





**SARCHI
Chair
in Just Energy
Transition**

*Just Energy Transition in Practice:
Energy Poverty, Economic Drivers, Health Impacts,
and Policy Challenges*

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SARCHI Chair in JET/ UP Economics

South African Medical Research Council Webinar
4 November 2025 | 14h00–15h00





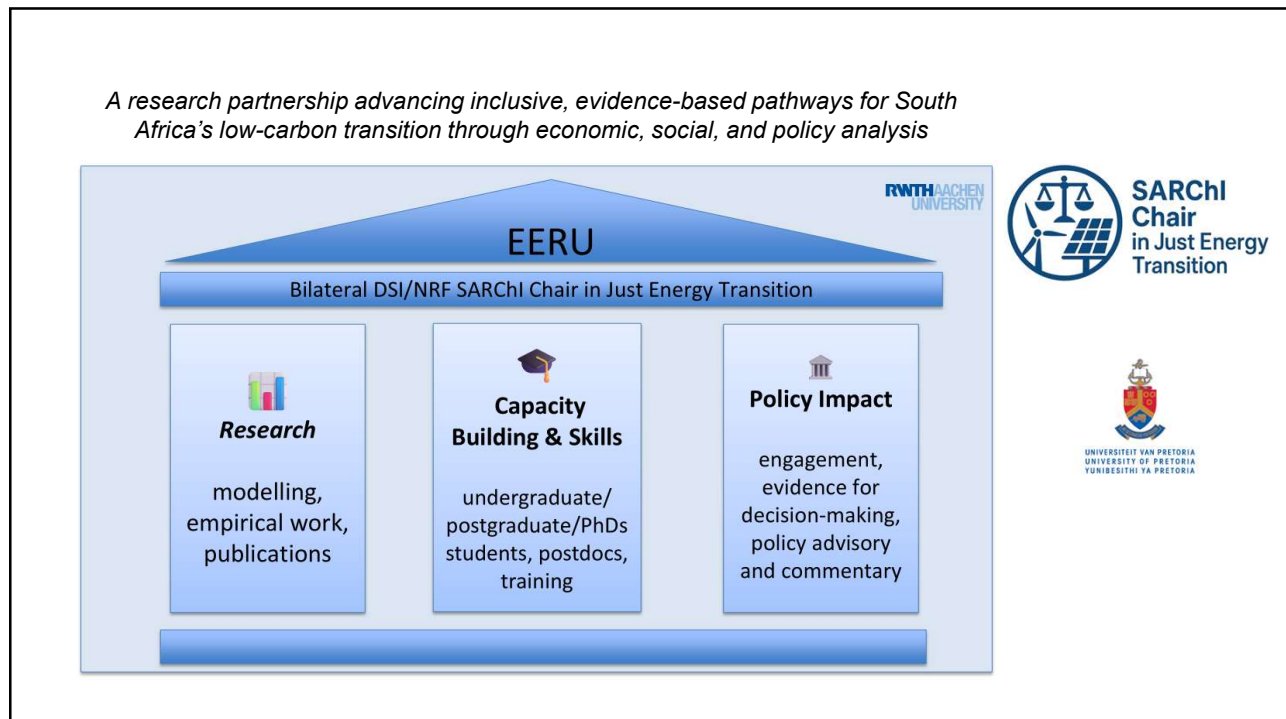
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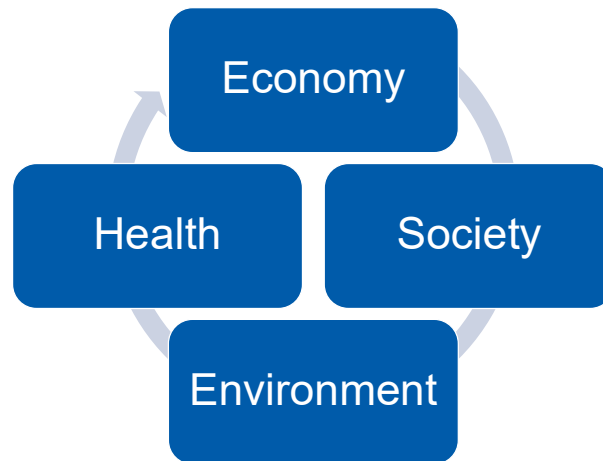
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Why the transition matters for health and wellbeing?



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What ***IS*** energy transition defined as?

The **definition of energy transition** is a gradual and steady shift of global energy use from fossil-based sources to a zero-carbon system by 2050, according to the [International Renewable Energy Agency \(IRENA\)](https://www.irena.org/). The energy transition is the main tool in a broader strategy adopted by governments to contain global warming to 1.5°C above pre-industrial levels by mid-century.

The **green energy transition** is necessary to reduce the energy-related CO₂ emissions from fossil fuels that scientific research confirms are a key factor in climate change, and thereby mitigate its disruptive impacts.

An energy transition that is grounded in renewables is important because it delivers benefits that go beyond solving the climate crisis. The transition, according to IRENA, can:

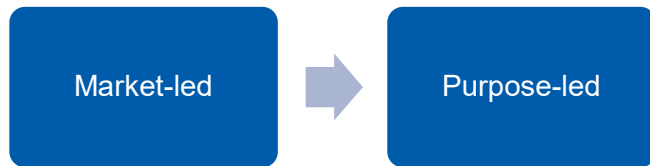
- Create new jobs and economic growth
- Underpin **sustainable development**
- Improve health by reducing pollution

<https://www.irena.org/Energy-Transition/Outlook>

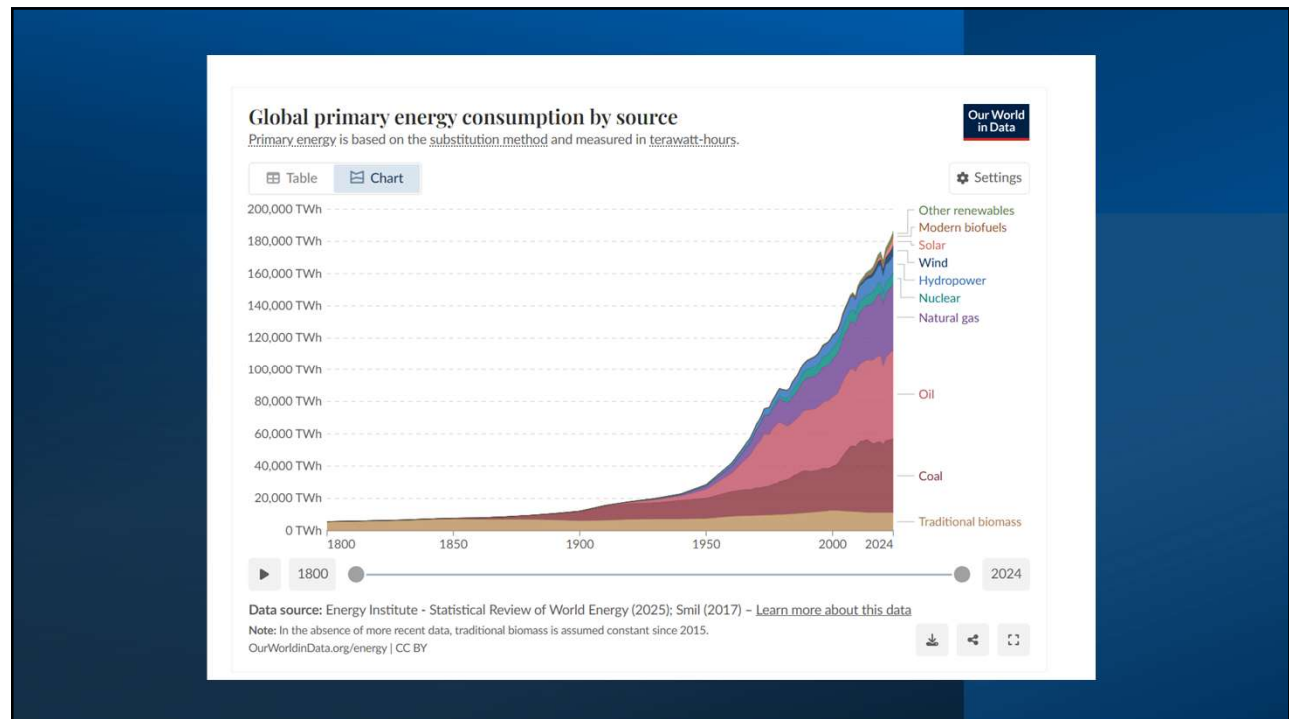
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What is an energy transition?

- The energy transition is not a novel concept in the history of humankind.
- Historical evolution:
 - From wood → coal → oil → renewables
- Today: purposeful, justice-driven transition
 - World → broader socioeconomic transformations
 - Energy Market liberalization
 - Climate change



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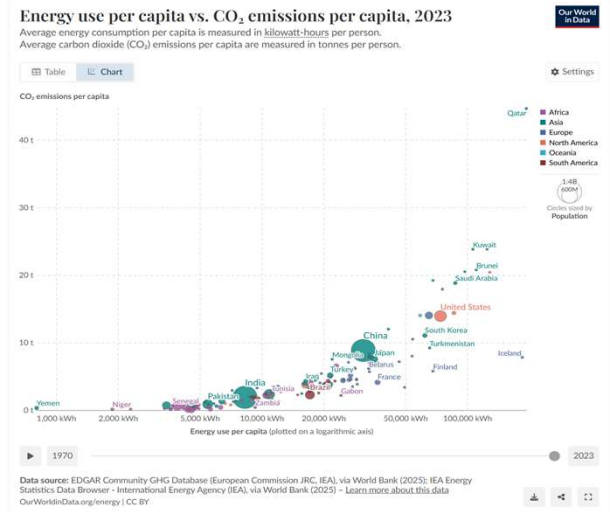
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Developed vs Developing Contexts

Developed: Efficiency, decarbonisation, innovation

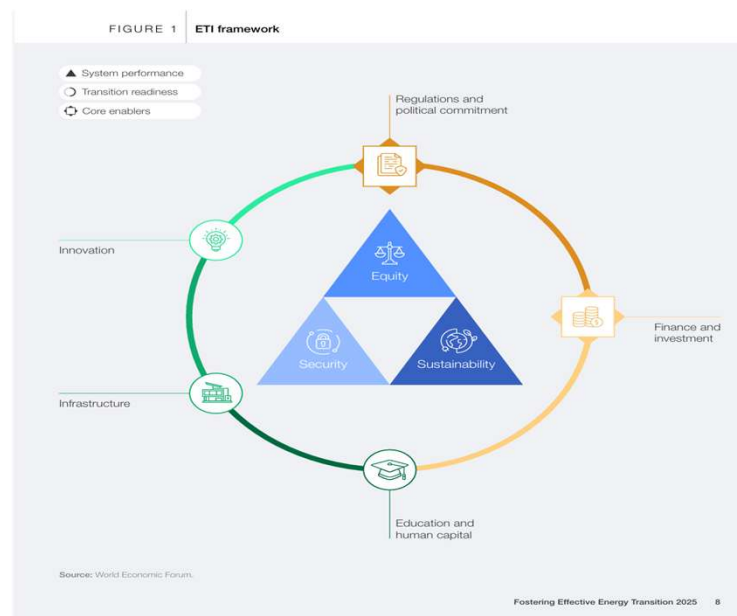
Developing: Access, affordability, resilience

Different starting points → different pathways



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How do we measure the efforts for ET?

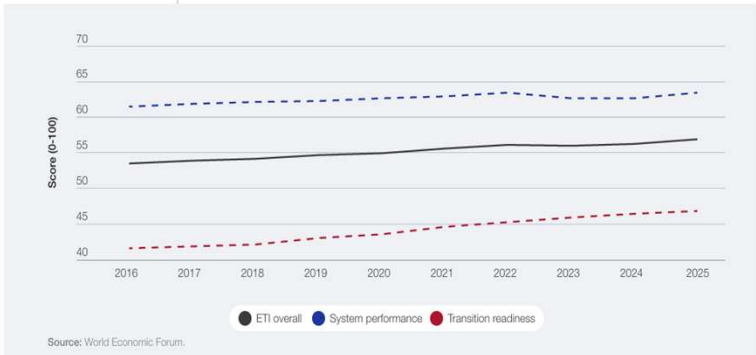


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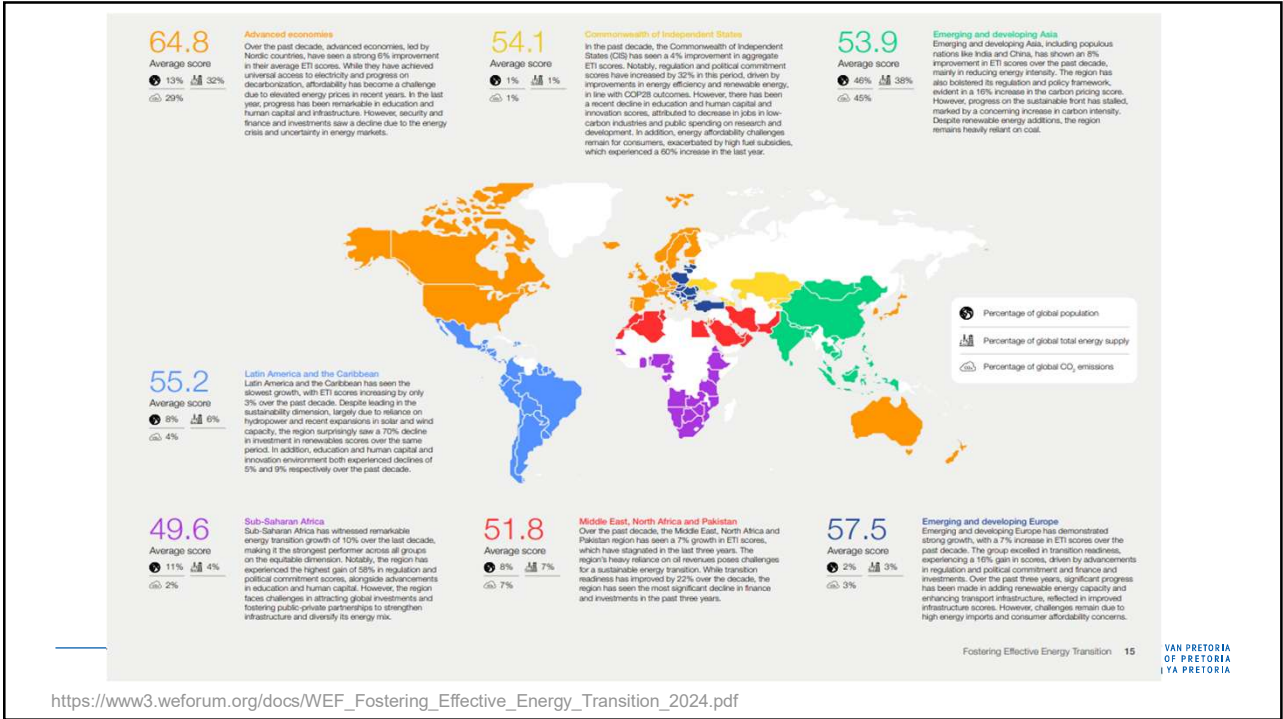
BOX 1 | Key terms of the ETI methodology

Score reference	System performance score	Transition readiness score	Global and regional averages
All scores in this report (from individual indicators to the overall index) are based on a 0 to 100 scale, with 100 being the highest possible value. Scores reflect the most recent data and updates available at the time of production.	This score reflects how a country's energy system was performing in terms of security, equity and sustainability, using 23 indicators to give an overall picture.	This score reflects countries' preparedness to support future energy needs, using 20 indicators assessing enabling factors such as regulation, infrastructure, capital and investment environment, human capital and innovation capacity.	References to global, regional or overall scores for the index or its components refer to the simple average of all country scores – not adjusted for size, gross domestic product (GDP) or population unless noted.

FIGURE 2 | Global average ETI and sub-index scores, 2016-2025

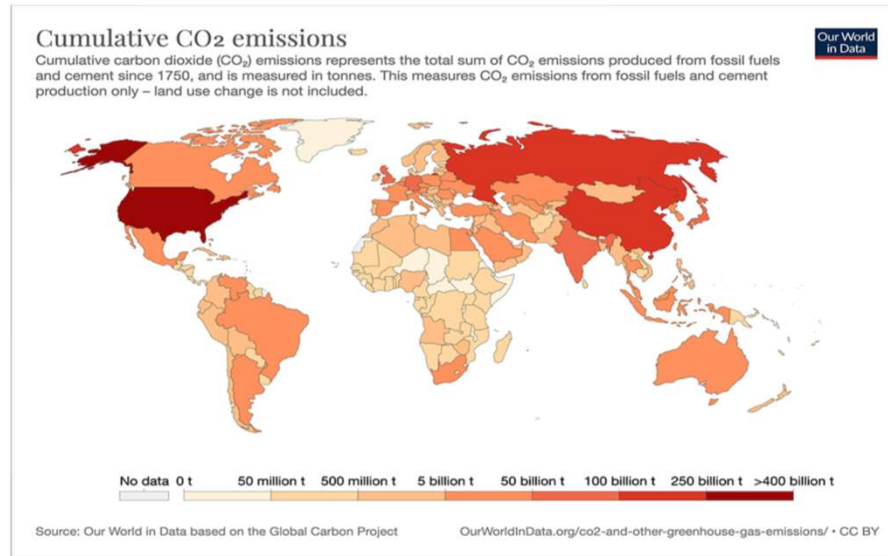


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Is the Global North – South divide real?



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Impacts of a energy transition



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Putting the JUST in the ET....

J – Justice (social, economic, and environmental)

U – Universality (access for all, leaving no one behind)

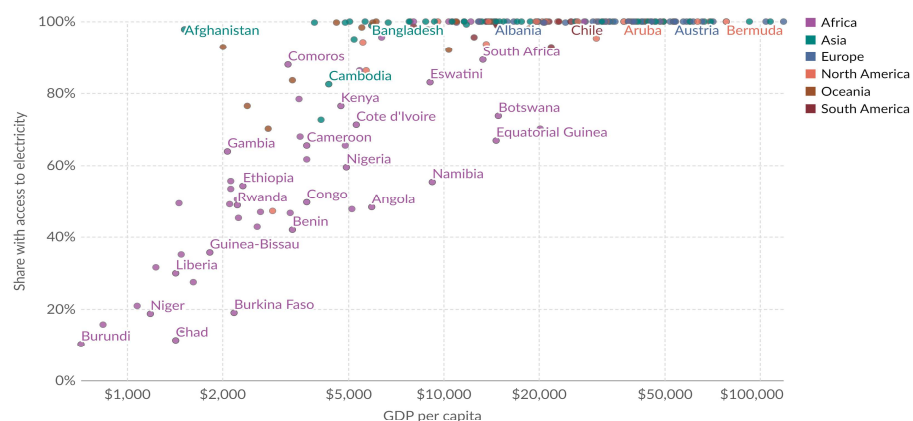
S – Sustainability (long-term, intergenerational perspective)

T – Transformation (systemic change, not only incremental shifts)

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Access to electricity vs. GDP per capita, 2021

Having access to electricity is defined in international statistics as having an electricity source that can provide very basic lighting, and charge a phone or power a radio for 4 hours per day. GDP per capita is adjusted for inflation and differences in the cost of living between countries.



Data source: Data compiled from multiple sources by World Bank
 Note: GDP per capita is expressed in international-\$¹ at 2017 prices.

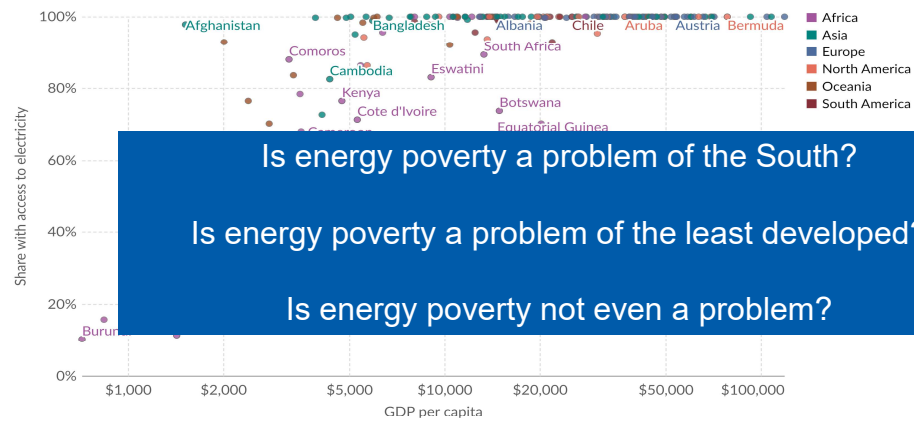
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Access to electricity vs. GDP per capita, 2021

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Our World
in Data



Data source: Data compiled from multiple sources by World Bank
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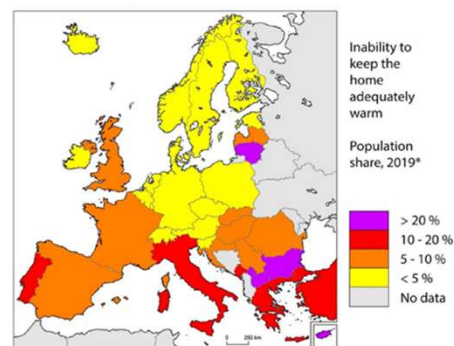
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Europeans unable to keep their homes adequately warm

6.9%	9.3%	10.6%
in 2021	in 2022	in 2023
(source: Eurostat, 2024)		

Figure 1: The energy poverty divide in Europe



* Kosovo*, UK, and Iceland data from 2018.

Source: S. Bouzarovski, H. Thomson, and M. Cornelis, "Confronting Energy Poverty in Europe: A Res 4, Jan. 2021, doi: 10.3390/en14040858

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Defining Energy Poverty....within JET

According to Reddy et al. (2000), it is “the absence of sufficient choice in accessing adequate, affordable, reliable, high-quality, safe, and environmentally benign energy services to support economic and human development.”



THE GLOBAL GOALS



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Differences in measuring energy poverty

Example: Netherlands

Measuring Energy poverty

- Affordability of energy
- Energetic quality of houses
- Households' ability to participate in the energy transition.
- Results
 - Large geographical discrepancies
 - Low number of households limited (but potentially can increase)
 - Half of the households cannot participate in the energy transition.

Example: Mozambique

Measuring Energy poverty

- Basic energy services associated with:
 - Modern cooking fuels
 - Indoor pollution
 - Electricity access
 - Household appliances ownership
 - Entertainment/education appliances ownership
 - Telecommunication means
- Results
 - Large geographical discrepancies (urban/rural)
 - Traditional biomass is the dominant fuel for cooking purposes

Mulder, P., Dalla Longa, F., & Straver, K. (2023). Energy poverty in the Netherlands at the national and local level: A multi-dimensional spatial analysis. *Energy Research & Social Science*, 96, 102892.

Ugembe, M. A., Brito, M. C., & Inglesi-Lotz, R. (2022). Measuring energy poverty in Mozambique: Is energy poverty a purely rural phenomenon?. *Energy Nexus*, 5, 100039

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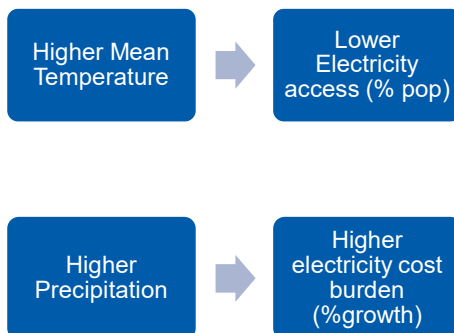
Why Study Energy Poverty and Climate Shocks in South Africa?

- South Africa faces both energy poverty and climate vulnerability.
- 86.5% electrification rate in 2022 — yet access ≠ affordability.
- Electricity prices rising; reliability declining.
- Climate change (↑ temperatures, ↓ rainfall predictability) intensifies both energy demand and supply risks.
- Objective: To analyse how temperature and rainfall affect energy poverty dimensions — access and cost burden.



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Findings: Climate Change Deepens Energy Poverty



- Energy poverty and climate change reinforce one another.
- Calls for climate-informed energy policy.
- Policies must link affordability, resilience, and emissions reduction.

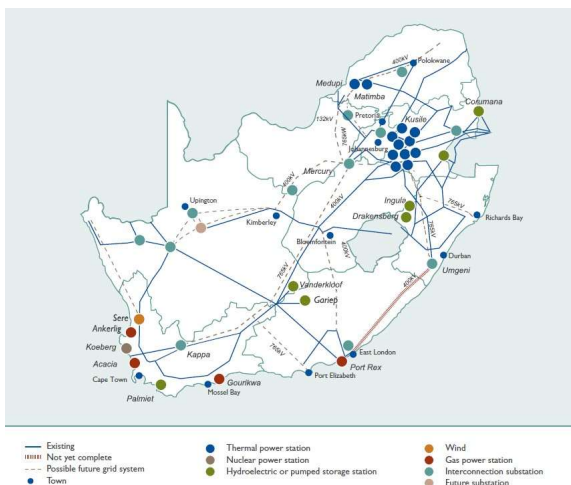
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The Cycle: Climate ↔ Energy ↔ Poverty ↔ Health



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The coal challenge: regional or national?

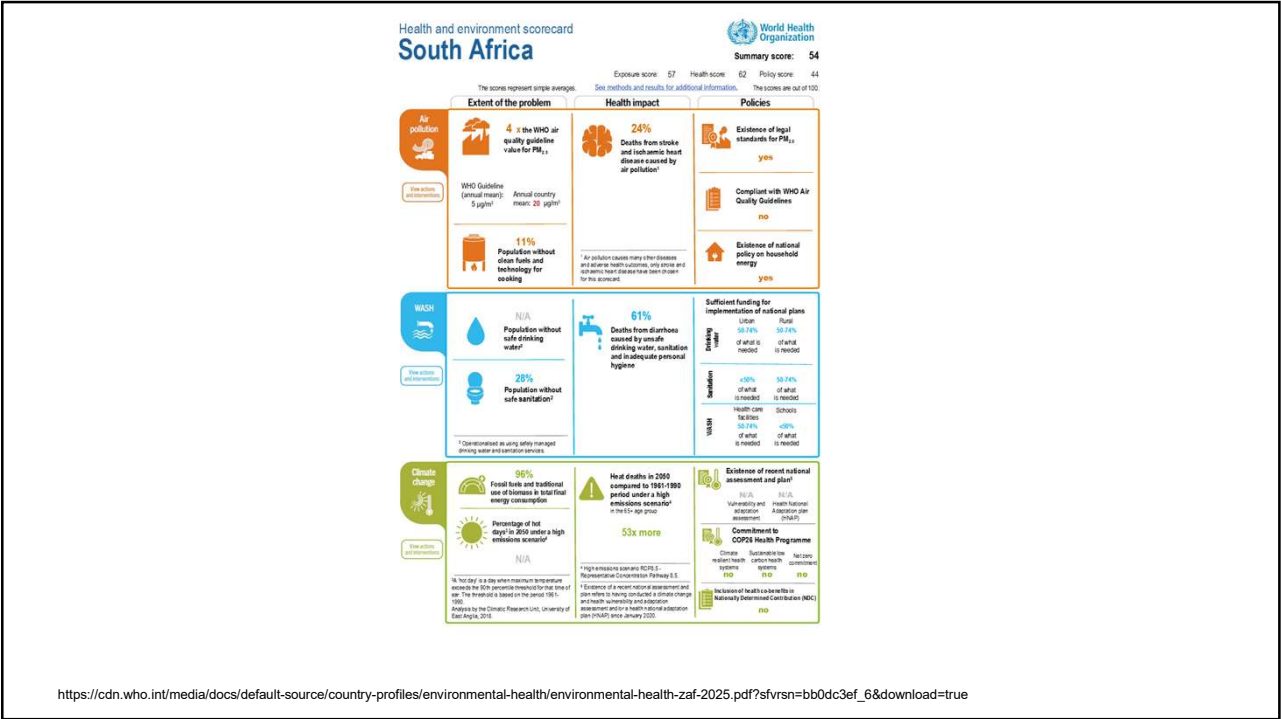


Total energy supply, South Africa, 2023

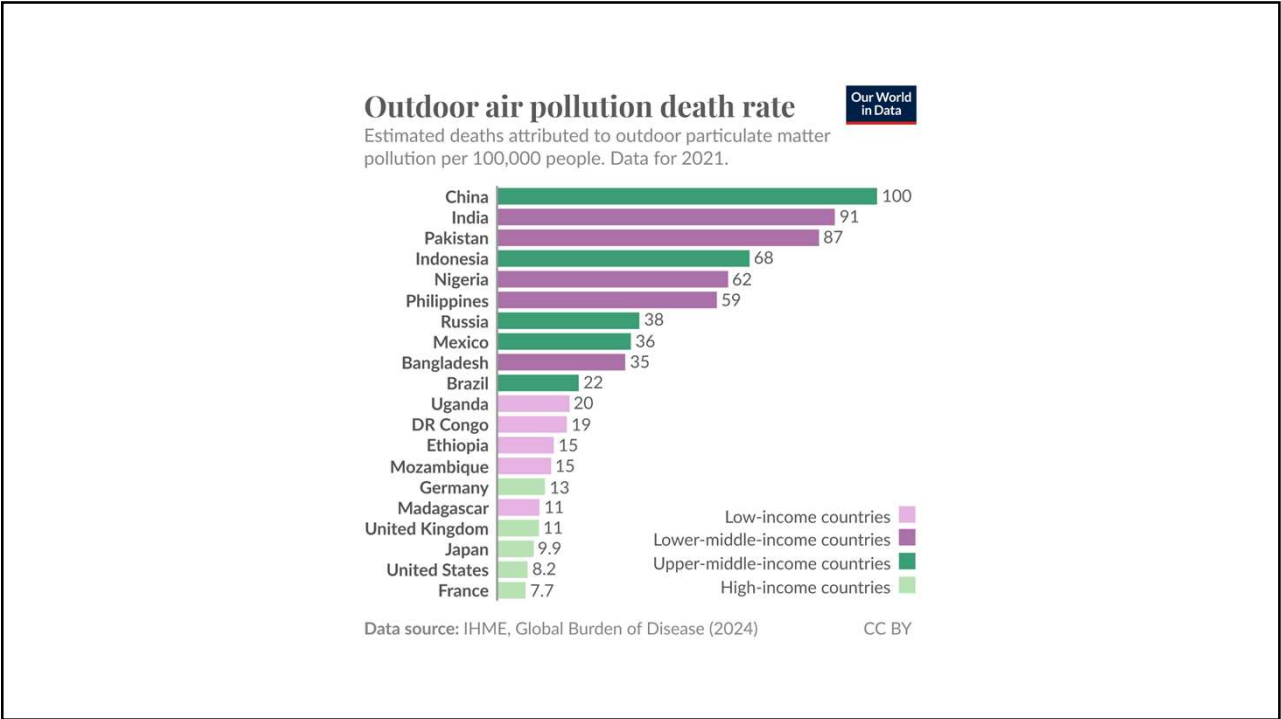


Source: International Energy Agency. Licence: CC BY 4.0

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*Energy justice
is health justice...
And climate justice...*

Thank you
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