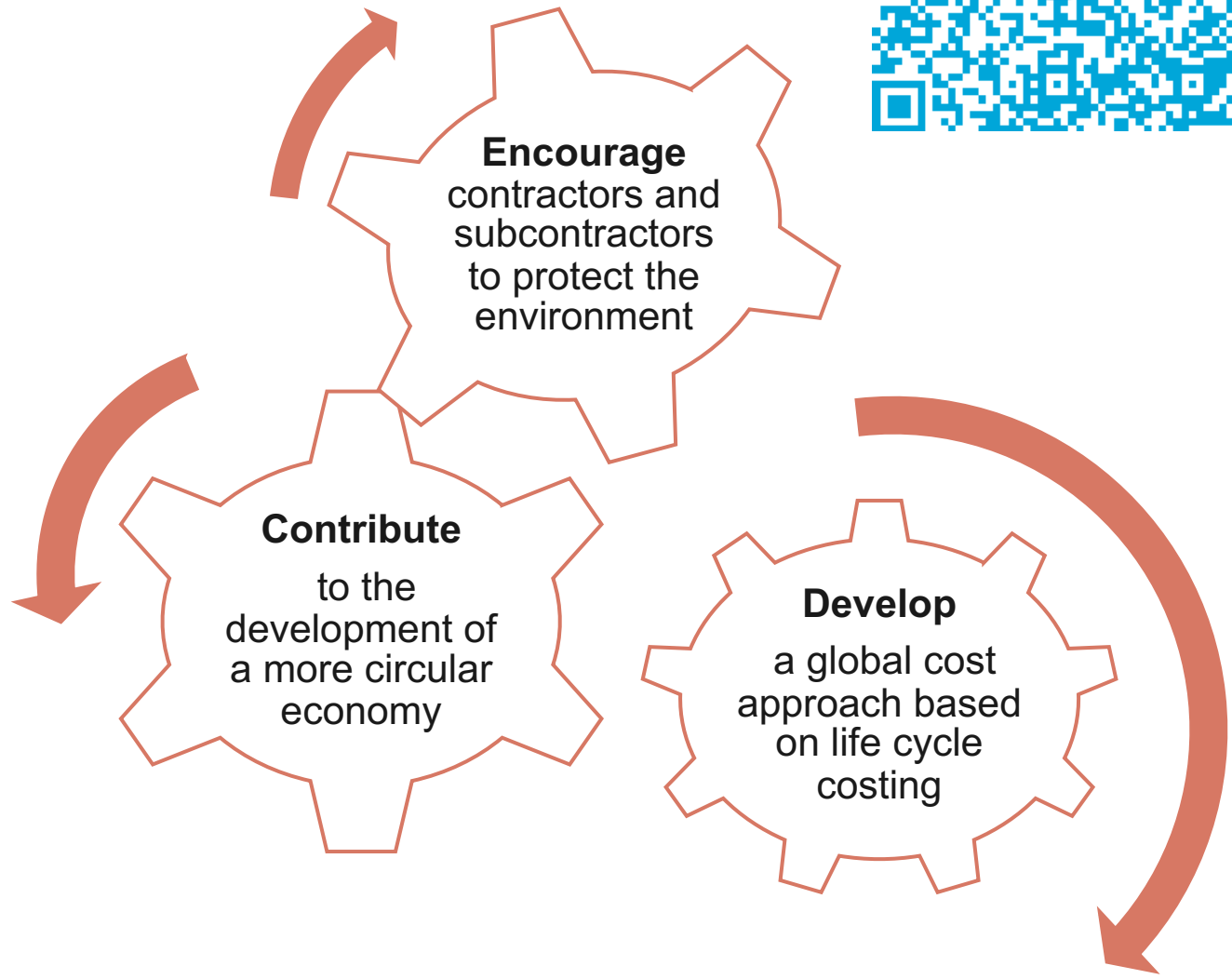
RTE's Energy Pathways to 2050 Report : Key Findings



Environmental dimension

- There may be **tension around mineral resource supply** in the energy transition economy, particularly for **certain metals**, and it will be necessary to **plan accordingly**
- **Transitioning away from fossils fuels** will also **create a need for new mineral resources and supply chains**
- **Criticality issues** for necessary resources vary, including **limited reserves, monopolies, conflicts of use and economic importance, substitutability, environmental impacts**, etc.

The Greener Choice



The Greener Choice – A Joint Call for Action

Dear suppliers,

In 2020, we as transmission system operators (TSOs) approached you with our letter entitled 'The Greener Choice'. Since then, global supply chains have been ruptured in the wake of the COVID-19 pandemic and are again being challenged by Russia's invasion of Ukraine. It is clearer than ever that as we are accelerating Europe's transition towards the first climate-neutral continent, we must also build up resilience in our global supply chains and drive decarbonisation well beyond our own activities. Today, we stand together as ten European TSOs and confirm the ambitions we outlined in our first Greener Choice letter, in the hope of turning our vision into reality.

We share these ambitions with, and face the same challenges as, many of our suppliers. We must therefore take the next steps together. In practice, this means TSOs and suppliers must both do their part. It is on us to lower entry barriers for innovative technologies and the circular use of raw materials. We will need to revise standards and practices that stand in the way of a smarter way of working and overcome legacy technologies, such as the use of SF₆ as an insulating gas. Naturally, this process will take many years. Along with the signatories of this letter, we have formed a working group which strives to coordinate and consolidate methodologies for rating and quantifying more sustainable manufacturing, service and logistical processes. These metrics will eventually be taken into account in our procurement processes.

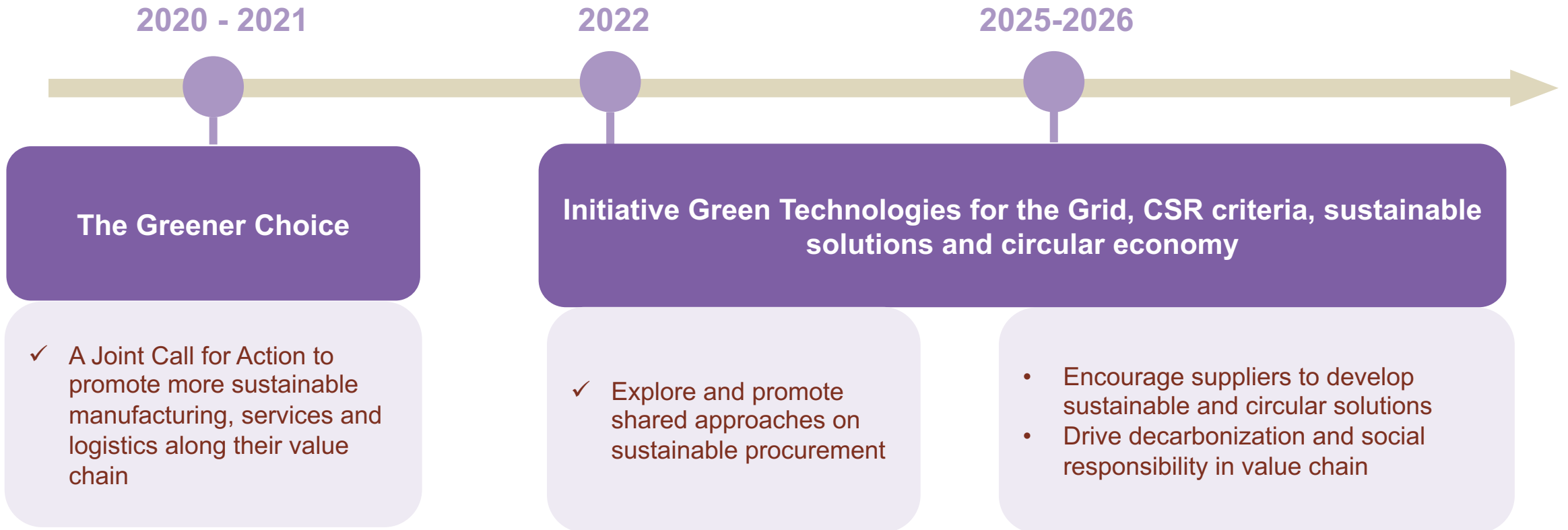
Similarly, we would like to see our suppliers - each to the best of their abilities - also transition towards more sustainable business models. We expect all suppliers to examine their value streams and account for raw materials, their provenance and recycled content, as well as emissions resulting from manufacturing and logistical processes. Where possible, suppliers should undertake standardised life cycle assessments of their products and services and share this data with us via common exchange platforms. This will form the basis for our transition towards carbon neutrality. Moreover, we would like to encourage suppliers of all sizes and from all sectors to invest in seeking out ESG performance ratings. These can help to identify an organisation's strengths and weaknesses and structure its approach to sustainability. At the same time, such ratings allow us as clients to benchmark suppliers' achievements and reward front-runners.

We value the efforts that many of you have already undertaken and encourage you to stay on this path. Your ideas are welcome and we are eager to discuss them with you. If you are unsure about how to tackle these topics, do not hesitate to reach out to us - we look forward to speaking with you.

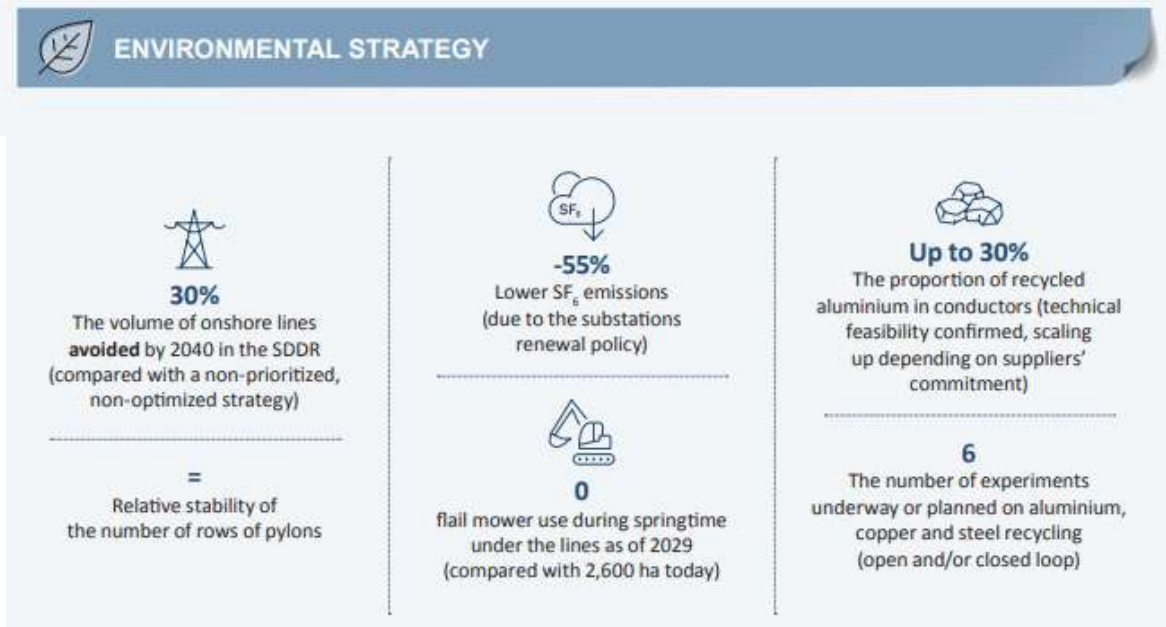
Let us help each other and work on this challenge together.

Robert Steinemer, Head of Procurement at Amprion	Vivienne Bracken, Chief Procurement Officer at National Grid	Ringelsen Ball, Head of Procurement and Claim Management at Swissgrid	Domenico Gentile, Head of Procurement & Contract/Claim management at TransnetBW
Norbert Hiesleitner, Head of Procurement at APG	João Correia Botelho, Director Procurement at REN	Sjouke Bootsma, Director Supply Chain Management at TenneT	
Harald van Ootryve d'Ysoewalle, Head of Eia Group Purchasing	Giles Ethermer, CEO at RTE	Alessandro Fiocco, Head of Procurement at Terra	

Advancing Sustainability and CSR in Procurement: A Collaborative TSO Perspective



RTE's Strategic Development Plan (SDDR)



Rte Installation of a Recycled Aluminium Alloy Conductor on RTE's Grid, 27th May 2026

2021 – 2023 : overhead line cables circular economy trial

Installation of new AAAC cables containing part of recycled almélec on RTE network (225 kV Cholet Distré and 90 kV Egletons Naves Eyrein)



Overhead Line Cable containing recycled content production by *Nexans*



Removal of 40 km of AACSR cables in Maurienne valley from old RTE overhead lines



Recycling by *MTB Recycling*: degreasing, steel-aluminum separation, aluminum cutting



Aluminum foundry by *Trimet* : reuse of almélec material to product a new machine wire



Circular Economy Trial: Key Successes

- ✓ Recycled overhead lines cables match mechanical strength and electrical conductivity specifications
- ✓ Producing a recycled overhead lines cables needs circular economy due to the required high purity of aluminum material for electrical application
- ✓ Lower emissions : recycling aluminum cuts tons of CO₂ vs. producing primary aluminum
- ✓ A collaborative work : RTE, MTB, Trimet and Nexans teamed up to recycle aluminum for the grid

RTE Overhead Line Cable Technical Specification

- RTE main new overhead line cable technology : aluminium-magnesium-silicium alloy (AAAC)
- Standard **IEC 62641** « Overhead line conductors – Aluminium and aluminium alloy wires for concentric lay stranded conductors »

“The wires shall be of the required composition to achieve the mechanical, electrical and thermal-resistant (if required) properties specified hereinafter. »

Table 1^a – Designation and properties for calculation purposes^b

Designation ^c		Maximum resistivity at 20 °C		Minimum conductivity ^d		Constant-mass temperature coefficient of resistance at 20 °C 10 ⁻³ /°C
IEC	CENELEC	nΩ·m		% IACS		
	AL4	32,900 ^e	32,600 ^f	52,4 ^e	52,9 ^f	3,60

- Maximum allowable resistivity

Table 2 – Tolerance on wire diameter

Nominal wire diameter mm		Tolerance mm
Over	Up to and including	
--	3,00	±0,03
3,00	---	±1 % of diameter

- Tolerance on wire diameter

Table 3 – Minimum mechanical properties for Ax and ALx wires

Designation ^a		Nominal wire diameter mm		Minimum tensile strength		Minimum elongation after break %
IEC	CENELEC	Over	Up to and including	MPa		
	AL4	1,50	3,50	325 ^b	342 ^c	3,0
		3,50	5,00	315 ^b	330 ^c	3,0

- Minimum mechanical properties

Circular Economy Does Not Compromise AAAC Quality

- **Risk** : using recycled materials introduces non-aluminium elements, increasing OHL cable resistivity or reducing mechanical strength
- **Suppliers have different possibilities to adjust OHL cable properties** :
 - Selection of material (recycling dependant)
 - Adjustment of cross section (existing tolerance in the standards)
 - Performing additionnal heat treatment
- **RTE quality feedback on last ten AAAC cables productions without circular economy (different suppliers)** :
 - Each production meets RTE specifications for « electrical quality » (verified by DC resistance measurements)
 - Mean value : 1.3% below the maximum limit
 - Standard deviation : 0.9%
 - Existing margin

→ Suppliers have solutions to mitigate the possible negative effects of recycled materials to ensure cables quality.

Main Takeaway

- ✓ Circular economy on aluminium ...
 - ... is a way to reduce european material dependency on aluminium
 - ... has beneficial effects on CO₂ emission
- ✓ Technical specification on aluminium alloy overhead line cables can be maintained with recycled content.
- Circular economy success lies in the collaboration it fostered across the value chain: dismantling and recycling to remelting and manufacturing

What's Next ?

Strengthen Supply Chain Resilience

- Improve **understanding of value chains** (e.g. copper, aluminum, steel) to identify vulnerabilities and mitigation opportunities

Accelerate Circularity in Grid Equipment

- Develop **more circular and resource-efficient components** to reduce dependencies and vulnerabilities
- Use IEC 63366:2025 as a basis for LCA and to define **product-specific rules (PSRs)**

Build Industrial & Recycling Capabilities

- Establish **strong industrial capacity** for processing and recycling grid technologies (in view of increasing decommissioning)
- Promote **high-value recycling** and prevent downcycling

Foster Ecosystem Collaboration

- Strengthen **coordination across the power grid value chain**
- Enable joint development of **recycling and processing capabilities**

Thank you

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