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SBs 2026

Transitioning Away from Fossil Fuels: A Roadmap Powered by Renewables, Electrification and Grid Enhancement

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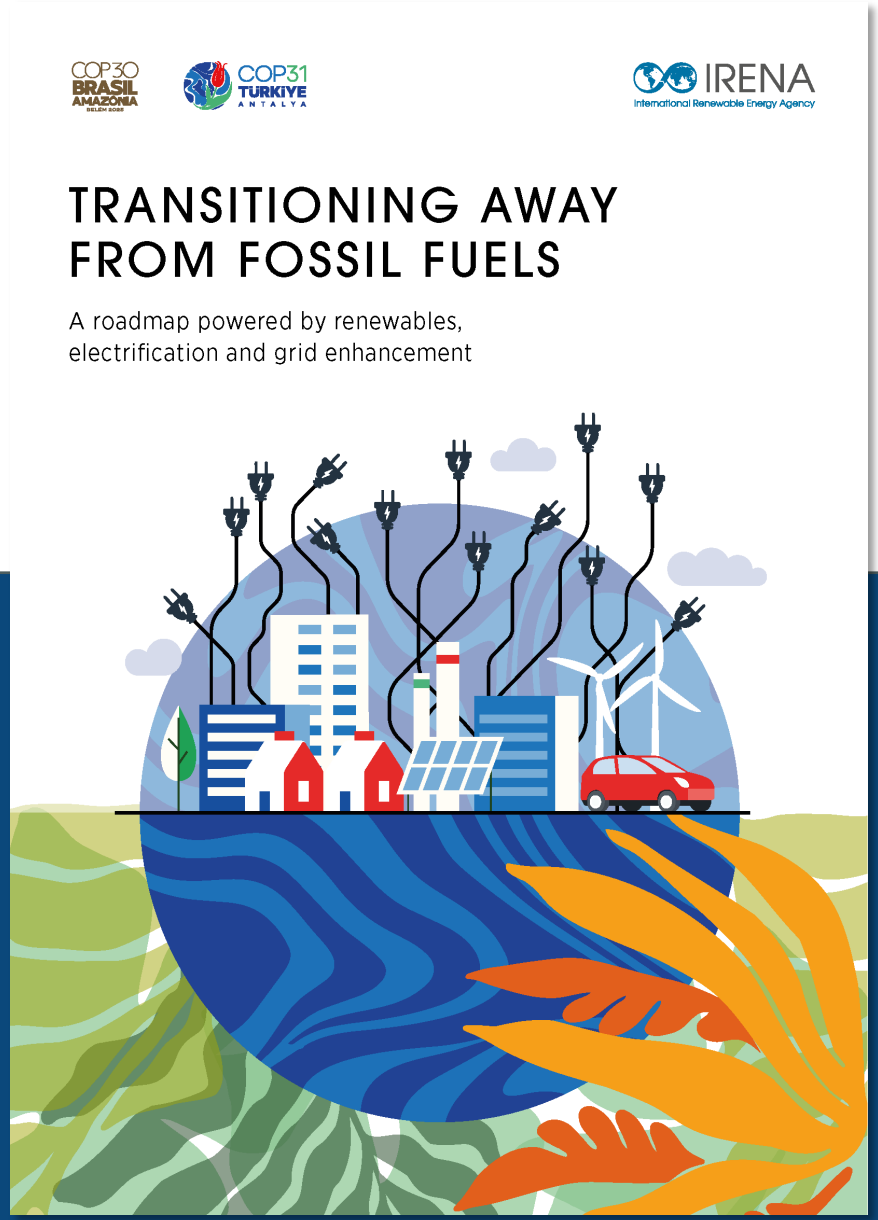
Local: Sala H-1-07, 1º andar, Horário: 15h00 às 16h55



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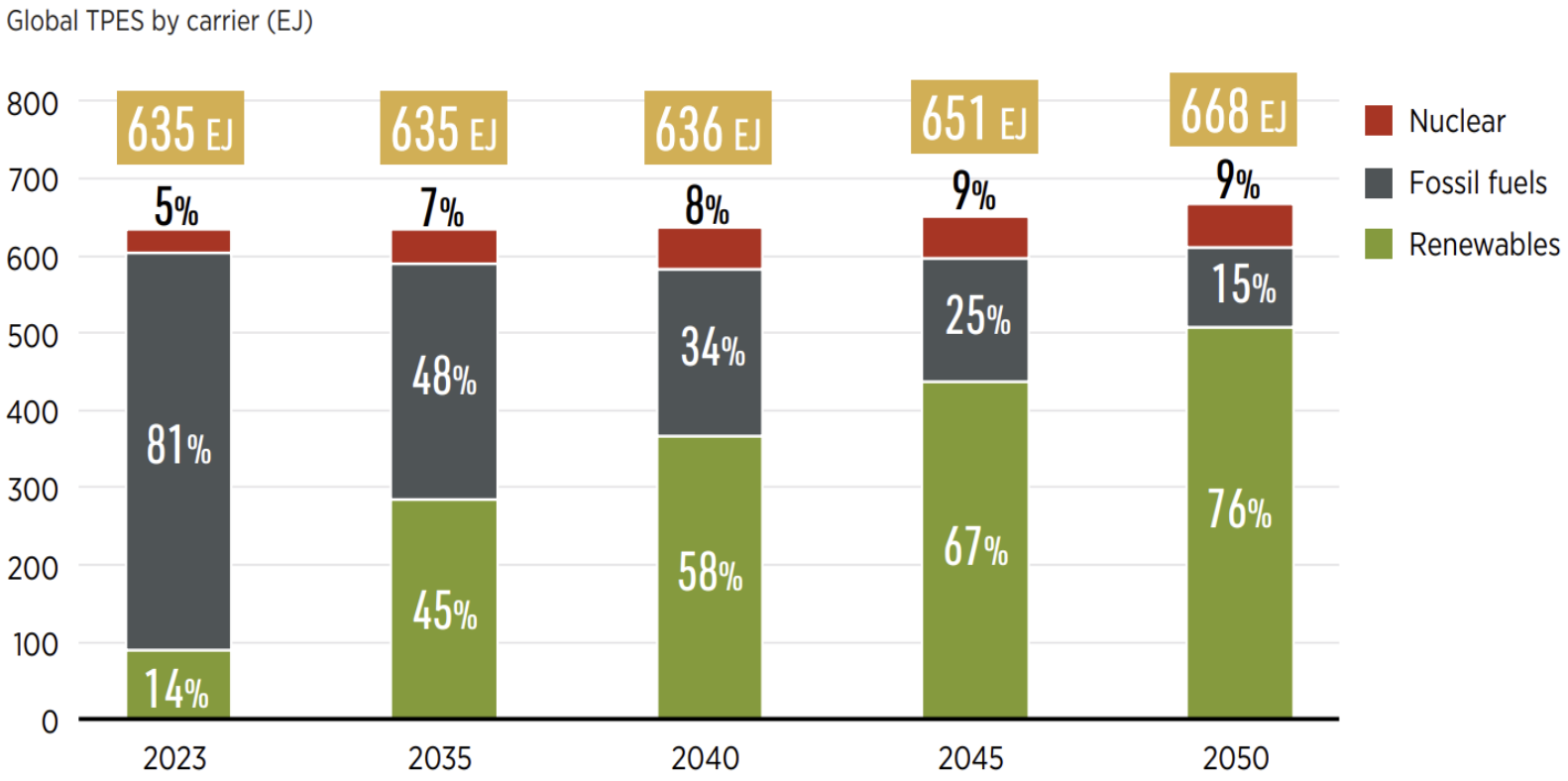
TAFF as a practical roadmap for implementation

Reduction of fossil fuel supply and renewable scaling up

FIGURE 1: Global primary energy supply under the revised 1.5˚C Scenario, by carrier, 2023–2050.



Source: (IRENA, Forthcoming a).

Notes: EJ = exajoules; TPES=Total primary energy supply; "renewables" include bioenergy, variable renewables (solar, wind) and others (hydro, geothermal, solar thermal); "fossil fuels" include oil derivatives, coal and natural gas; Maritime and aviation bunkers are included at the global level.

1. Integrated planning

- 1.5C compatible
- Energy security
- Competitiveness
- Just, equalitarian and orderly transition
- All renewable - fuels and generation must be onboard
- All sectors to transform
- Regional and country level

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Electrification at the core

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2. Decade of electrification

- ***Global FEC***: **Electrification**

23% today → **35% in 2035** → 54% in 2050

- ***Buildings***:

36% today → **57% in 2035** → 77% in 2050

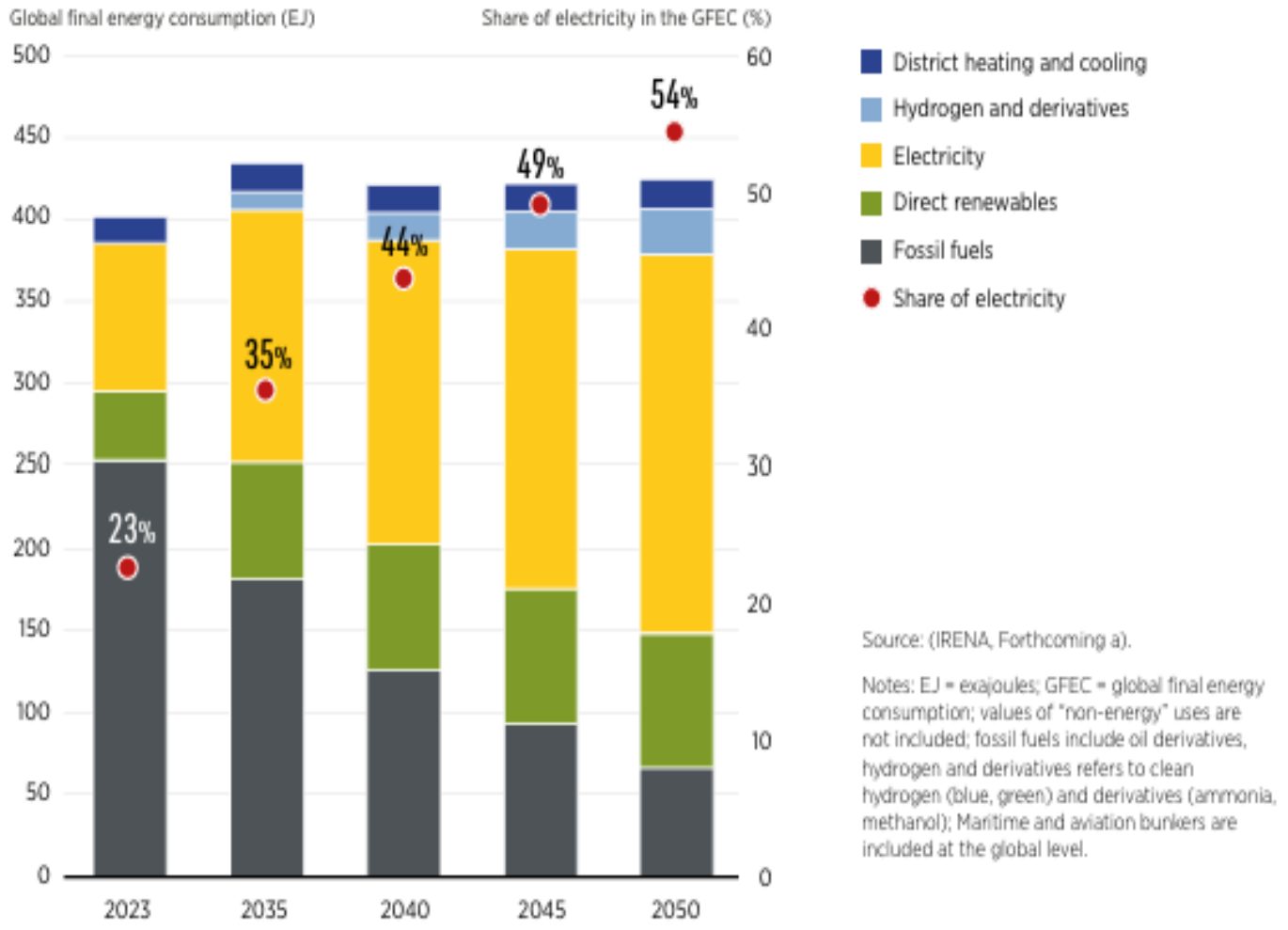
- ***Industry***:

27% today → **34% in 2035** → 42% in 2050

- ***Transport***:

~1% today → **15% in 2035** → 47% in 2050

Evolution of the global final energy consumption (left axis) and the global electrification rate (right axis) under the revised 1.5˚C Scenario, by carrier, 2023-2050



Source: (IRENA, Forthcoming a).

Notes: EJ = exajoules; GFEC = global final energy consumption; values of "non-energy" uses are not included; fossil fuels include oil derivatives, hydrogen and derivatives refers to clean hydrogen (blue, green) and derivatives (ammonia, methanol); Maritime and aviation bunkers are included at the global level.

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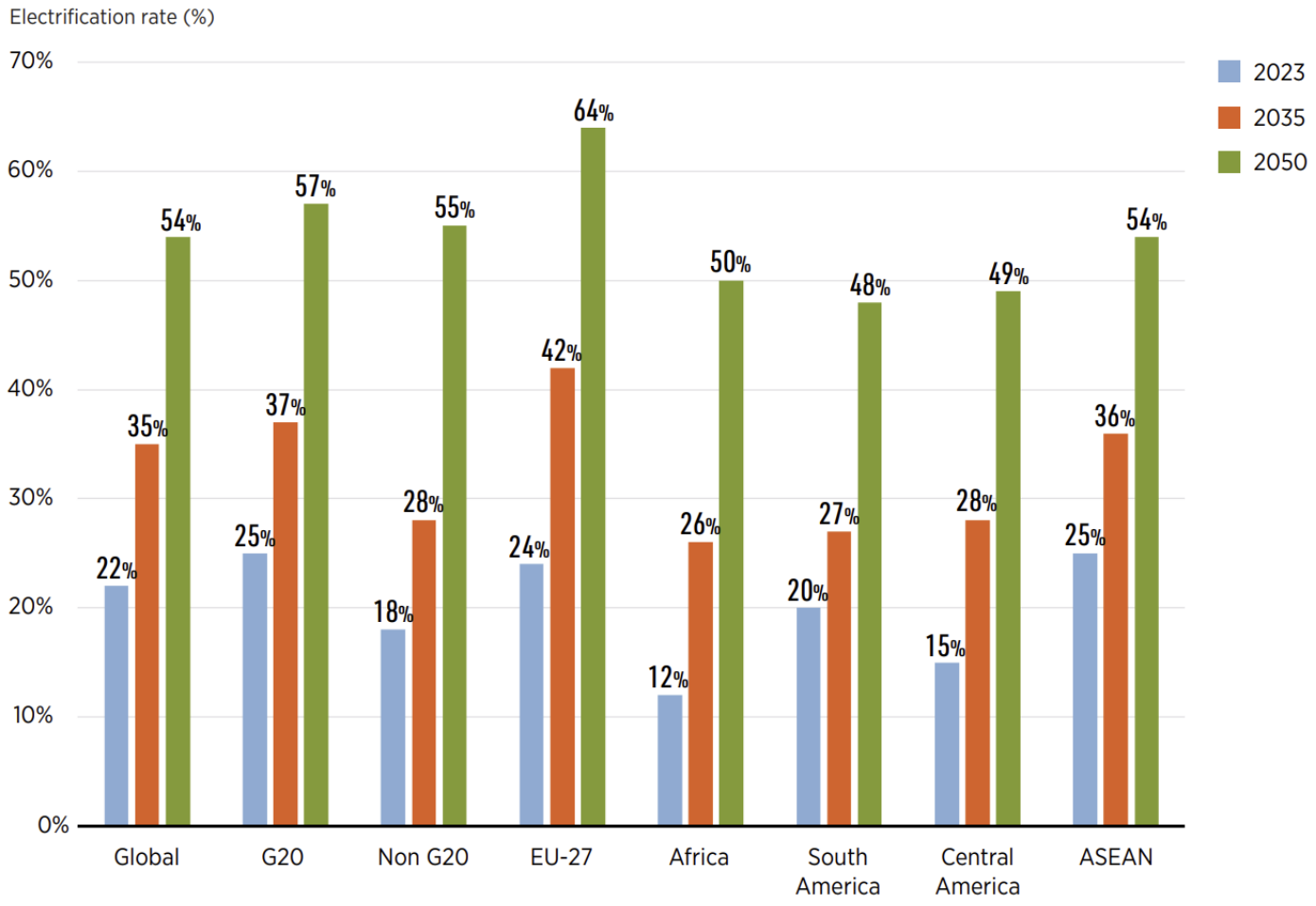
Each region – Benefits, specificities, unique status and conditions, resources availability

FIGURE 5: Evolution of the electrification rate in selected regions, 2023, 2035 and 2050



Source: (IRENA, Forthcoming a).

Notes: ASEAN = the Association of Southeast Asian Nations; EU = European Union; G20 = the Group of 20, excluding the African Union; Total final energy consumption excludes international marine and aviation bunkers, except at global level.

3. Benefits for economies

- Higher energy efficiency
- Reduced fossil fuel dependence and price volatility
- Greater energy security & resilience
- Green industrialization and competitiveness
- Jobs & growth

- Multiple pathways:
  - ❖ Initial status
  - ❖ Resources availability
  - ❖ Supply chain
  - ❖ Market designs - prices
  - ❖ Sectoral policies

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Electrification at the core, combined with renewables and Implementation priorities beyond the energy sector

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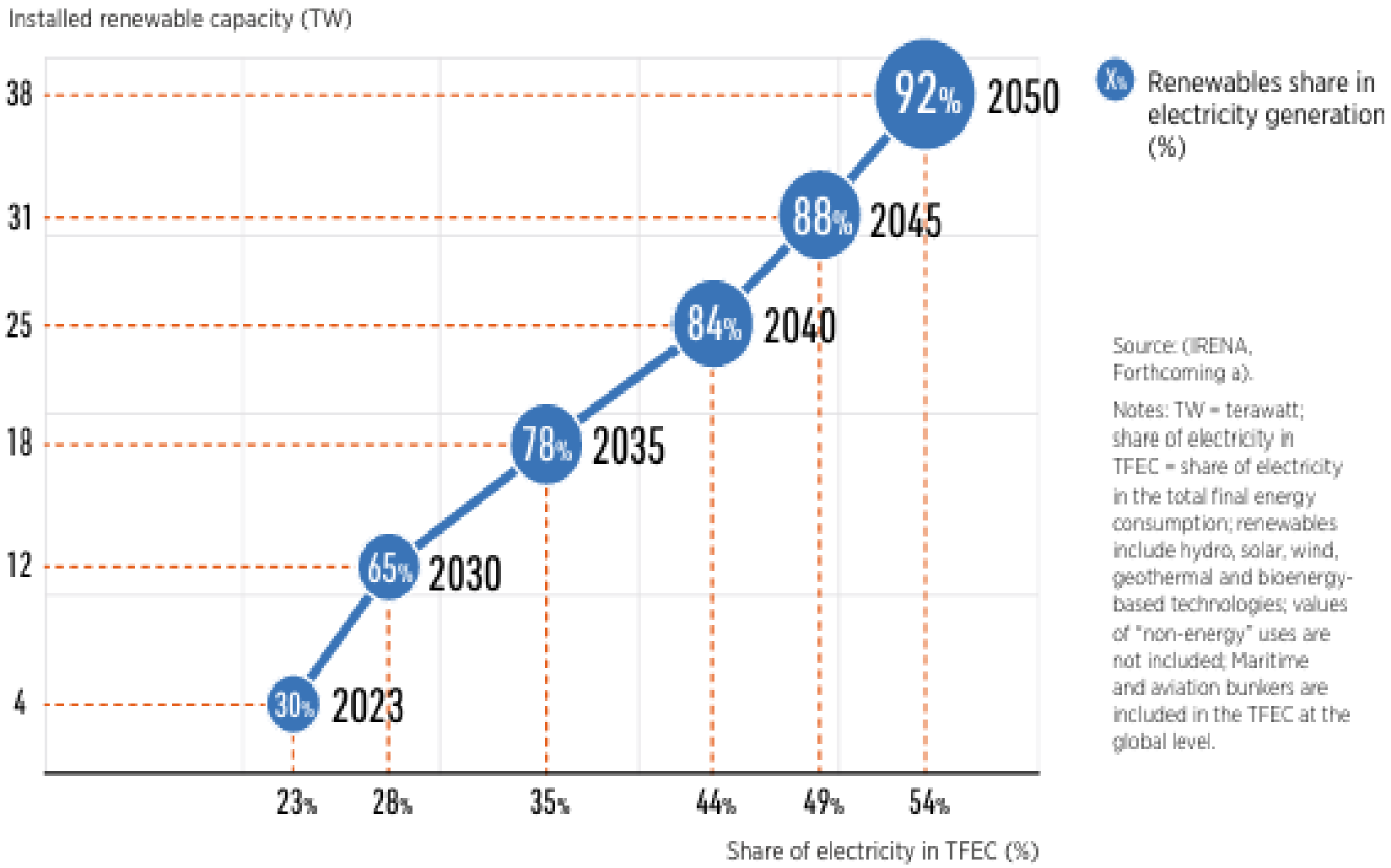
The energy transition to 2050 under the revised 1.5˚C Scenario, 2023-2050



Source: (IRENA, Forthcoming a).

Notes: TW = terawatt; share of electricity in TFEC = share of electricity in the total final energy consumption; renewables include hydro, solar, wind, geothermal and bioenergy-based technologies; values of "non-energy" uses are not included; Maritime and aviation bunkers are included in the TFEC at the global level.

4. Scaling key enablers

- Renewables (~18 TW by 2035 in power sector)
- Grids target is needed for doubling of grids investment
- Sustainable fuels (~300 Mt/yr by 2035 for hard-to-abate sectors)

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Integrated action today delivers a resilient, competitive and sustainable tomorrow

This is the decade of

ELECTRIFICATION

Transport

Buildings

Industry

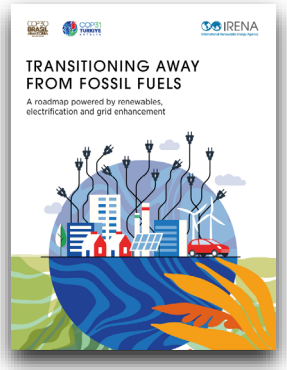
≥35%

Electrification of end-use sectors by 2035

GRIDS

≥ x2

An average of 1.2 trillion per year between 2025-2035



Implementation priorities beyond the energy sector

Coordinated evolution of energy carriers, infrastructure and industrial value chains

Market design, regulatory reform, fiscal policies, skills and education are critical enablers

Accelerating electrification across transport, buildings and industry as a practical and immediate implementation priority

Renewable power, grids, flexibility and sustainable fuels must scale together to support system transformation

International cooperation essential to accelerate delivery at scale

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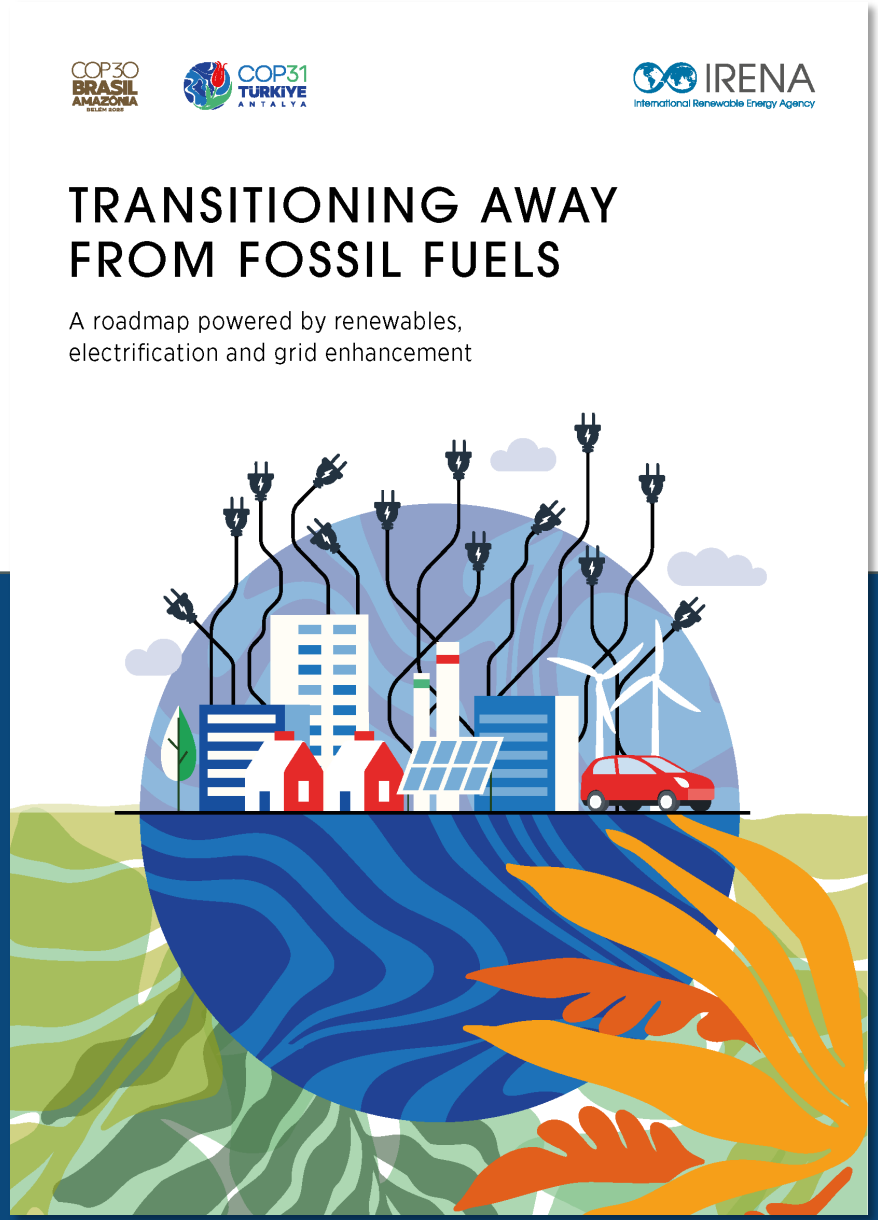
IRENA can lead and support through data, knowledge, tools and implementation partnerships

Priority Area	IRENA Contribution
Regional coordination & knowledge sharing (WETO, RETO, Outlooks)	Established platforms (APRA, APRESA, PARLAC, APRECA) enable peer-learning, policy dialogue and roadmap development.
Cross-sectoral governance	Electrification demands coherence across energy, transport, industry, buildings, finance and planning authorities.
Integrated planning support	Analytical workstreams align electrification, grid development and flexibility strategies with investment needs.
Country Roadmaps (REmap, NETO), engagement & partnerships	Direct engagement strengthens planning capacities and connects national strategies to the scale of transition required.



Thank you!

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