Sustainable Hydropower Development

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Trung Son hydropower project, Vietnam

The role of hydropower

The Clean Energy Transition

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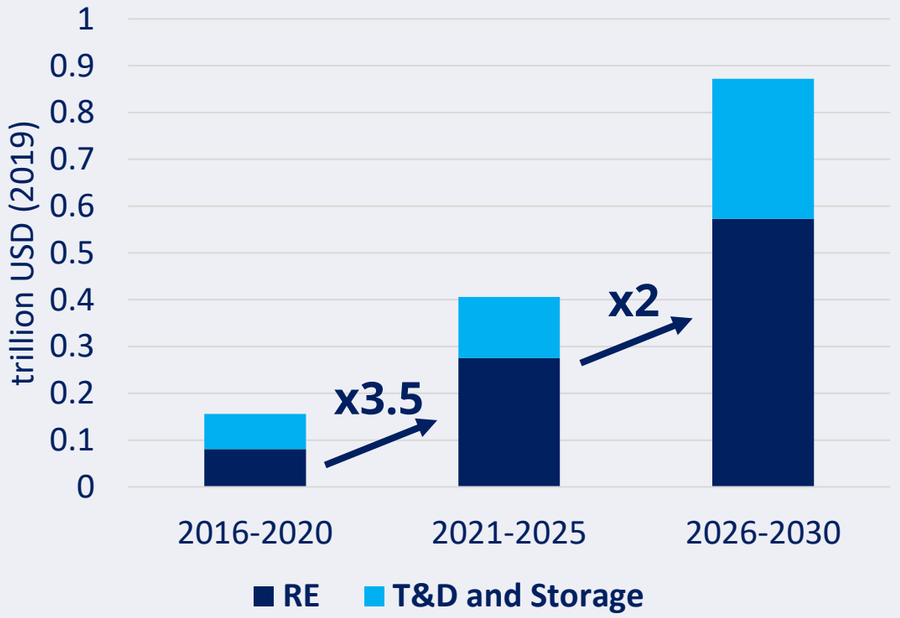
- **RE deployment needs to accelerate drastically**
- **Private sector mobilization will be key** to meet the RE investment challenge ahead of us
- Private sector participation is contingent on the power sector ***Foundations*** and sustainable power grid

Average annual power system investment in the Net Zero 2050 Scenario



Note: Emerging market and developing economies excluding China

The role of hydropower

Hydropower is key in the Clean Energy Transition

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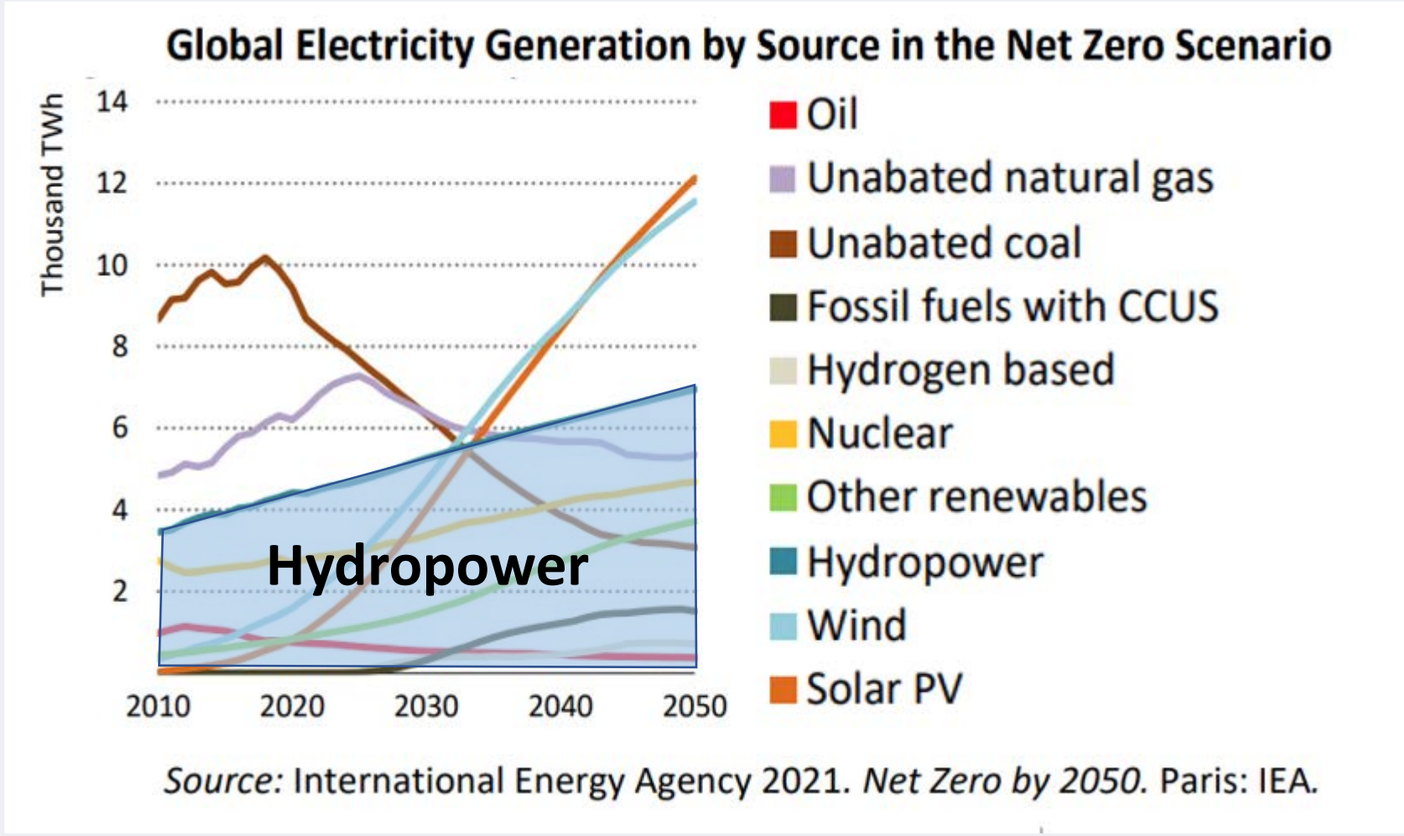
Double the current hydropower installed capacity

In 2050 Hydropower will need to be **third largest** single energy source

Hydropower **currently provides 16 %** of electricity world wide

Reservoir in existing hydropower plants combined equals to approximately **2500 times** the current installed batteries including EV's

HOW ARE WE GOING TO MEET THIS INCREASE IN DEMAND



Source: International Energy Agency 2021. *Net Zero by 2050.* Paris: IEA.

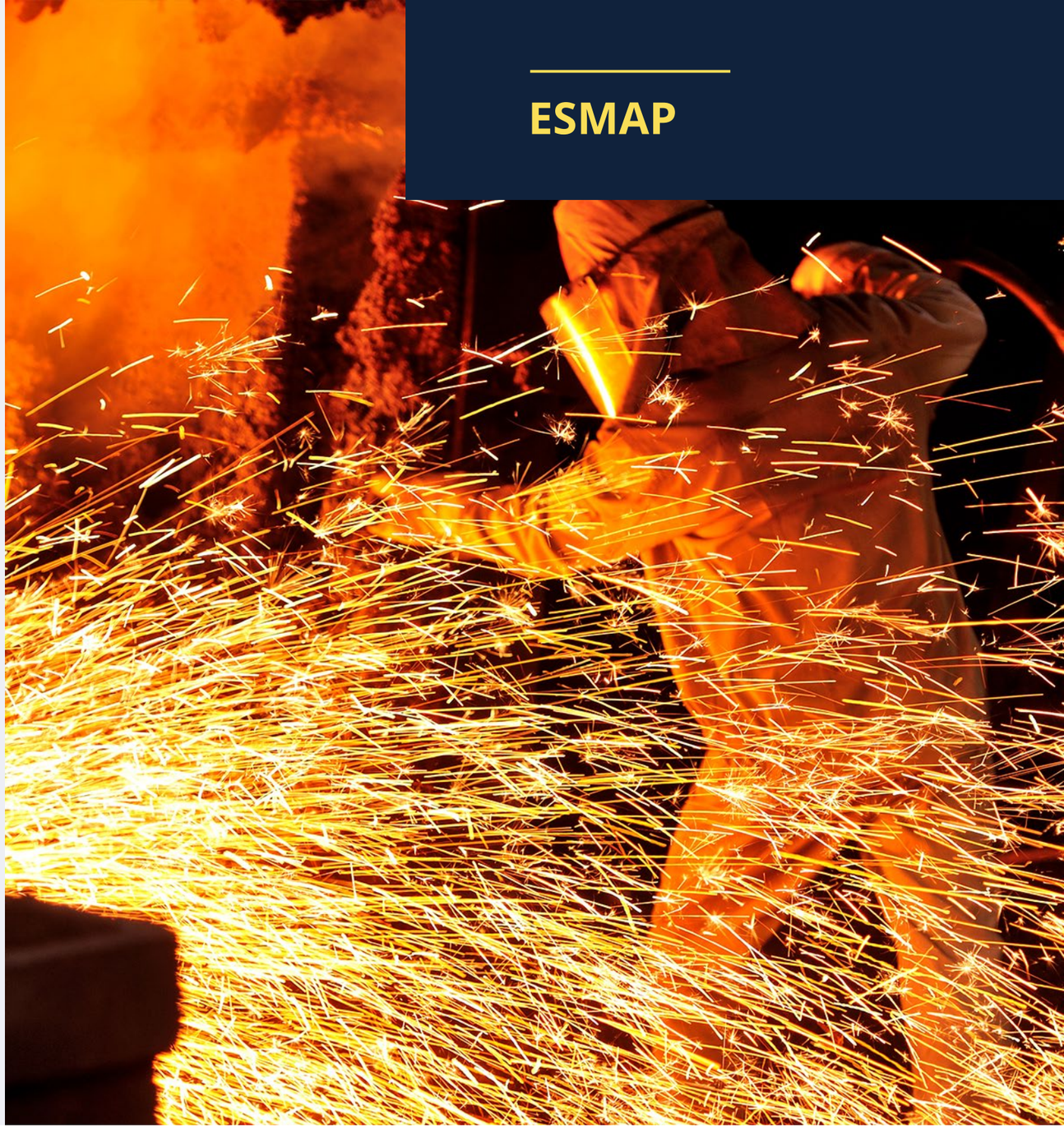
The role of hydropower

The Clean Energy Transition

- Hydropower plays **dual roles** of reliable **baseload** power source and support for **integrating variable renewable** energy.

- **Hydropower** provides large scale energy storage necessary to provide fast response for system stability.

- **Hydropower and Pumped Storage Hydropower** plays a role in the clean energy transition in countries where there are system constraints to scaling up variable renewable energy.



Existing Hydropower

Current Hydropower fleet is aging

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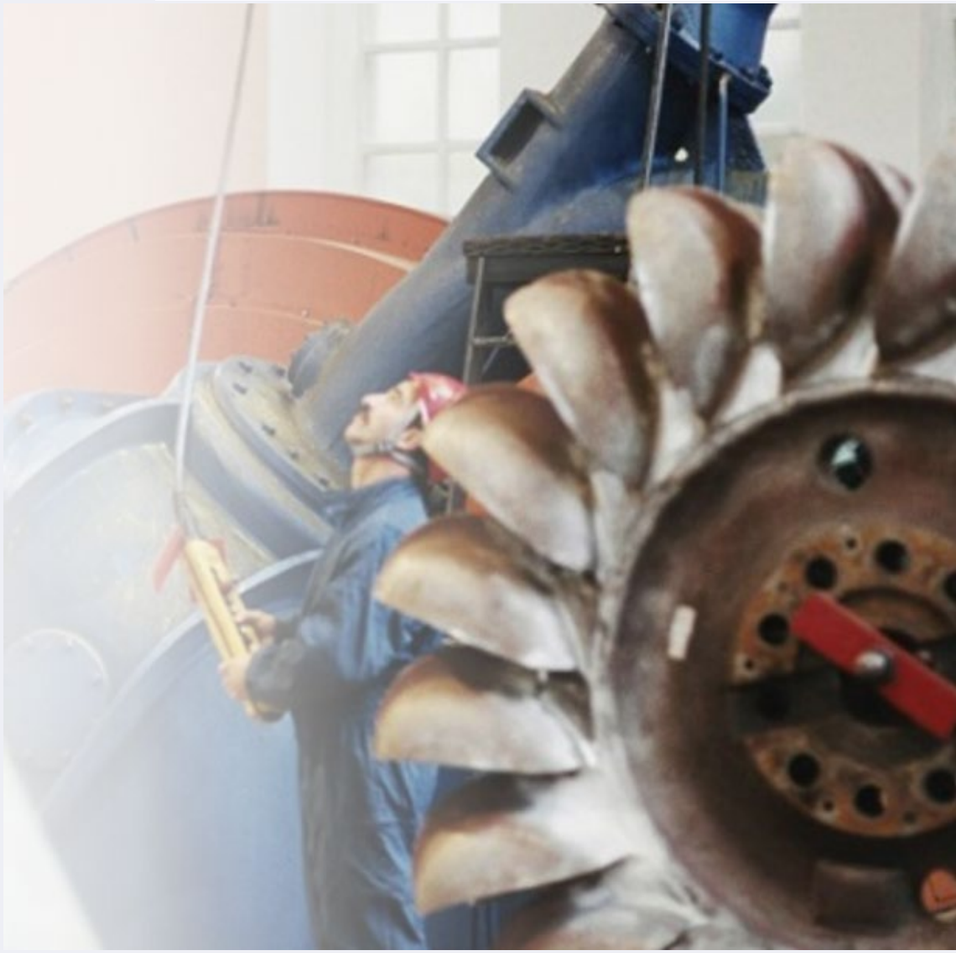
By 2030 more **than 20 % of the current hydropower** fleet will be more than **55 years old**

Rehabilitation including modernization is needed

This will create a need of more than **US $300 billions** in investments until 2030 – Rehabilitation only



How to scale up Hydropower

Sustainable hydropower

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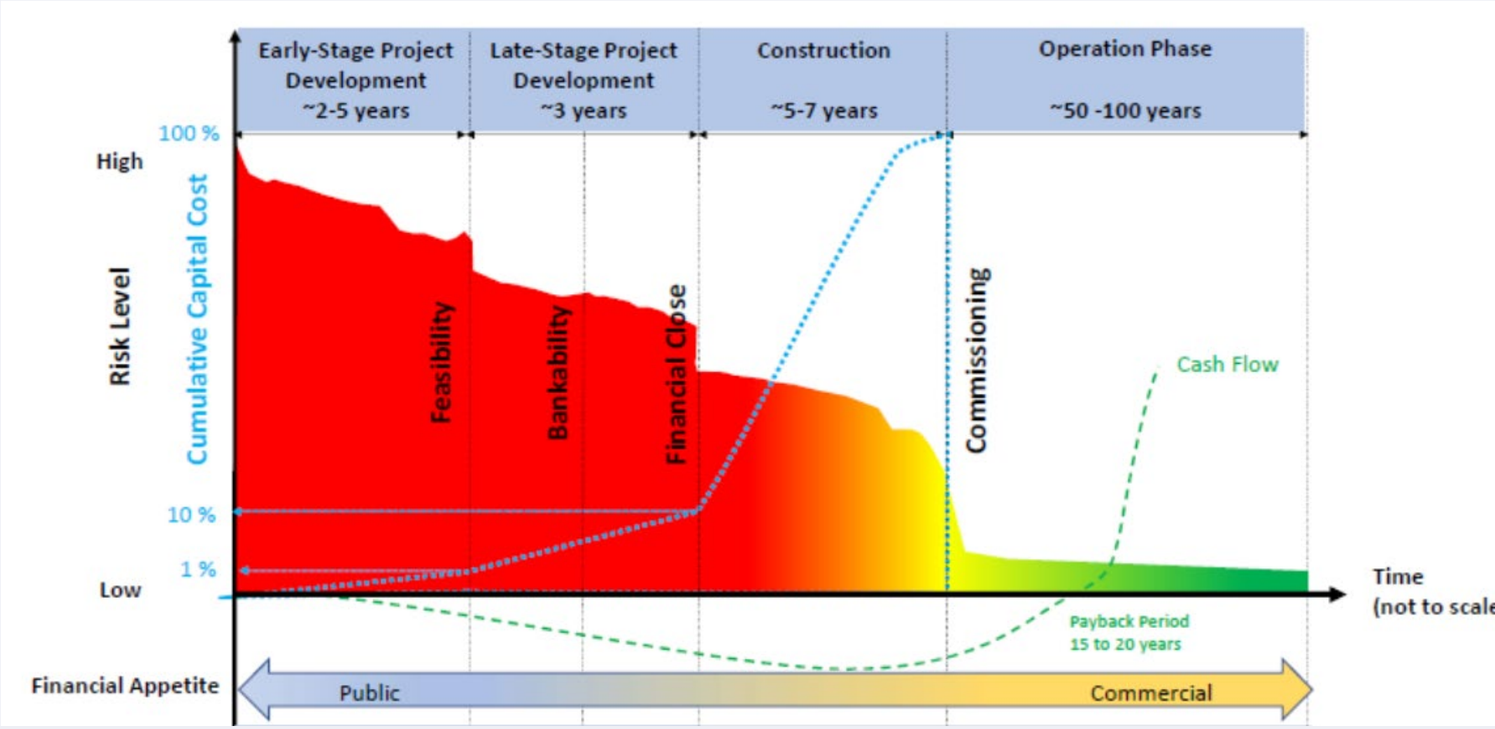
Significant potential remains untapped

Long project preparation and Risk influence the appetite from private sector

Between 2011 and 2020 around 27% of installed hydropower capacity was done by the private sector

Private sector more active in smaller power projects

Challenges to attract the private sector is the - lack of financial sustainable Off Takers



Enabling environment

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Government policies

- Enabling environment for investment
- Financial incentives and support mechanism

Legal framework

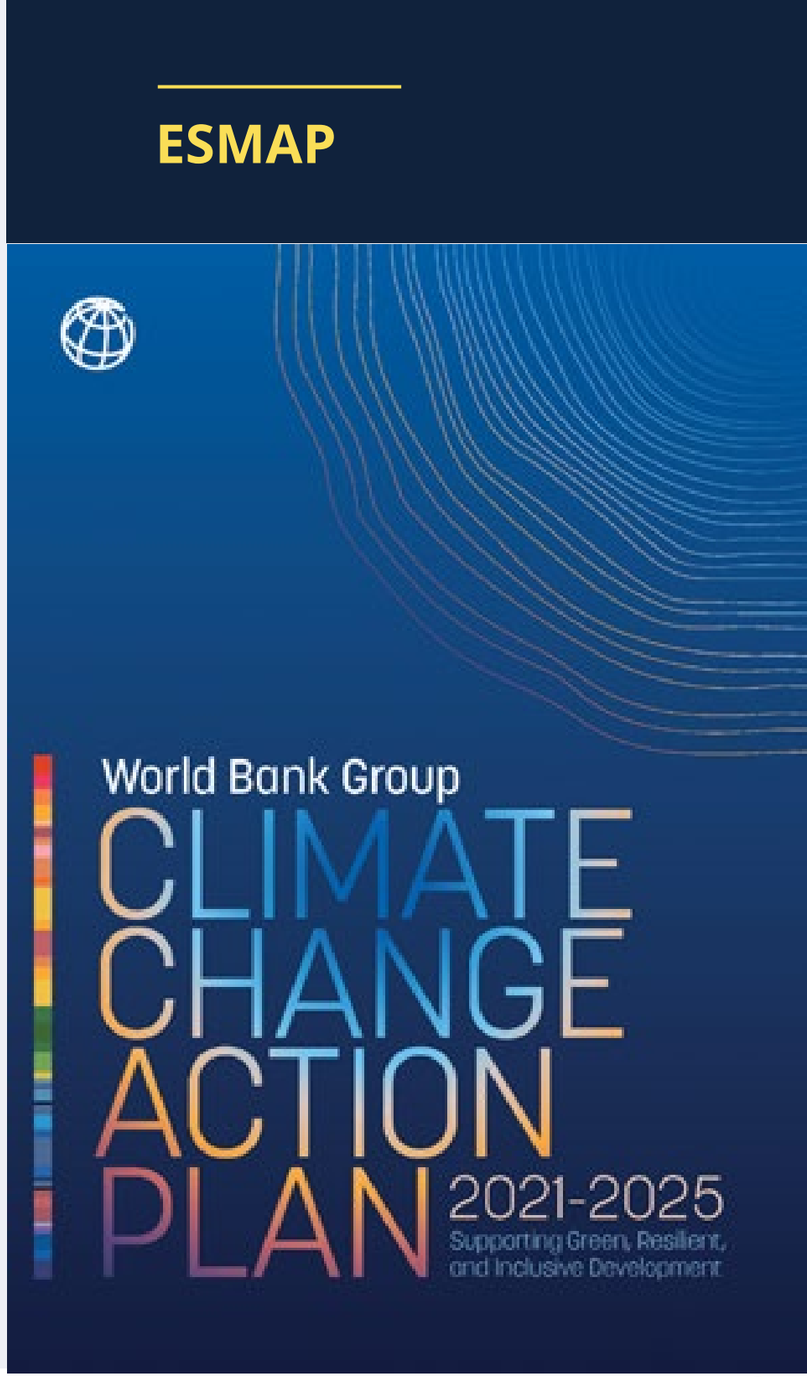
- Definition hydropower resource
- Ownership and protection
- Institutional framework
- E&S

Social acceptance

- Changes to the environment and health
- Education
- Gender Equality
- Stake-holders engagement

WB is committed to supporting sustainable hydropower

- The WBG will support countries in developing **sustainable and resilient hydropower**, while not damaging the ecosystems, and the associated **water storage** needed, including through **regional cooperation** to advance complementary investments across countries."
- "the WBG is committed to supporting countries to develop and finance hydropower projects that are **well suited to local conditions and are resilient to climate change**."
- The WB supports hydropower when part of the **low-carbon development pathway** of a country / region



How is WB supporting Hydropower

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Removing **barriers**, unlock **untapped potential** and support **transformational** projects

UpStream Support:
strengthening planning, regulatory and institutional capacity

Downstream Support:
technical assistance, risk mitigation and/or direct financing for specific transformational projects

How is WB supporting Hydropower

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Upstream support:

- **Least cost** and **low-carbon** development plans
- Pre-feasibility **studies** and **E&S assessments**
- Project development **structuring**
- Sector interventions for **bankability of a project offtake**
- **Capacity building**
- **Dam safety** assessments

- Bank prepared, Grants and/or loans.

How is WB supporting Hydropower

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Downstream support:

De-risking project preparation and/or construction and demonstrating sustainable impact

- **Transformational** projects
- **Decarbonization** pathway
- In accordance with country/regional **masterplan** and/or **Least Cost** Development Plan
- Strong **sectorial engagement**

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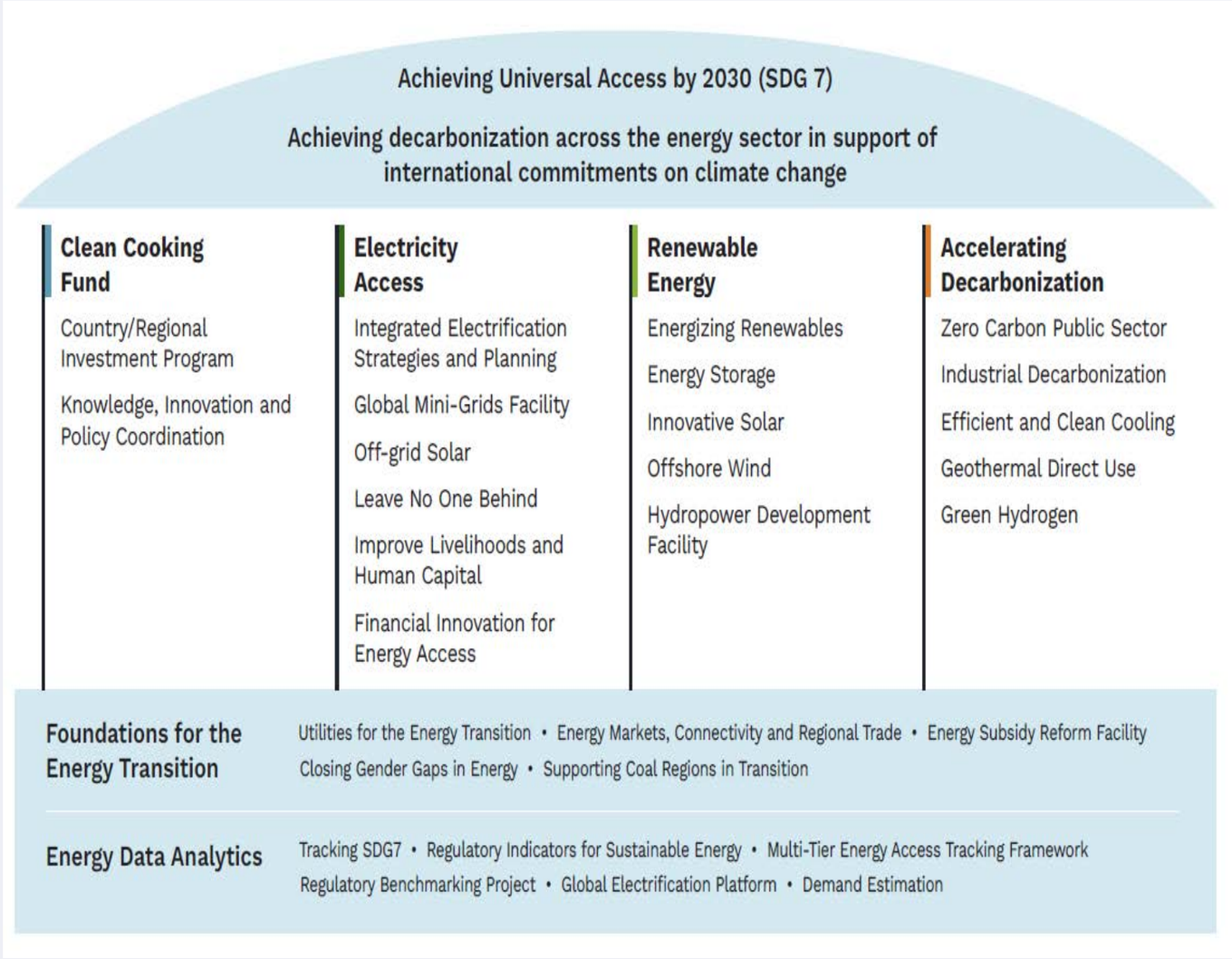
The Clean Energy Transition

- ESMAP is one of the oldest MDTFs at the World Bank, **established in 1983** to respond to the aftermath of the global energy crisis of the 1970s
- A partnership between the World Bank and **22 partners**
- To help low and middle-income countries reduce poverty and boost growth through **sustainable energy solutions** with analytical and advisory services
- **Fully integrated** within the World Bank's country financing and policy dialogue in the energy sector.
- Helps to **shape** World Bank Group strategies and programs to achieve the **WBG Climate Change Action Plan** targets and **SDG7**.



ESMAP – Hydropower development facility

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HDF Obejctive

- Build a portfolio and pipeline of sustainable hydropower projects in recognition of the critical role it plays in system balancing and water resource management

- Support low to middle income countries to develop and manage next generation of greenfield and rehabilitation/upgrade/modernization projects

- Accelerate deployment of sustainable hydropower that is critical for VRE integration

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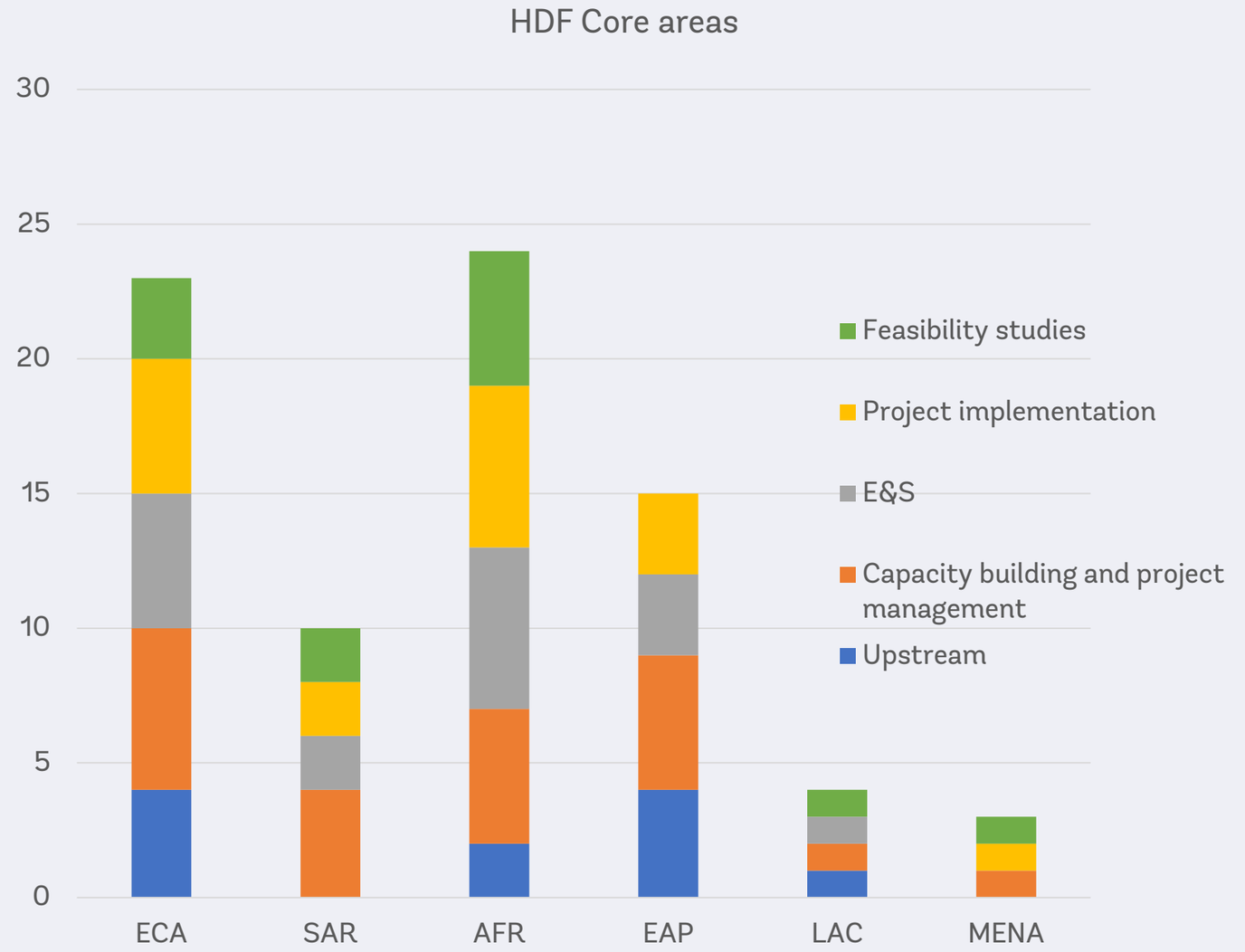
The Clean Energy Transition

- **Upstream** means grants for activities that leads to a pipeline of sustainable project. For example roadmaps for rehabilitation
- **Capacity building and project management** grants seek to ensure the lifetime sustainability of the projects throught strenghtening the Client´s capabilities
- **Project implementation** grants seek to enhance and tailor strategies for the project such as financing methods, identification of risks and establishment of potential risk sharing mechanisms etc.
- **Environmental and Social impact** (E&S) seek to support Clients to use and implement the Bank´s ESF
- **Feasibility studies** seek to ensure comprehensive assessments of the technical and commercial viability of the projects thorugh developing new or additional studies where they need strengthening



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Energy Sector Management Assistance Program

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Thank you