



THE GLOBAL ENGINEERING CONFERENCE ON SUSTAINABLE  
DEVELOPMENT AND WORLD FEDERATION OF ENGINEERING  
ORGANISATIONS EXECUTIVE COMMITTEE MEETINGS.

15<sup>th</sup> - 18<sup>th</sup> October 2024, Kigali, Rwanda

# Theme: Engineering Innovations for a Sustainable Future

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# Renewable energy for health and education in Eastern and Southern Africa

Presenter: Joanis Holzigel

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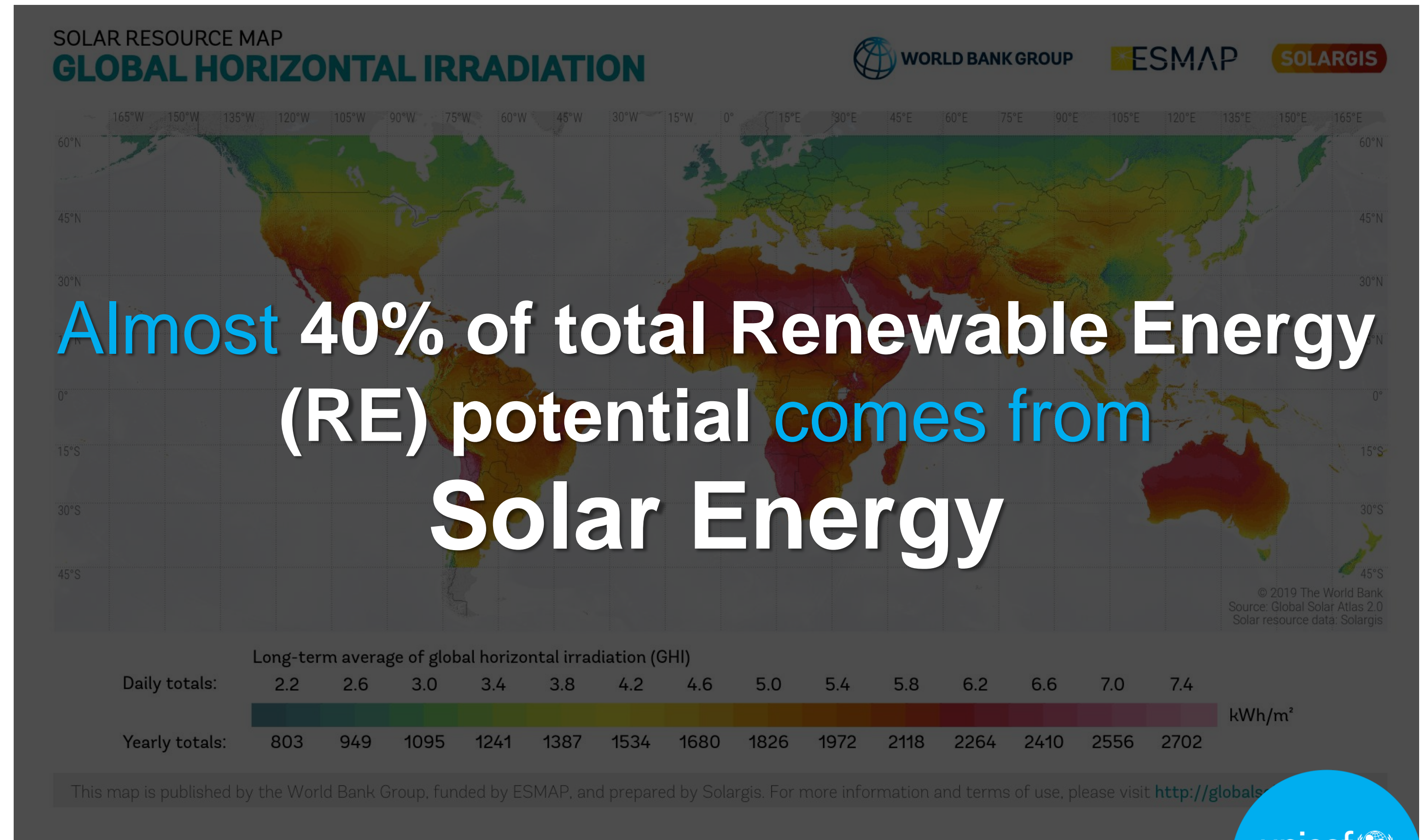


# BACKGROUND

## AFRICA

- **A fifth of the world's population** (around 1.3 billion people) accounts for **6% of global energy demand**
- **3% of electricity demand**
- **Less than 37%** access to energy in rural areas
- Hydropower constitutes **less than 1%** of total RE potential
  - *65% of installed capacity*

**Less than 2% of the world's installed renewables-based electricity generation capacity**





# ELECTRICITY ACCESS CHALLENGES IN AFRICA



Photo of a young girl and her caregiver, REUTERS/Thomas Mukoya/File Photo

- Around 690 million people are without access to electricity in Africa – only 36% of grid reliability
- Energy affordability
- Disparities between urban and rural areas
- High dependence on diesel generator
- Political and regulatory instability
- Climate Change...



# WHY A REPORT ON RENEWABLE ENERGY IN AFRICA

- Assessing the **current state of electrification** for social services
- **Where to move first:**  
Identificaion of **priorities and high potential** areas for electrification
- Assessment of **sustainable electrification solutions**, such as energy service models



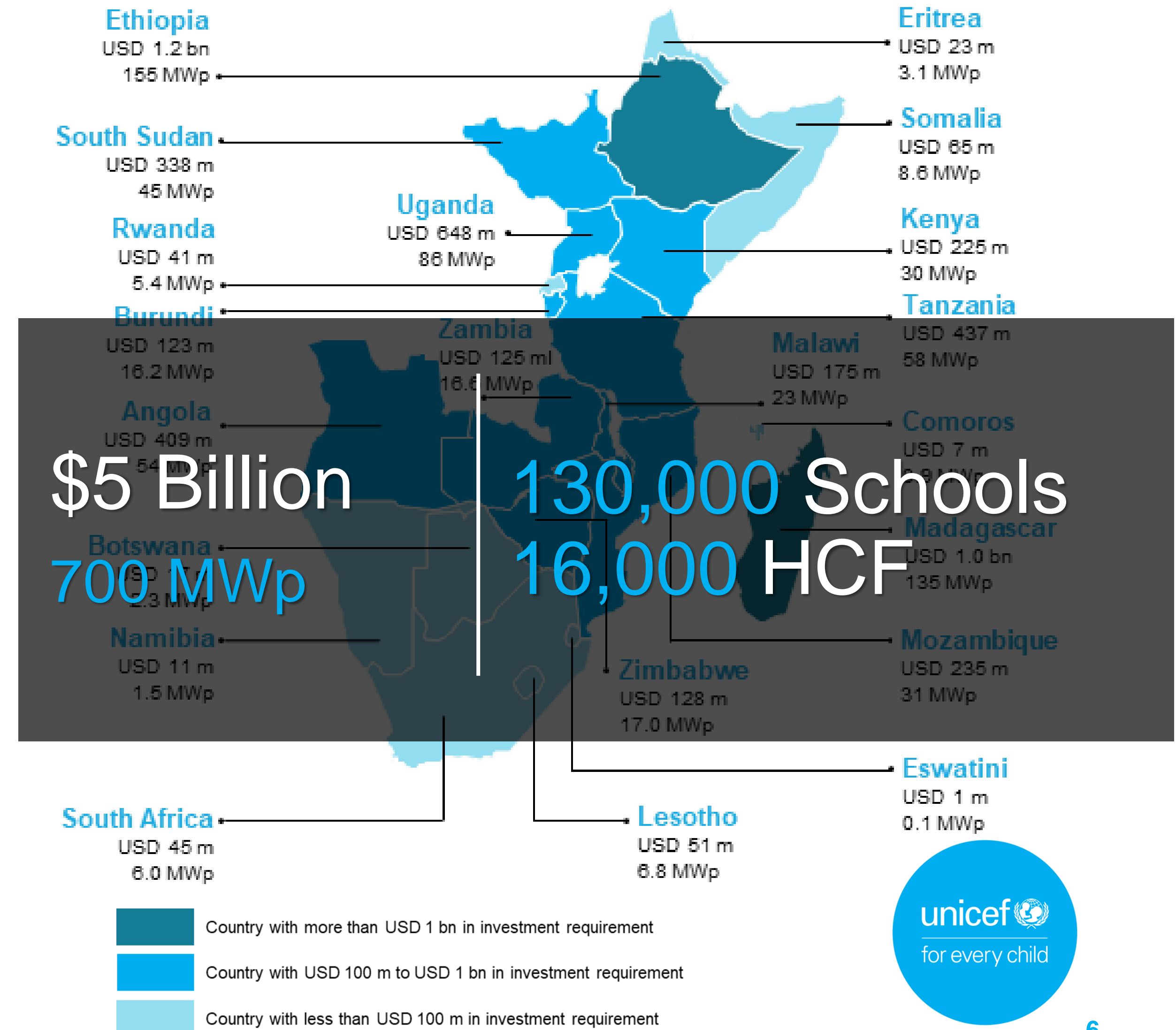
Photo of Group of Children smiling, in Tziyavaya in Zimbabwe © UNICEF/UN08022023



# KEY HIGHLIGHTS FROM THE REPORT

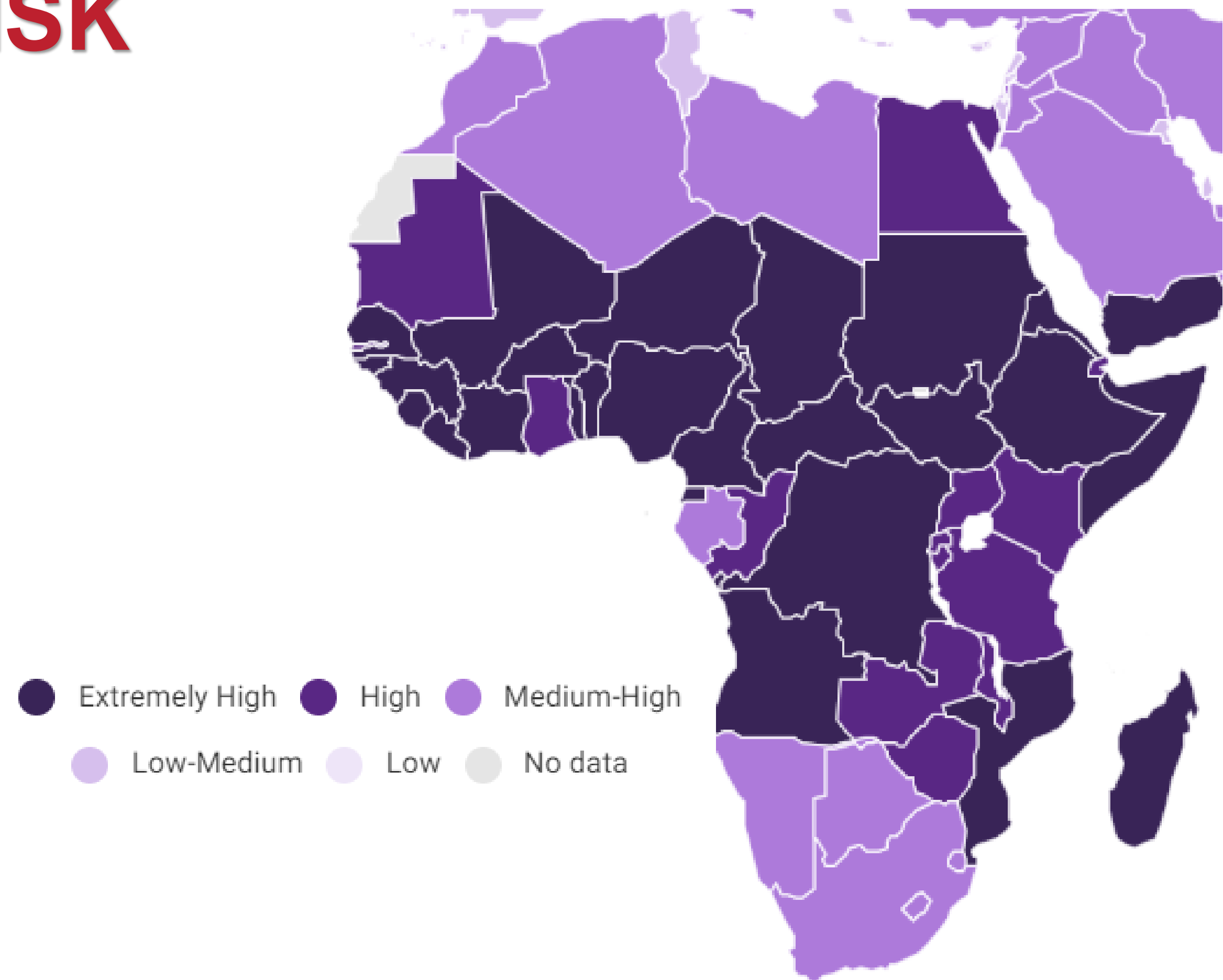
- Market gap
- CCRI
- Adequacy of regulatory framework
- Existence of ongoing electrification initiatives
- Accessibility of health and education institutions
- Cost of diesel in the country

## Evaluation Parameters



# UNICEF CHILDREN'S CLIMATE AND ENVIRONMENT RISK INDEX (CCRI)

- **Approximately 1 billion children** (nearly half of the world's children) live in **extremely high-risk countries**
- **All countries in Eastern and Southern Africa** have a medium-high to extremely high risk of being negatively affected by climate and environment events
- The **CCRI** is composed of many indicators across climate and environmental hazards, shocks and stresses, as well as child vulnerability



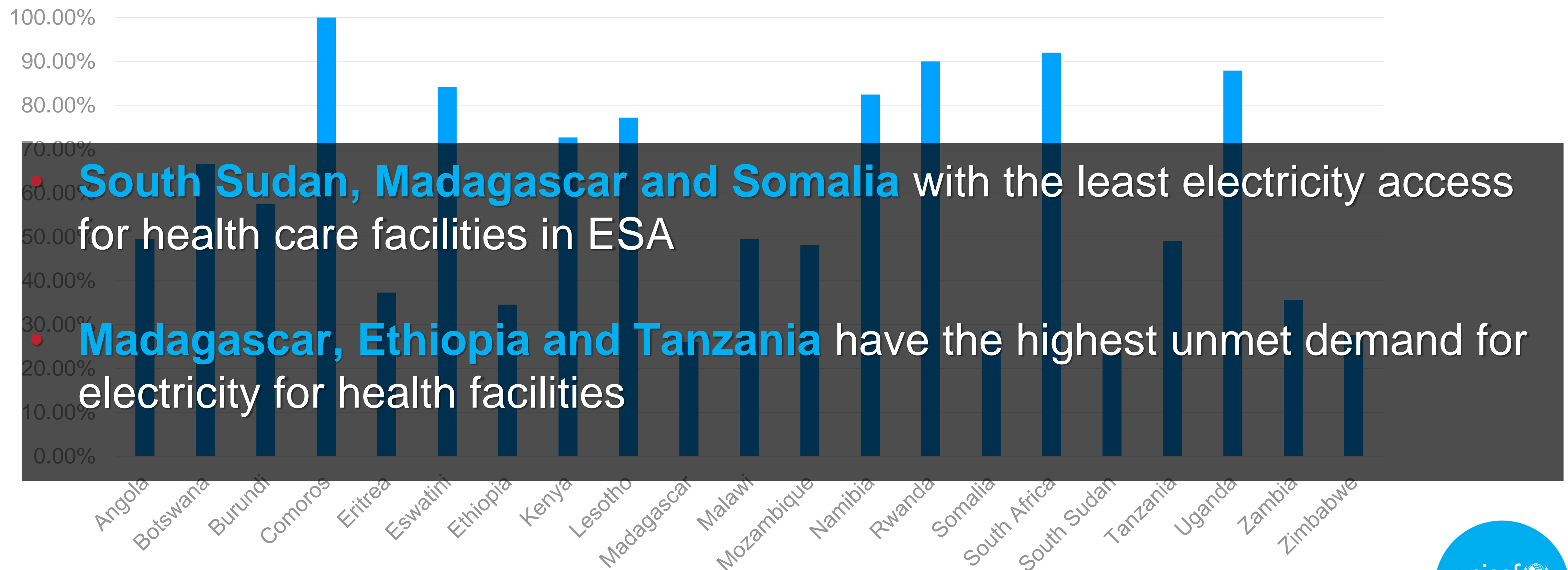
This map does not reflect a position by UNICEF on the legal status of any country or territory or the delimitation of any frontiers.

Source: UNICEF (2021), The Climate Crisis is a Child Rights Crisis: Introducing the Children's Climate Risk Index.



# ELECTRIFICATION OF THE HEALTH SECTOR IN ESA

Electricity access for HCFs (% of all institutions)



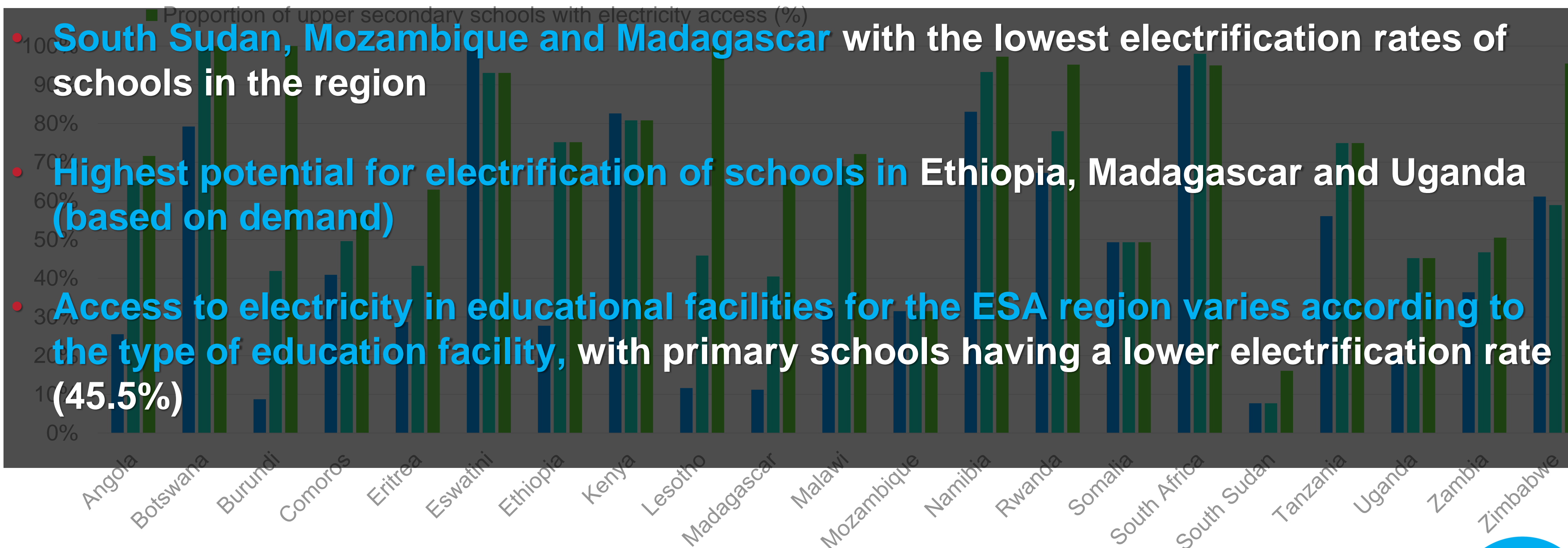
Data from various sources, including Joule, "Achieving universal electrification of rural healthcare facilities in Sub-Saharan Africa with decentralized renewable energy technologies", 2021; WHO; Government of Rwanda



# ELECTRIFICATION OF EDUCATION SECTOR IN ESA

Proportion of schools with electricity access

■ Proportion of primary schools with electricity access (%)    ■ Proportion of lower secondary schools with electricity access (%)  
 ■ Proportion of upper secondary schools with electricity access (%)



- **South Sudan, Mozambique and Madagascar** with the lowest electrification rates of schools in the region
- **Highest potential for electrification of schools in Ethiopia, Madagascar and Uganda (based on demand)**
- **Access to electricity in educational facilities for the ESA region varies according to the type of education facility, with primary schools having a lower electrification rate (45.5%)**

Data from UNESCO "UIS.Stat SDG Indicators", Indicator 4a, Retrieved July 2024 and representing data from different years by countries





# KEY TAKEAWAYS AND RECOMMENDATIONS

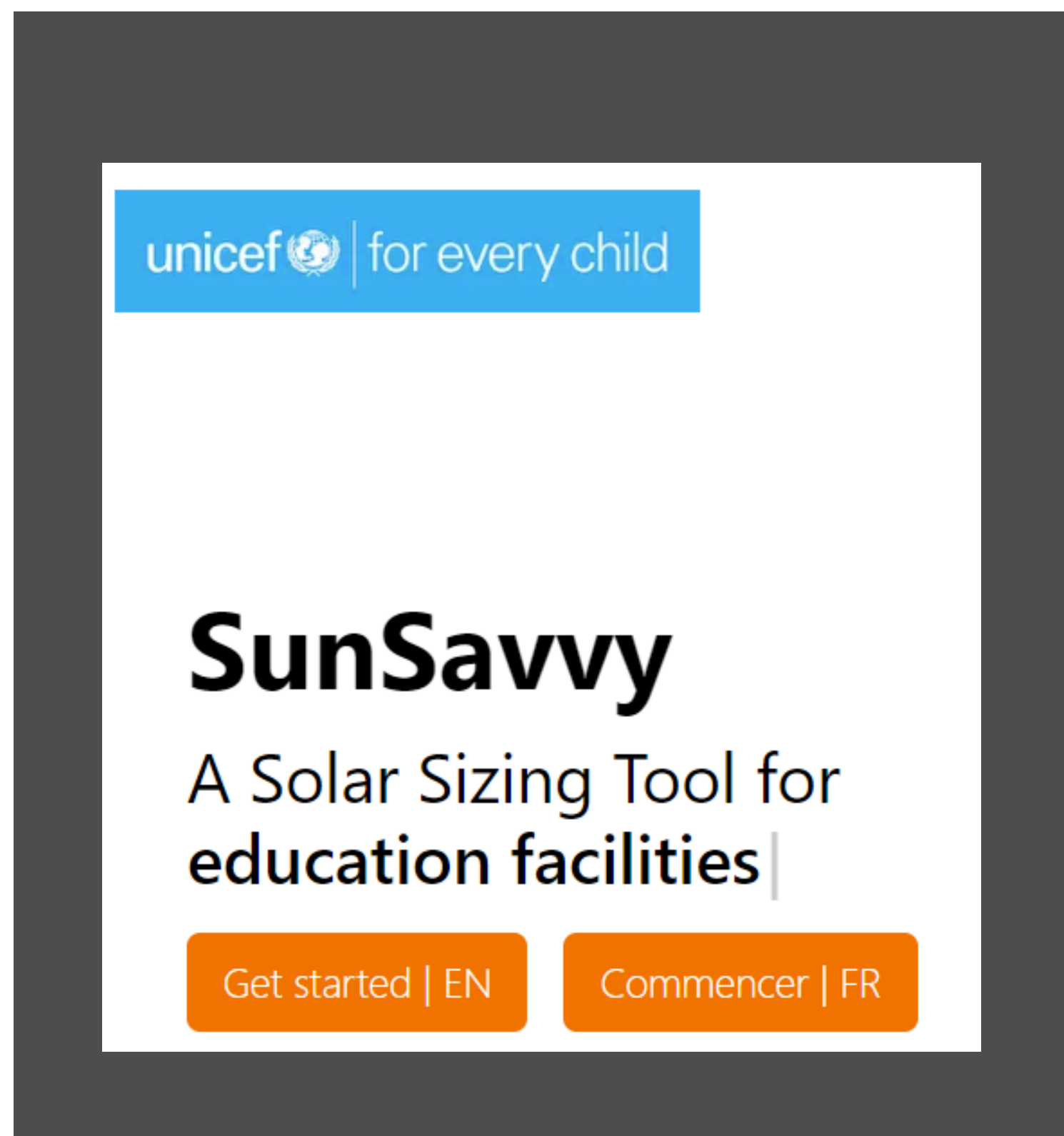
- Focus on countries with significant RE potential and large energy deficits in critical sectors
- Work with governments to strengthen regulatory frameworks
- Champion the development of multi-use energy systems that cater to both electrical needs and water systems in health and educational facilities.
- Building local capacity is essential for the long-term sustainability of RE installations.
- Incorporating climate resilience into RE projects is vital.
- Explore innovative financing models, such as blended finance, pay-as-you-go, energy as a service
- Establish robust monitoring and evaluation frameworks to ensure that projects meet their objectives and provide valuable data



A Child sitting on a bench in Turkana, Kenya



# UNICEF SUNSAVVY TOOL FOR SOLAR SIZING



The screenshot shows the SunSavvy website landing page. At the top left is the UNICEF logo with the tagline "for every child". The main heading is "SunSavvy" in a large, bold font, followed by the subtitle "A Solar Sizing Tool for education facilities". Below this are two orange buttons: "Get started | EN" and "Commencer | FR".



Photo of a 16-year old girl at a solar course in Cote d'Ivoire © UNICEF/UNI414903/Dejongh

- **SunSavvy** is a solar sizing tool developed by UNICEF for health, education, and water facilities.
- It's designed for use by non-technical staff for **UNICEF and Partners**.
- Tool is accessible on [sunsavvy360.org](https://sunsavvy360.org)





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# THANK YOU / MURAKOZE

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