GET.transform
Transforming Energy Sectors Globally

GET.transform
Energy Transition Country Services

OVERVIEW

Developing a sustainable power sector is of fundamental importance for industrial and rural development. Electricity generation is the largest source of energy-related greenhouse gas emissions and represents the leading cause of climate change. Achieving the goals of the Paris Agreement means accelerating the decarbonisation of power supply at an unprecedented scale and pace, while at the same time catering for a greater electricity demand and energy efficiency as end-use sectors electrify and electricity access improves. Industry, buildings and transport will increasingly rely on electricity driven solutions, including the shift to electric mobility, green hydrogen or heat pumps.

According to analysis from the International Renewable Energy Agency (IRENA), the world's pathway to a sustainable energy sector sees electricity's share of final energy demand growing from less than a fifth to nearly half in 2050, while requiring the power sector to deliver 60 percent of the energy-related CO2 emissions reduction. Both utility-scale grid connected renewable energy generation and decentralised off-grid power generation are essential to the success of power sector development that is aligned with the SDG7 goals and the Paris Agreement targets.

GET.transform is a reputable and trusted partner for country governments and regional institutions in advancing their power system transformations. GET.transform delivers technical assistance across: Long-Term Energy Planning, On-Grid Regulation and Market Development, Off-Grid Regulation and Market Development and Renewable Energy Grid Integration.

GET.transform is supported by

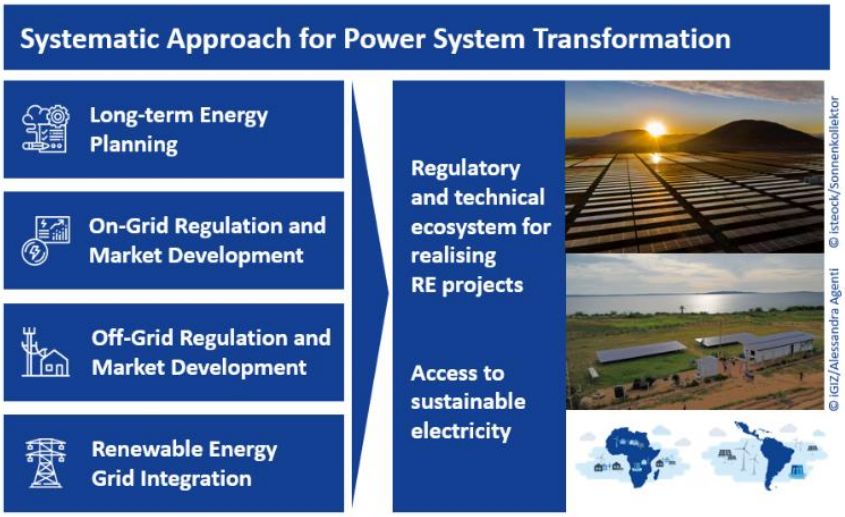
german cooperation
DEUTSCHE ZUSAMMENARBEIT

Sweden
Sverige

Ministry of Foreign Affairs of the Netherlands

Austrian Development Agency

Figure 1 – **GET.transform Approach**



GET.transform services are clustered along the four outputs, ultimately contributing to a systematic ecosystem building approach across partner countries and regions.

Figure 2 – **GET.transform Outputs**

Developing least-cost, low carbon **capacity expansion and investment plans**, outlining development paths for power generation projects

Supporting **institutional reforms** that allow for new market actors and renewable energy participation: market model design, non-discriminatory grid access, cost-reflective services

Design and management of **solicited auctions** as well as **market-driven mechanisms** for procuring on-grid energy

Developing **electrification pathways** building on socio-economic development and productive-use policies

Design and management of **award mechanisms** for procuring off-grid energy

Updating of **technical power system planning and operational procedures** that enable the operation of renewable energy dominated power systems

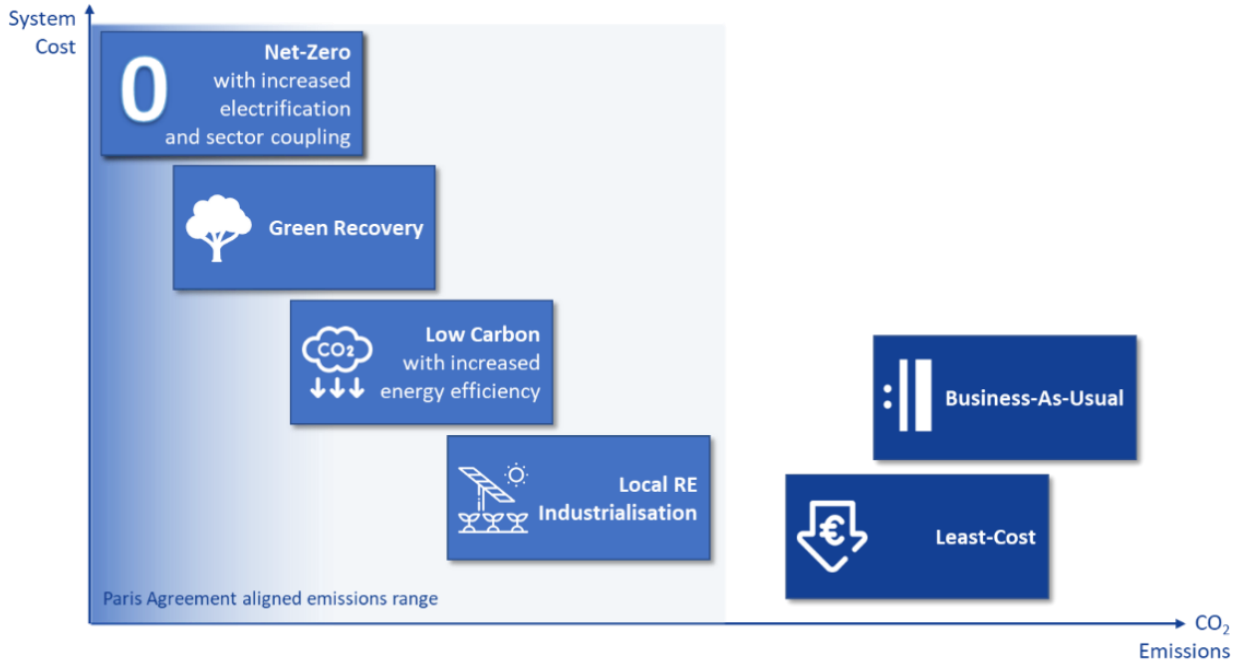
Output 1: Long-Term Energy Planning	The quantity and quality of long-term power system expansion plans is increased, outlining low carbon development paths for power generation and demand.

Long-Term Energy Planning represents the foundation for power system transformation ecosystem building. In this way, Output 1 paves the way for the subsequent outputs which address the enabling environment for the procurement of new power-generation capacity (Outputs 2 and 3) as well as the integration of renewable energy into grid-based power systems (Output 4).

Long-term energy scenarios (LTES) strategically inform and support policy and decision-making leading to the adoption of capacity expansion and investment plans outlining growth paths for power generation and demand. Technically sound and cost-effective plans help to avoid over- and underbuilding power plant capacity, create awareness about the renewable resource potential and mitigate the risk of investing into carbon-intensive infrastructure with the risk of creating future stranded assets. In light of fighting the COVID pandemic economic impacts, LTES can further support green recovery policies making them a central tenet of the power sector and integrating public support into NDC planning and implementation.

GET.transform works and collaborates with energy ministries, national and regional planning commissions, regulators as well as electric utility planning departments to advance the quantity and quality of power system expansion plans. Together with the partners, and as one aspect of the overarching Power System Transformation Assessment, GET.transform develops Country Energy Planning Diagnostics that analyse the governance and institutional steering as well as energy modelling and scenario development processes. Locally owned and driven LTES processes are supported to provide the ability for a comparative analysis considering the impact of least-cost, low carbon, net-zero and business-as-usual development pathways, as well as increased energy efficiency, electrification, sector-coupling, local-content options as well as regional integration. Such analysis considers energy efficiency technology shifts and fuel switching to electricity in different economic end-use sectors, e.g. the use of green hydrogen in the industry sector or the increasing volume of electric vehicles in the transport sector. By putting these considerations into perspective, analyses of the conflicting and complementary objectives of economic policy and climate policy are provided to support political decision-making processes, thus facilitating a power system transformation that is technically, economically and environmentally sustainable.

Figure 3 - **Exemplary Comparative Analysis Considering Power System Costs and Power Sector CO2-Emissions for Different Policy Development Pathways**



Output 2: On-Grid Regulation & Market Development	On-grid power sector regulation and market frameworks (policies, regulations and processes as well as human capacities) are strengthened, creating opportunities and access for renewable energy market entrants.

Reform of on-grid power markets is essential to enable new private market actors, renewable energy participation and investment. Accelerated innovations in renewable energy, services and markets are triggering the need to reconsider traditional business models and power sector regulatory frameworks. In Europe, this is expressed by a liberalised electricity sector that was built over the past 30 years. Renewable energy generation technologies were introduced by means of directives and procurement mechanisms including feed-in tariffs and solicited auctions. Given this vast history, there are key learning points which are of great relevance to other regions of the world, including Africa where the process towards establishing an African Single Electricity Market (AfSEM) has been launched in 2021.

GET.transform supports the development and revision of on-grid regulations and power markets to facilitate increased investment in renewable energy. GET.transform works with its country partners to advance institutional reforms driving the design of participatory electricity markets that are in support of viable public and private-sector utility and IPP (Independent Power Producer) business models. Technical assistance is provided on market model design and non-discriminatory grid access regulations. One central focus lies on advancing procurement mechanisms for renewable on-grid electricity generation capacity, such as e.g. auctions.

GET.transform works and collaborate with energy ministries, power procurements offices, regulators and electric utility regulatory departments to support the design and management of centrally public-sector managed solicited procurement mechanisms, i.e. auctions for on-grid IPPs. This includes supporting the procedural design and standardised documentation, as well as tender management and advisory services during programme implementation. Strong coordination is sought with GET.invest and international DFIs in order to ensure compatibility with their financing and guarantee instruments. As part of an inclusive electricity market design, GET.transform further supports procurement regulations that provide incentives for a market-driven uptake of distributed generation, i.e. captive power projects. This includes working with electricity regulators to advance regulations that enable various business models including self-consumption, bilateral trading mechanisms between customers, as well as feed-in tariffs for excess power.

All activities are accompanied by strategic capacity building measures targeted at key change agents and decision makers, including professionals and managers, to ensure strong ownership and buy-in of the project partners. One example is the African Electricity Regulator Peer Review and Learning Network (PRLN) where GET.transform and the Power Futures Lab (PFL) of the University of Cape Town, an active contributor to the establishment of the African School or Regulation, continue their collaboration. The PRLN facilitates the experiential learning and peer-to-peer exchange between the Chief Executive Officers of electricity regulators in Africa and represents a strong tool for disseminating and harmonising electricity policy and regulations.

Output 3: Off-Grid Regulation & Market Development	Off-grid power sector regulation and market frameworks promoting access to electricity (policies, regulations and processes as well as human capacities) are strengthened, enabling opportunities for electricity access, mini-grid and productive-use projects.

Over the last 20 years, access to electricity in Sub-Saharan Africa has gradually increased from 24 to 48 percent on the whole. However, a country-by-country analysis shows that the gains have been very disproportionate, with countries like Kenya, South Africa, Zimbabwe and Ghana outperforming from early on. Across Africa, as in many rural pockets in the LAC region, access rates are only slowly improving. GET.transform, through its track-record in successfully supporting off-grid regulations and markets, is well known to public-sector partners for scaling up electricity access solutions.

GET.transform works on three thematic building blocks that are integral for establishing an ecosystem that successfully delivers on achieving electrification targets.

Figure 4 - **Electrification Ecosystem Building Blocks**

GET.transform works with energy ministries, regulators, rural electrification agencies and electric distribution utilities in developing electrification pathways and plans considering opportunities for extending interconnected distribution grids as well as isolated mini-grids. This is complemented by comprehensive support to monitor progress in new electricity connections, using digital solutions to feed data into decision making processes, and learning from the applications and impacts that power creates in communities.

GET.transform further supports developing regulations and instruments for financial management and coordination of electrification programmes including streamlined processes allowing the scaled-up implementation of renewable energy access projects. Examples include mini-grid regulations, tariff-setting policies, calculation and approval mechanisms, risk mitigation instruments and technical standards for various renewable technologies. One central focus are project award and procurement mechanisms, i.e. auction mechanisms and bundled mini-grid licenses.

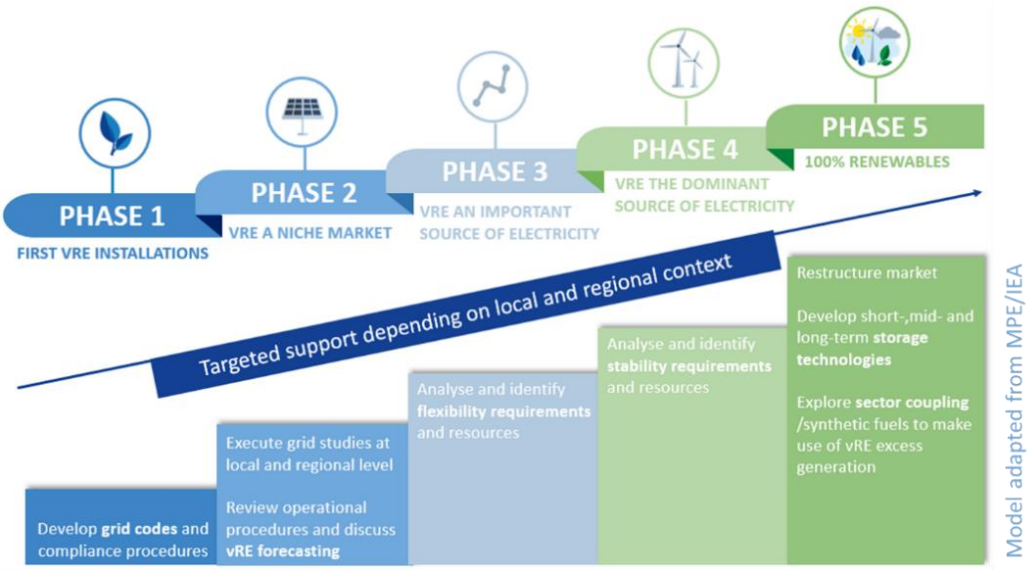
Lastly, GET.transform supports partners in the design and implementation of productive use of energy strategies to stimulate private-sector economic activity which is important for viable off-grid supply business cases. Based on the results of electrification planning, GET.transform encourages multi-sectoral coordination between energy access implementing agencies and other sectors, e.g. the agricultural sector, whereby rural electrification programmes are integrated with government and donor support programmes for farming and processing.

Output 4: Renewable Energy Grid Integration	The technical planning and operating procedures for integrating variable renewable energy have been enhanced, allowing higher shares of renewable energy integrated into power systems.

The variable nature of renewable energy sources like solar PV or wind calls for transformational changes in the technical planning and operation of power systems. The need for change often goes hand in hand with energy security related concerns and challenges, particularly early on in renewable energy deployment. While Output 1, 2 and 3 focus on policy and regulatory design, Output 4 focusses on the technical engineering implementation of power system transformation.

GET.transform supports power system planners and operators to reliably integrate variable renewable energy into their networks. GET.transform supports analytical work to establish a sound base for updating planning and operational procedures and provides capacity building to trigger a mind-set change and boost confidence in the operation of renewable energy dominated power systems. The advisory approach builds on the IEA's "phases of system integration" framework to discuss and prioritise different measures to support technical regulation as well as planning and operation of transmission and distribution systems with increasing shares of renewable energy.

Figure 5 - **Technical Power System Transformation Development Model**



GET.transform works with electric utilities and their power system network planning and operation departments to analyse support needs depending on the vRE development phase a country is currently in and where future plans would take them to. As one aspect of the overarching Power System Transformation Assessment, vRE Integration Roadmaps that identify short, medium and long-term measures to update planning and operating procedures of the power system are discussed with project partners to derive recommendations for further technical assistance. Based on the recommendations GET.transform deploys adequate support measures that may range from developing grid codes and compliance procedures in Phase 1 to analysing and managing flexibility and stability requirements in Phase 3 and 4 to developing storage technologies and exploring sector coupling strategies in Phase 5. During the development path toward Phase 5, GET.transform analyses and addresses the requirements for increased automation and digitalisation of operating procedures to advance smarter networks and technical communication.

Table 1 – **Indicative Activities GET.transform**

Output	Key Activities
Output 1: Long-Term Energy Planning	1.1 Developing Country Energy Planning Diagnostics to analyse the gaps and need for technical assistance in steering, developing and improving power system expansion plans. 1.2 Supporting the steering, developing and improving of power system expansion plans (governance and institutional steering of energy planning processes, modelling and scenario development).
Output 2: On-Grid Regulation and Market Development	2.1 Providing technical assistance on electricity market design, non-discriminatory grid access regulations as well as on procurement mechanisms (e.g. auctions) for renewable energy on-grid energy. Providing legal, technical and process support during programme inception and implementation. 2.2 Capacitating and strengthening public-sector regulatory bodies including energy ministries, regulatory entities and utilities in formulating and designing on-grid regulation and markets. Supporting normative policy and regulatory directives and guidelines.
Output 3: Off-Grid Regulation and Market Development	3.1 Providing technical assistance on electrification plans, monitoring and tracking frameworks, productive use strategies as well as on regulations and procurement mechanisms for renewable energy mini-grids, interconnected distribution systems and other decentralised access technologies. Providing legal, technical and process support during programme inception and implementation. 3.2 Capacitating and strengthening public-sector regulatory bodies including energy ministries, regulatory entities and utilities in formulating and designing off-grid regulation and markets. Supporting normative policy and regulatory directives and guidelines.
Output 4: Renewable Energy Grid Integration	4.1 Developing vRE integration assessments and roadmaps detailing recommendations for measures to update planning and operating procedures of the power system. 4.2 Providing targeted technical support measures advancing the integration of vRE in country and regional electricity networks.

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