

CHALLENGES & OPPORTUNITIES WITH RENEWABLE ENERGY PROJECTS IN AFRICA

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WTO TRADE AND ENVIRONMENTAL SUSTAINABILITY
STRUCTURED DISCUSSIONS (TESSD)

WORKING GROUP ON ENVIRONMENTAL GOODS AND
SERVICES

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AGENDA

1. EDF: The Company
2. EDF International Division – Offices
3. EDF International Division – Missions
4. Assets in Construction & Operation
5. EDF International Division – Strategy
6. Challenges
7. Opportunities
8. Q & A

EDF: THE COMPANY

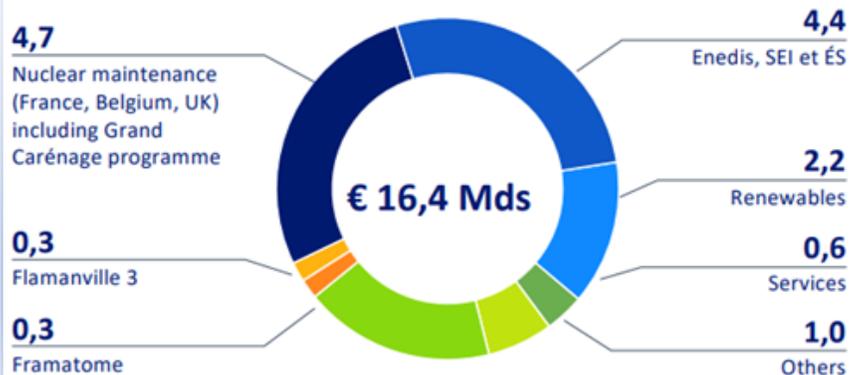
- **Électricité de France (EDF)** is a world leader in low-carbon energy and an integrated company active in all facets of the energy sector: generation, transmission, distribution, energy trading, energy sales and energy services.
- The Group provides energy and services to approximately **40.3 million customers**, with 30.3 million clients in France alone.
- In 2022, EDF generated consolidated sales of **€143.5 billion in 2022** and had an **installed capacity of 116.9GW** of which **91%** is from low carbon sources.
- **36GW** of installed capacity was from renewable energy sources.
- The Group's Net Investments worldwide rose from **€15.7 billion in 2021** to **€16.4 billion in 2022**.

Installed capacity⁽¹⁾

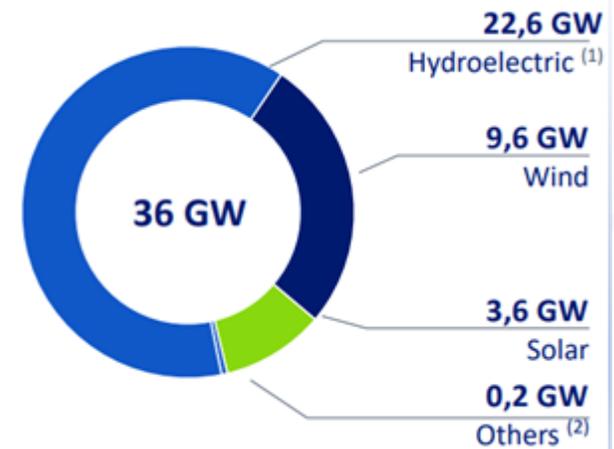


(1) Consolidated data.

Group net investment worldwide in 2022
(excl. Planned asset disposals)

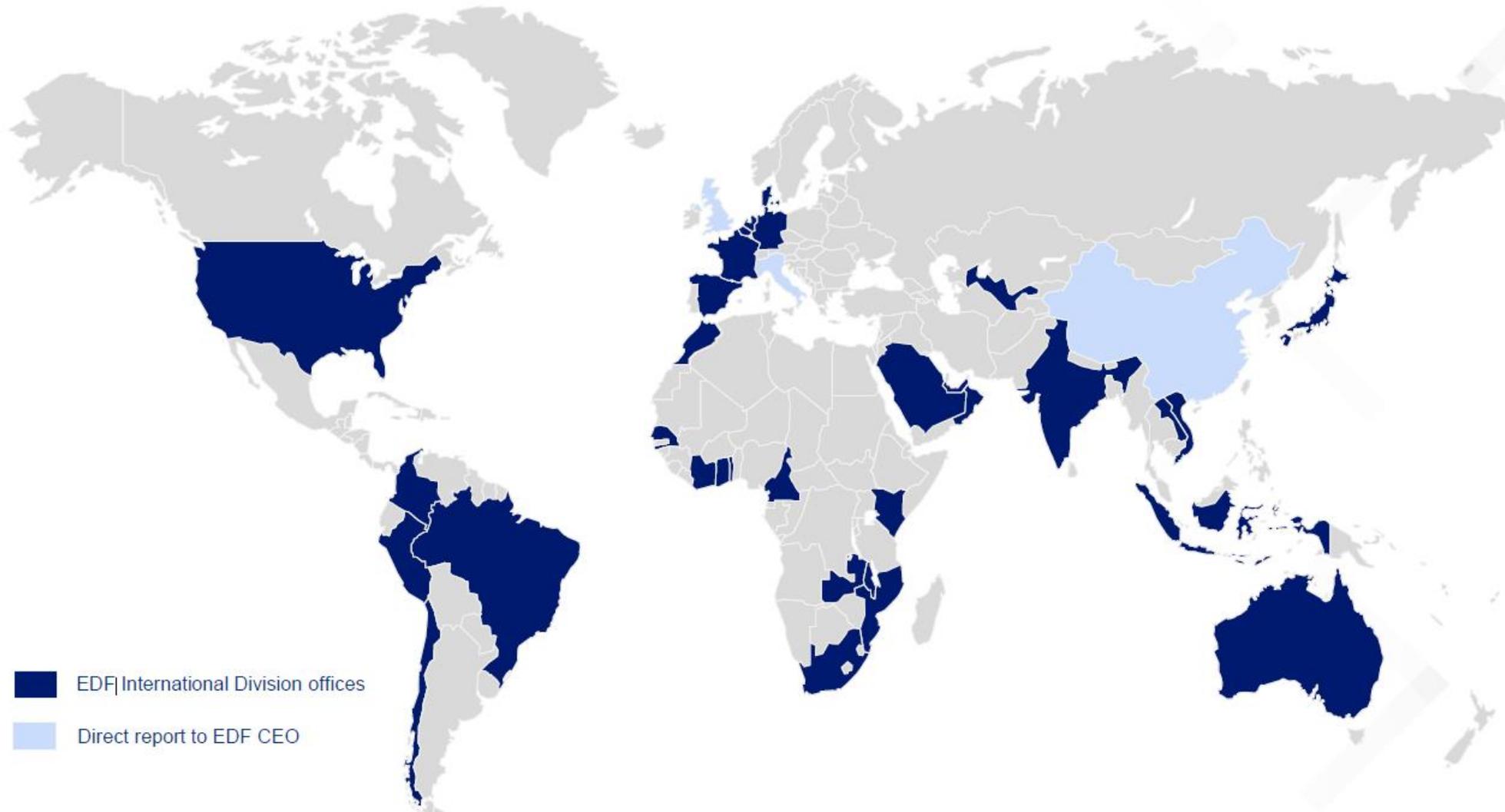


Our renewables generation mix by sector
(in GW net, at end of 2022)



EDF INTERNATIONAL DIVISION - OFFICES

Presence in **30** countries



- EDF International Division offices
- Direct report to EDF CEO

EDF INTERNATIONAL DIVISION - MISSIONS

Project origination



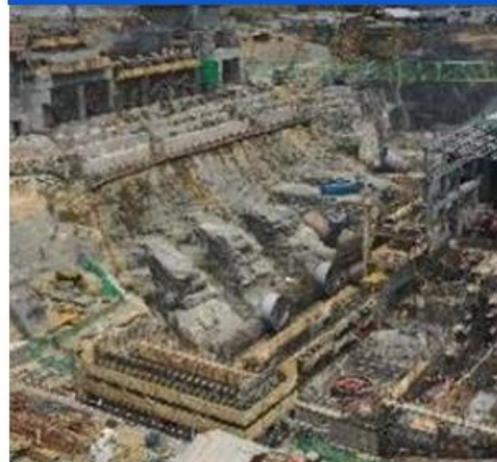
Originating development and acquisition opportunities for energy infrastructure

Project development and set-up



Management of permitting, studies (E&S, technical, ...), negotiation of the regulatory framework, contracts, partnerships, financing

Project implementation



Bringing projects to a successful conclusion in terms of costs, schedule, quality and safety, in accordance with the expected profitability

Management of the international asset portfolio



Contributing sustainably to the Group's cash flows and to Health and Safety

ASSETS IN CONSTRUCTION & OPERATION



- Hydro
- Gas & biomass
- Off Grid / Mini Grid
- C&I (PV, storage, energy efficiency)
- Network
- Others
- In construction

EDF INTERNATIONAL DIVISION – STRATEGY

1 – DEVELOPING AND MANAGING THE INTERNATIONAL ASSETS AND PORTFOLIO

🎯 5 GW in operation by 2030

HYDROPOWER



- **Sinop (Brazil) and Nam Theun (Laos)** in operation
- **Nachtigal** (Cameroon) under construction
- **Projects** under development in **Malawi, Brazil, Chile, Peru, Colombia, India, Nepal, Morocco, Laos, Cameroon, Spain, Uzbekistan...**
- **Innovation: PHS** (pumped hydro storage) and **floating solar**

🎯 5 CCGT by 2030 within the CO2 trajectory

THERMAL, BIOMASS & HYBRID SOLUTIONS



- **Norte Fluminense (Brazil), Phu My (Vietnam)** in operation
- 840 MW CCGT under construction in **Belgium**
- **Projects** under development in **Uzbekistan, Vietnam, Brazil, Peru**
- **Ivory Coast: biomass plant** fuelled by oil palm residues under construction
- **Chile: 1 GW gas and solar platform**

🎯 14 million delivery points by 2030

NETWORKS



- Construction of **HVDC VSC submarine cables** to supply electricity to artificial islands in the United Arab Emirates (USD 8.3 Bn)
- **Transmission projects** in South America and Asia
- **Distribution network** projects in India and Colombia
- Contract for the deployment of **5 million smart meters in India**

EDF INTERNATIONAL DIVISION – STRATEGY

2 – DEVELOPING LOW CARBON ELECTRIFICATION AND ENERGY SERVICES MODELS

 1 GW by 2030

DISTRIBUTED SOLAR & ENERGY SERVICES FOR C&I* CUSTOMERS



- Providing C&I customers with **solar and hybrid self-consumption solutions** and developing **energy efficiency services**
- Creation of Emerge, a joint venture with Masdar (50/50) in the **Middle East**
- **Pan-African** partnership with DPA

 1 million customers by 2030

OFF-GRID MINI-GRIDS



- Range of **solar kits** in Togo, Ivory Coast, South Africa, Kenya, Senegal (350,000 kits installed)
- **Solar powered agricultural pumps** in Kenya and Togo
- Development of **mini-grid** activities (electrification of remote villages) in Indonesia, Peru, Zambia,...

EDF INTERNATIONAL DIVISION – STRATEGY

3 – MAKING THE WORLD A FIELD OF INNOVATION

SMART OFFERS FOR TERRITORIES AND LOCAL AUTHORITIES



- **Solutions to support territories and local authorities** (smart lighting, energy efficiency, electric mobility, storage...)
- **Smart Lighting** projects in North Europe and in the Middle East
- **Electric mobility projects** in India and Singapore

HYDROGEN



- Development of **H₂ projects** in Chile, Germany, Singapore, the Middle East (electrolyzers, H₂ applications)

CHALLENGES

- **Taxation:** Significant changes in 2023/4
 - Increase in cost of doing business – Employment, logistics etc.
 - Adjusting to changes – Downsizing, cost reduction, price changes.
- **Exchange Rates:** Kenya Shilling has significantly lost against major currencies
 - Impact on cost of projects against payment
 - Push for KES payments against declining US\$ reserves
- **Regulations:** New and proposed regulations
 - Examples: The Energy (Net-Metering) Regulations, The Draft Energy (Solar Water Heating) Regulations, The Draft Mini-Grid Regulations etc.
- **Competition** – Kenya is a highly competitive market with several players
 - Price is “King”
 - Quality?

CHALLENGES

EXAMPLE OF REGULATORY CHALLENGES

› **Pre-installation/Project Development:**

› Licenses and Permits:

- › Environmental and Social Impact Assessments – Study informs on risks and mitigations
- › Pre-Construction (e.g., Technical designs, Structural Assessments)

› **Construction:** Inspections, certificates...

› **Tariff Approval:** The process could be lengthy and delayed.

› **Operation and maintenance:**

- › Reporting, Monitoring Performance
- › Servicing (e.g., servicing or cleaning of modules)

OPPORTUNITIES

› Improving regulatory environment

- › Stakeholder engagement/consultation key to transparency
- › Improved processes and standardisation – ensure quality of products entering the market while maintaining quality of projects.

› Diversified Economy

- › Services: Tourism, Financial Services, ICT, Manufacturing (raw materials local, value could be added, e.g., cables, lithium batteries), Environmental Services (e.g., safety monitoring, considering aging infrastructure “tested” by climate change) etc.
- › Kenya supports the Eastern Africa region – DRC, Rwanda, Burundi, Uganda etc. Opportunity to grow and access region of +200m

› Diversified Renewable Energy Sector

- › Baseload: Geothermal, Hydro and Biomass
- › Wind & Solar

› Developed Financial Services Sector

- › 40+ Commercial Banks – International & Indigenous
- › Regional Offices for Multilateral Institutions

› Growing Infrastructural Development – Roads, Rail, Ports, Industrial Parks, Housing, recreational etc.

› Upskilling of Workforce

- › Operational maintenance support: In hydroelectric power plants – Monitoring and Climate Change, Dam Safety etc.
- › Capacity building, knowledge transfer & Training – e.g., Uganda Electricity Generation Company trained on Health & Safety.



THANK YOU!

