



# PRESIDENTIAL INITIATIVE

ON CLIMATE CHANGE, RENEWABLE ENERGY & FOOD SECURITY



SIERRA LEONE

# ENERGY TRANSITION AND GREEN GROWTH PLAN

EXECUTIVE SUMMARY

SUPPORTED BY



# FOREWORD

It is with immense pride that I present Sierra Leone's Energy Transition and Green Growth Plan, a blueprint for a sustainable and prosperous future. This plan represents a significant stride towards achieving universal energy access while laying the foundation for clean energy, which is essential for transformative advancement in our economy and society.

By the year 2040, we aspire for every household to have access to reliable and affordable electricity, alongside increased levels of clean cooking access. Energy is fundamental to advancing human capital, particularly in the realms of education and health. With sustainable energy powering our schools and hospitals, we can foster the growth and development of a skilled and healthy population capable of driving our nation forward. Our ambitions extend beyond merely fulfilling basic needs; we are also focused on how leapfrogging to clean energy technologies can increase agricultural productivity and create sustainable industries.

I am confident that this Energy Transition and Green Growth Plan will advance our shared vision of prosperity alongside environmental stewardship. This plan outlines how Sierra Leone can embark on a low-carbon development trajectory to become a middle-income nation by

2050. Energy will be a pivotal enabler in this endeavour. Through rapid adoption of renewable energy and energy efficiency across key sectors—including power, mining, transport, industry, and agriculture—we will reduce our reliance on fossil fuels and make significant strides in combating climate change.

The economic benefits are profound. Transitioning to clean energy will help avoid fossil fuel imports and stimulate job creation. In the coming decades, this transition is set to drive GDP growth, positioning Sierra Leone as a leader in sustainable energy solutions and industrial development. Our agro-food and mining industries will be powered by clean energy, increasing productivity, and ensuring sustainable growth. Furthermore, this transition presents vast social opportunities, fostering greater participation and development of women and youth

Looking ahead, Sierra Leone is well-positioned to become energy independent, leveraging our abundant renewable energy resources to strengthen regional energy security and drive economic growth.

Of course, achieving these outcomes will require substantial investment and collaboration. The true value of this plan lies in its clear

articulation of the concrete actions needed for success, including securing the necessary funding.

We invite our development partners, the private sector, and the international community to join us in realizing this ambitious vision. Together, we can forge a sustainable and prosperous future for all Sierra Leoneans.

**H.E. JULIUS MAADA BIO**

President of Sierra Leone





# ACKNOWLEDGEMENT

The Sierra Leone Just Energy Transition and Green Growth Plan is the result of President Julius Maada Bio's bold leadership and commitment to sustainable economic development and climate action.

His Excellency has prioritized the country's energy transition as a key enabler of economic, social, and environmental progress, notably through the creation of the Presidential Initiative on Climate Change, Renewable Energy and Food Security (PI-CREF).

The PI-CREF and the Ministry of Energy (MoE) are responsible for identifying and implementing meaningful projects that will improve energy access and energy efficiency, underpinning green economic growth. The Energy Transition and Green Growth Plan was conceived as a critical initiative for mobilizing both national and international stakeholders to drive forward Sierra Leone's energy transition.

To ensure the plan's inclusivity and success, we applied a whole-of-government approach to its development. It has been an honour for us to chair the Inter-Ministerial Committee on Energy Transition, and we would like to thank the committee's members for their dedication toward co-creating this roadmap to a sustainable future. This includes the Ministry of Energy; Ministry of Agriculture; Ministry of Planning and Economic Development; Ministry of Trade and Industry; National Minerals Agency; Ministry of Mines and Natural Resources; Ministry of Fisheries; Ministry of Environment and Climate Change; Sierra Leone Road Safety Authority; Ministry of Transport and Aviation; Electricity Distribution and Supply Authority (EDSA); Electrical Generation and Transmission Company (EGTC); Ministry of Finance; Ministry of Gender and Children's Affairs; and the Ministry of Basic and Senior Secondary Education.

The plan also benefitted from countless inputs from partners in governmental agencies, sub-national governments, academia, development institutions and

civil society. We thank them for their contributions and recognize the active and invaluable support of Sustainable Energy for All (SEforALL) under the leadership of Damilola Ogunbiyi. I would like to thank the SEforALL team comprising of Alvin Jose, Ngozi Beckley-Lines, Ioannis Pappis, Iqlima Fuqoha, Alexandros Korkovelos, Alice Uwamaliya, Anant Wadhwa, Yogitha Miriyala, Naomi Tan, Rosemary Idem, Ava Strasser, Teresa Sesay, Charles Mankhwazi and Tamojit Chatterjee for the development of this report.

I wish to also acknowledge my team at PI-CREF for their indispensable support and Anthony Kamara, Director of Partnerships, Communications and Outreach for his critical role in coordinating the work of the Inter-Ministerial Committee in collaboration with SEforALL Country Manager, Ngozi Beckley-Lines.

Overall, this plan serves as a shining example of how meaningful change can be achieved through deep collaboration, and on that note, we look forward to continuing to work with the above-mentioned partners, and others, to implement the measures detailed in this plan.



A handwritten signature in white ink on a dark blue background.

**HON. KANDEH KOLLEH YUMKELLA**

Chairman, Presidential Initiative on Climate Change, Renewable Energy and Food Security and Energy Governance Coordination Group (EGCG)



A handwritten signature in white ink on a dark blue background.

**DR. ELDRÉD TAYLOR**

Deputy Minister 1, Ministry of Energy

## A GREEN ECONOMY INCLUDES POWERING EDUCATION, HEALTHCARE, SUSTAINABLE MINING, AND OTHERS; WHICH CAN BE POWERED BY RENEWABLE AND ENERGY EFFICIENT EQUIPMENT



### ⚡ ENERGY

Sustainable energy sources can enhance economic development through consolidation, improvement and expansion of existing energy supply infrastructure, reaching the nation's ambition of **100% electrification and clean cooking by 2040**

### 💧 WATER & SANITATION

By powering water pumps, efficient irrigation and clean water supply could be enabled, supporting the target of **90% safe water by 2030**

### 🌱 AGRO-FOOD INDUSTRIES

Processing, storage, and transportation can be supported by secure energy, which reduces post-harvest losses and lowers operational costs to achieve the strategic objectives of the **Feed Salone strategy**

### 📖 EDUCATION

Reliable electricity will improve learning conditions and enable access to modern educational resources, **expanding free basic and senior secondary education, and to strengthen tertiary and higher education**

### 🚲 MOBILITY & ICT

Mobility can be enhanced through electric transportation, **lowering air pollution, and improving access to remote areas**. Reliable electricity enables internet access and telecommunications expansion, to reach 50% internet penetration rate by 2030.

### 🌍 NATIONALLY DETERMINED CONTRIBUTIONS

Sustainable energy can allow Sierra Leone to achieve its long-term NDC goals for mitigating emission levels to **5% by 2025, 10% by 2030, and 25% by 2050**.

### ⚔️ SUSTAINABLE EXTRACTIVE INDUSTRIES

Reduces the environmental impact of mining operations, lowers greenhouse gas emissions, and cuts fuel costs. This **improves operational efficiency and resource management** in the long term

### 🏥 HEALTHCARE

Sustainable energy can provide security of supply to the operation of equipment, and the storage of vaccines and medications, particularly in rural areas to support the **access to critical health services**.



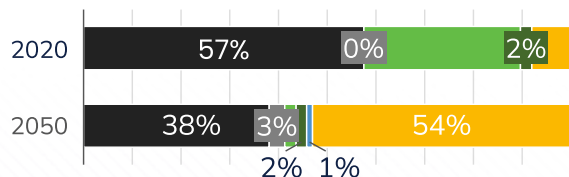
# AN ENERGY TRANSITION BASED ON LOW CARBON DEVELOPMENT SUPPORTS MULTIPLE PUBLIC POLICY OBJECTIVES, SUCH AS THE FEED SALONE STRATEGY, NATIONAL DEVELOPMENT PLAN AND NATIONAL DETERMINED CONTRIBUTIONS



# A GREEN GROWTH FUTURE WILL SEE A DECLINE IN THE SHARES OF BIOMASS AND OIL, AND INCREASES IN HYDROPOWER AND ELECTRICITY; EXCEPT THE INDUSTRY SECTOR WHERE GAS RISES

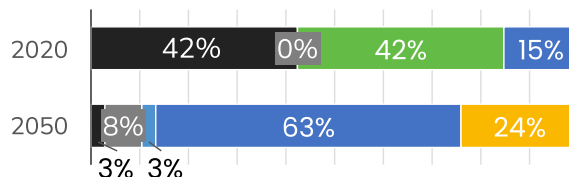
## FUEL MIX IN PERCENTAGE

### OVERALL



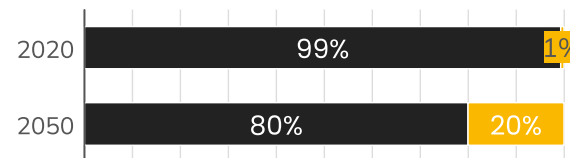
Oil Gas Biomass Biofuel

### POWER



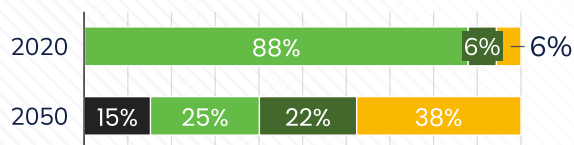
Oil Gas Biomass Hydrogen  
Hydro power Solar PV

### AGRICULTURE



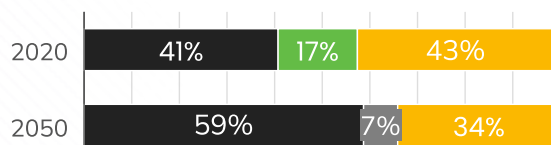
Oil Electricity

### COOKING



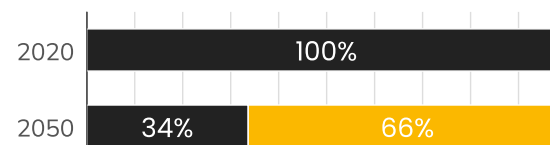
Oil Biomass Biofuel Electricity

### INDUSTRY



Oil Gas Biomass Electricity

### TRANSPORT

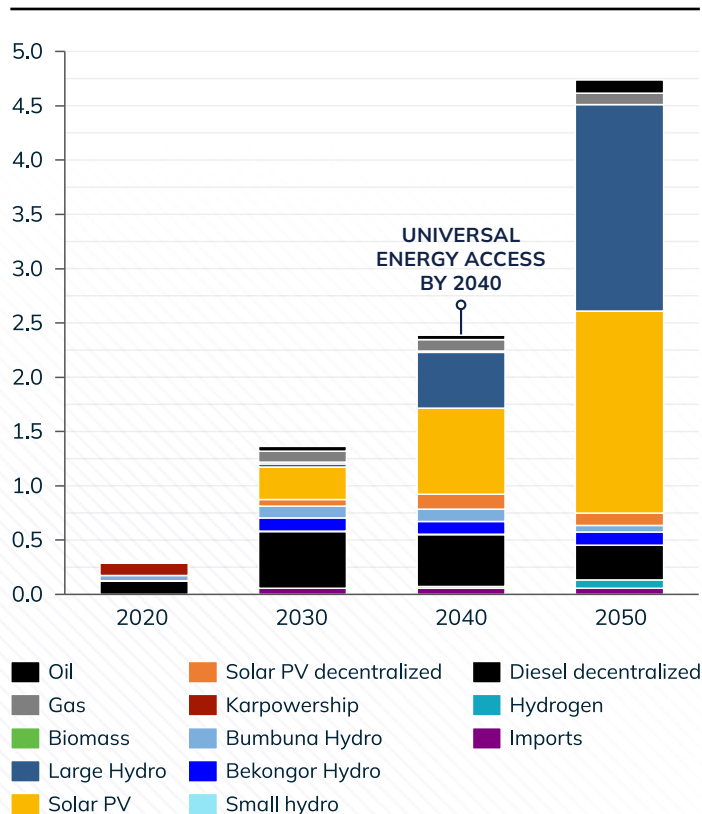


Oil Electricity

Source: SEforALL analysis

# A GREEN GROWTH POWER INFRASTRUCTURE WILL REQUIRE 440 MW OF MINI GRIDS AND GRID STRENGTHENING FOR ACCESS, AND A GREEN GRID POWER OF ~4.5 GW AND 2.5 GW FOR T&D BY 2050

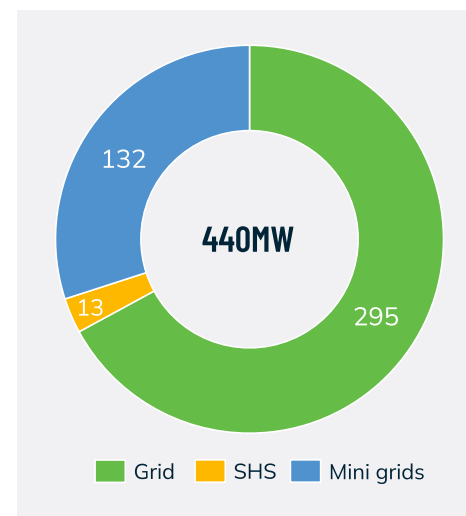
## INSTALLED CAPACITY GW



## ELECTRIFICATION BY 2040

Electricity access in residential, social infrastructure, and agriculture under green growth will require investments:

- 132 MW in hybrid solar-diesel mini-grids for settlements where rapid grid extension would take time
- 13 MW in solar home systems where grid extension is not feasible
- Densification of existing grid by 295 MW between 2024-2040 for electricity access of settlements near to grid.



Note: decentralized solar PV and diesel includes stand-alone and minigrids  
 Sources: NODE ; OnSSET-SEforALL , MCC , Interviews with EDSA and Ministry of Energy

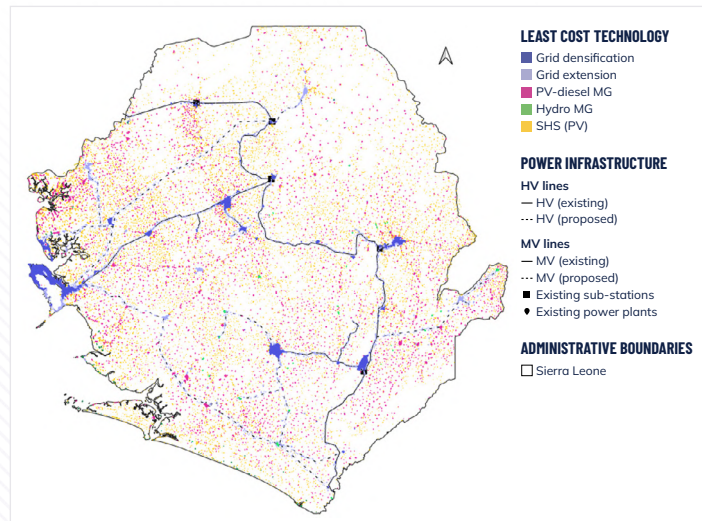


# ALMOST 11 MILLION PEOPLE TO BE PROVIDED WITH ELECTRICITY FOR PRODUCTIVE USE FOR A GREEN GROWTH FUTURE

## ELECTRIFICATION BY 2040

Full electrification will require additional transmission and distribution investments from 2020-2040:

- 197 MW for the residential and social-healthcare sectors
- 0.078 MW for agriculture and post-harvesting



## ELECTRIFICATION POTENTIAL

### POPULATION

- 21,076 settlements
- 1,132,680 households
- 10,821,000 people

### HEALTHCARE

- 1,052 health posts
- 331 health centres
- 53 hospitals

### EDUCATION

- 27,193 pre-primary and primary schools
- 1,298 junior and senior secondary schools

### AGRICULTURE






- 7.9 GWh for irrigation
- 316.5 GWh for post-harvest processing
- 0.2 GWh for fish processing



Sources: NODE ; OnSSET-SEforALL , MCC, Interviews with EDSA and Ministry of Energy



# SIERRA LEONE’S POWER SECTOR, AGRICULTURE AND INDUSTRIES WILL REQUIRE A TOTAL CAPITAL INVESTMENT OF USD ~6.5 BILLION UP TO 2040 TO FULLY ELECTRIFY AND BE ON TRACK FOR GREEN GROWTH

| INVESTMENT, SELECTED PROJECTS   |   | CUMULATIVE TOTAL INVESTMENT, USD Mn |              |
|---|---|-------------------------------------|--------------|
| Sector  | Project archetypes  | 2020-2040                           | 2040-2050    |
|  <b>Power</b>                                | Grids and mini-grids, renewables, battery storage, T&D (ex. residential)                    | 4239                                | 6647         |
|  <b>Electricity access (distribution)</b>    | Electricity access distribution costs for current and new connections                       | 725                                 | 925          |
|  <b>Industry &amp; Mining (distribution)</b> | Clean high-temperature heating processes  | 1375                                | 760          |
|  <b>Clean Cooking</b>                        | Clean cookstoves  | 88                                  | 61           |
|  <b>Agriculture</b>                          | Generation including through mini-grid, diesel gen-sets and SHS, and distribution from grid | 21                                  | 95           |
| <b>Total</b>  |   | <b>6,448</b>                        | <b>8,488</b> |

## FINANCING A GREEN GROWTH PATHWAY

Sierra Leone will require approx. USD 6.5 billion up to 2040 and a cumulative total of USD 15 billion to achieve universal energy access and sustainably power various sectors to meet social and development targets in agriculture, industry and mining.




## FINANCIAL PARTNERSHIPS

Core finance providers and de-risking instruments from international institutions:

- Households and individuals
- Public institutions
- Green finance funds
- Private foundations

# HYDROPOWER AND TRANSMISSION AND DISTRIBUTION, AT 6 BILLION USD AND 5.5 BILLION USD, RESPECTIVELY, WILL BE THE MOST SIGNIFICANT TECHNOLOGY INVESTMENTS FROM 2020 TO 2050

**LARGEST CUMULATIVE TECHNOLOGY INVESTMENTS (2020-2050) IN KEY SECTORS** M USD

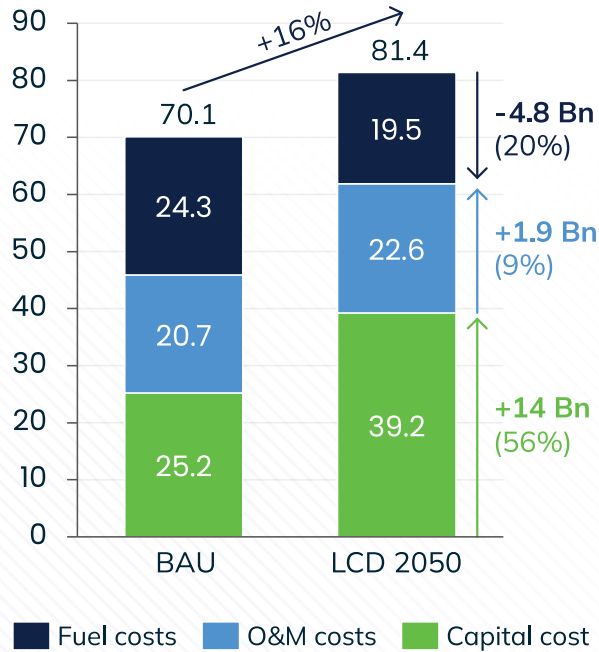
|  |                                     |       |
|--|-------------------------------------|-------|
|  POWER              | Large hydro                         | 6,093 |
|  | Solar PV                            | 1,481 |
|  | Transmission and distribution       | 5,498 |
|  ELECTRICITY ACCESS | Solar home system                   | 81    |
|  | Mini-grid hybrid and diesel systems | 466   |
|  | Transmission and distribution       | 1,245 |
|  CLEAN COOKING    | Electric cookstoves                 | 149   |



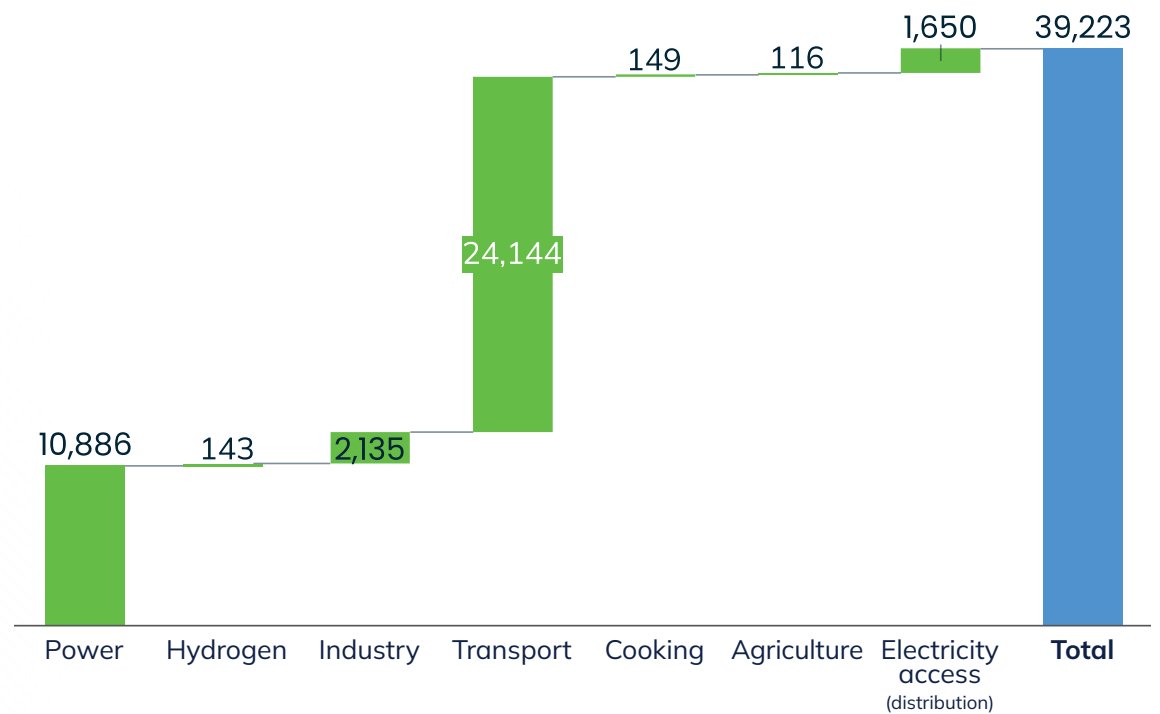


# A GREEN GROWTH FOCUSED ENERGY TRANSITION WILL REQUIRE 56% MORE INVESTMENTS, WITH MOST OF THE COSTS STEMMING FROM THE TRANSPORT AND POWER SECTORS

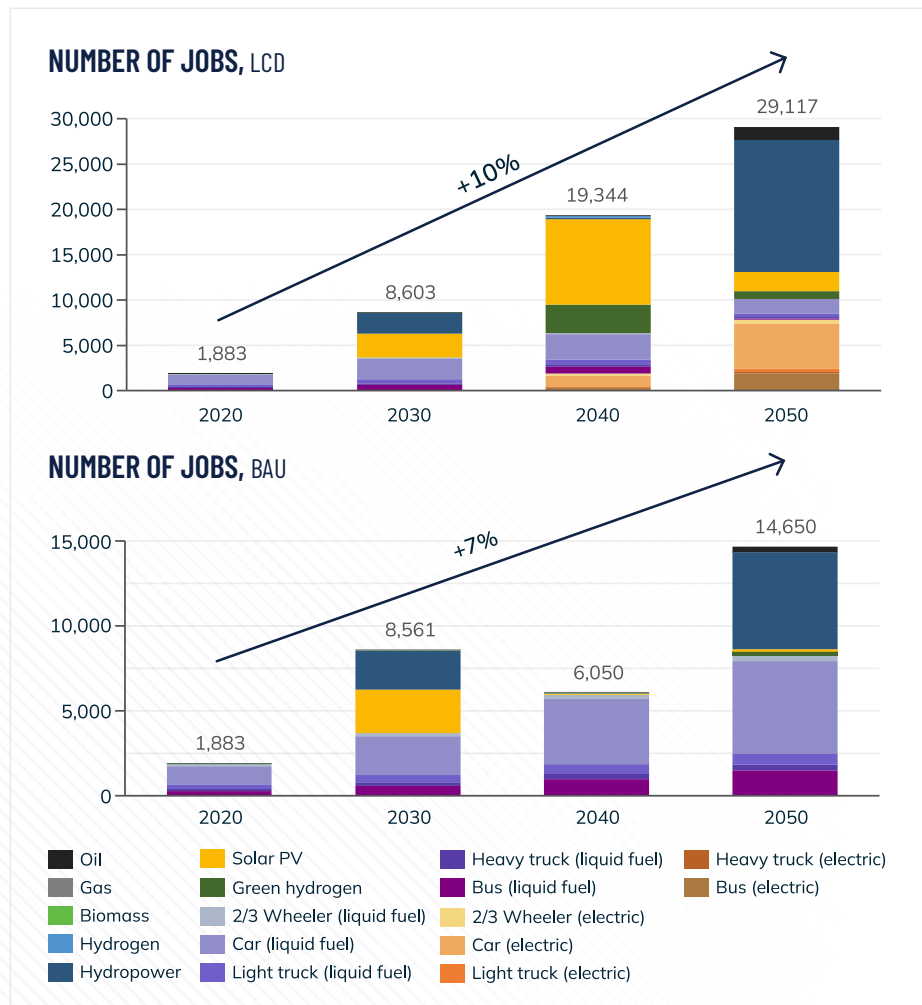
**CUMULATIVE SPENDING** MILLION USD, 2020-2050



**CUMULATIVE CAPITAL COSTS BY SECTOR** MILLION USD, 2020-2050



# SIERRA LEONE'S ENERGY TRANSITION & GREEN GROWTH PLAN CAN DOUBLE THE NUMBER OF ENERGY-SECTOR RELATED JOBS TO 29,117 BY 2050 COMPARED TO BAU



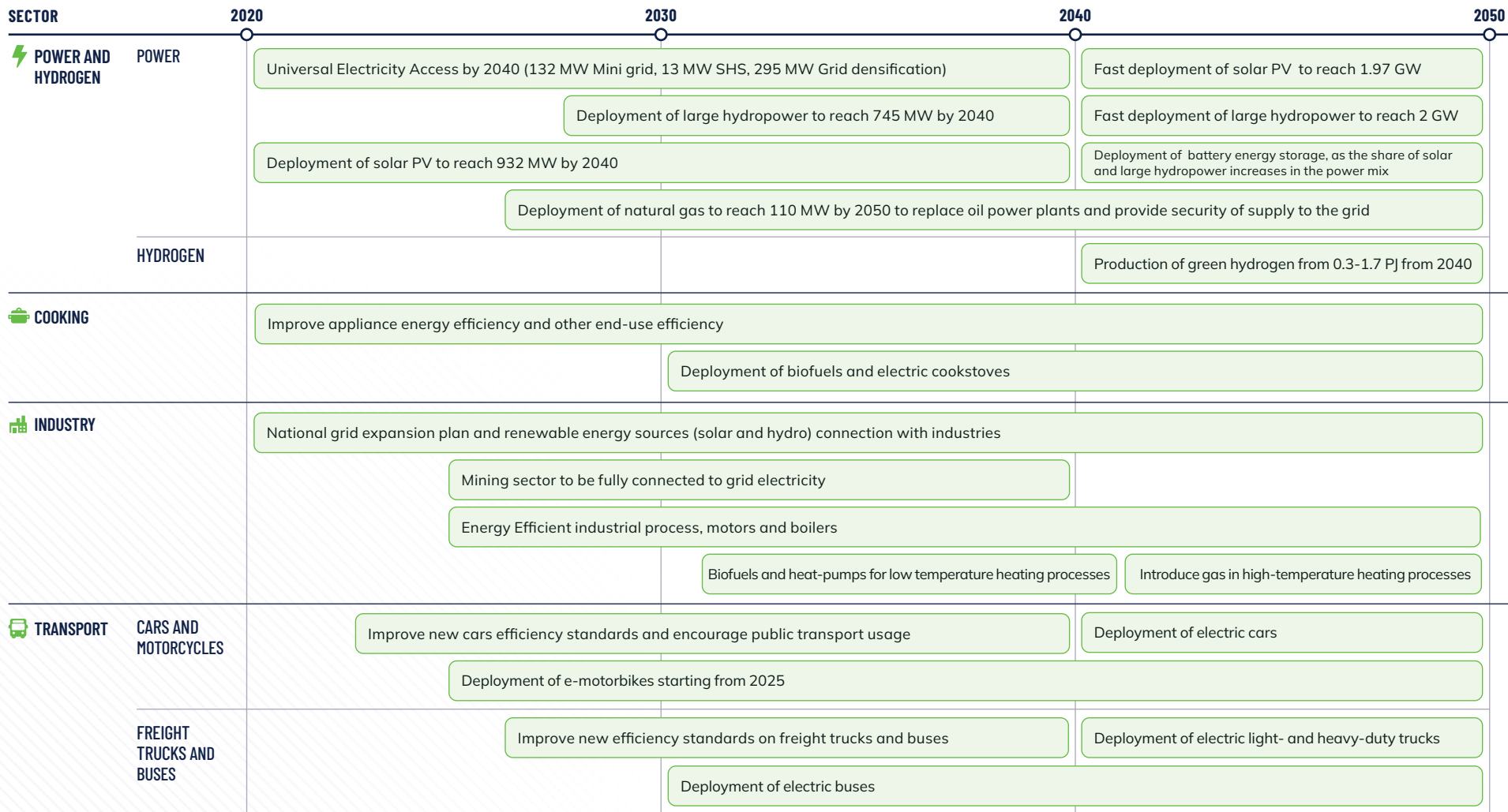
## OPPORTUNITIES FOR WOMEN AND YOUTH

- The shift towards solar, hydroelectric power and electric vehicles (EVs) needs a **skilled and educated workforce**.
- Specific opportunities for the **participation of women & youth** in the transition value chain.
- **Expansion of reliable grid access** for universal electricity access by 2040 will create employment opportunities for women & youth.
- Green growth plan identifies 7,156 potential sites for mini-grids, which can **leverage opportunities for local women & youth** for installation, maintenance and end-of-life management.





# A SET OF TECHNOLOGY TRANSITIONS SUPPORTED BY POLICY FRAMEWORKS WILL BE NEEDED TO ACHIEVE A GREEN GROWTH FUTURE



# A BEST-PRACTICE GOVERNANCE STRUCTURE AND THE IMPLEMENTATION OF AN ACTION PLAN THROUGH A CENTRALLY COORDINATED FRAMEWORK IS KEY FOR GREEN GROWTH IN SIERRA LEONE



01

## ESTABLISH A CENTRALIZED CROSS-MINISTERIAL COORDINATION BODY (CCB)

- Empower the CCB with cross-ministerial authority to align policies and actions with the Ministry of Energy and other ministries
- Staff the CCB with experts in sustainable development, renewable energy and climate resilience

02

## ESTABLISH A DEDICATED ENERGY PLANNING UNIT

- Create a dedicated energy planning unit within the Ministry of Energy with cross-sectoral coordination functions to sustainably build and retain modelling capacity in the long term
- Adequately staff the planning unit and support it with dedicated government funding

03

## ENSURE PERIODIC UPDATE OF GREEN GROWTH PLAN (GGP) AND INTEGRATION IN LONG-TERM DEVELOPMENT TARGETS

- Set clear, measurable targets for renewable energy adoption, emissions reductions and sustainable resource management; align the strategy with Sierra Leone's Nationally Determined Contributions (NDCs) under the Paris Agreement
- Integrate green growth objectives into all sector-specific development plans
- Conduct a periodic review and update of GGP

04

## FOSTER CAPACITY BUILDING AND PUBLIC AWARENESS

- Launch a nationwide green skills development programme targeting key sectors (e.g., agriculture, energy, construction)
- Integrate climate change and sustainable development into national education curricula
- Conduct regular public awareness campaigns to promote sustainable consumption and production patterns





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