



European Financial Flows on SDG7 to Africa

2022 Report

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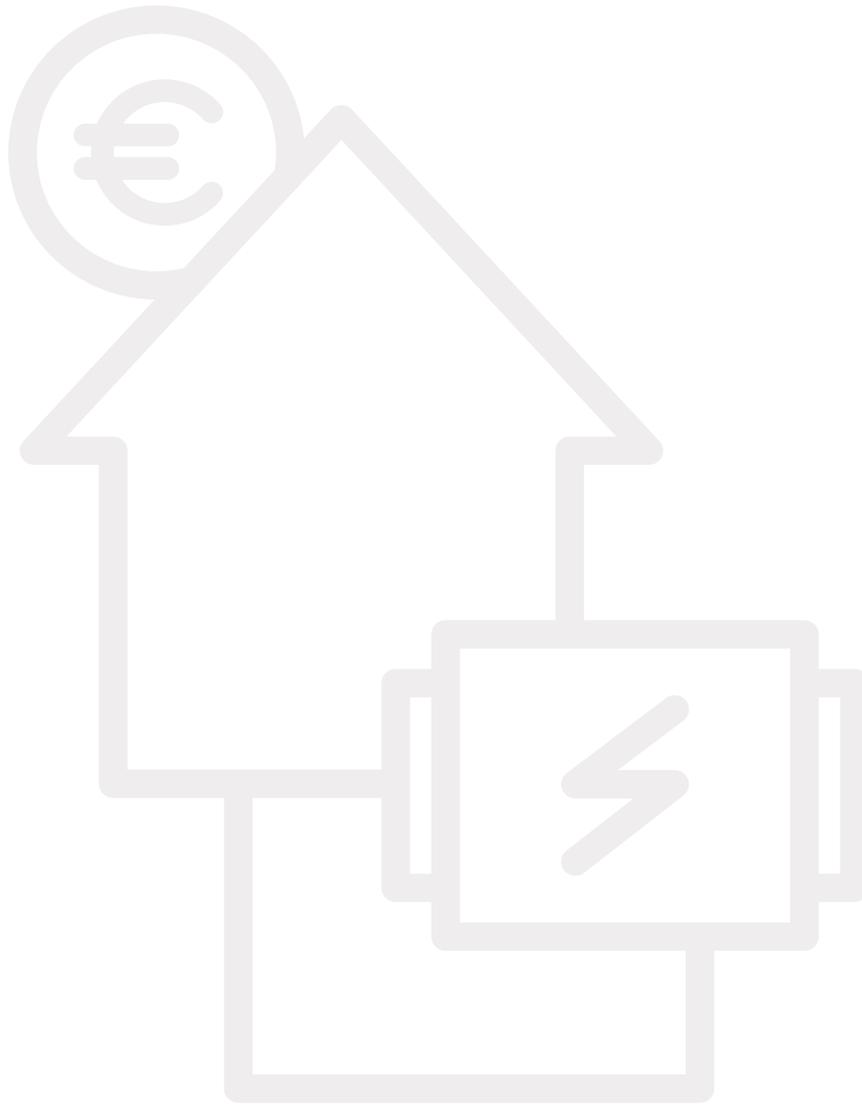


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Glossary

AEEP	Africa-EU Energy Partnership	EBID	Ecowas Bank for Investment and Development
AEGEI	Africa-EU Green Energy Initiative	EC	European Commission
AEGF	African Energy Guarantee Facility	ECOWAS	Economic Community of West African States
AFD	Agence Française de Développement	EDM	Electricidade de Moçambique
AfDB	African Development Bank	EES	External Energy Strategy
AfSEM	African Single Electricity Market	EIB	European Investment Bank
ARE	Alliance for Rural Electrification	ESCOM	Electricity Supply Corporation of Malawi
ATI	African Trade Insurance Agency	ESI	Africa's electricity supply industries
AU	African Union	EU	European Union
AUDA-NEPAD	African Union Development Agency New Partnership for Africa's Development	FMO	Entrepreneurial Development Bank (Netherlands)
BOAD	West African Development Bank	GDP	gross domestic product
BMZ	Federal Ministry for Economic Cooperation and Development (Germany)	GET.pro	Global Energy Transformation Programme
C&I	commercial and industrial	GH2	green hydrogen
CAPP	Central Africa Power Pool	GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (Germany)
CCA	Clean Cooking Alliance	GNI	gross national income
CLSG	Côte d'Ivoire, Liberia, Sierra Leone and Guinea Electricity Networks Interconnection	GW	giga-watt
CMP	Continental System Masterplan	GWh	giga-watt hour
COMELEC	Comité Maghrébin de l'Électricité (Maghreb Electricity Committee)	GTAF	Global Technical Assistance Facility (EU)
CORREAC	Central Africa Regional Electricity Regulation Commission	HEP	hydroelectric power
CRS	Creditor Reporting System	HPP	hydroelectric power plant
DBSA	Development Bank of South Africa	HVDC	high voltage direct current
DFI	development finance institution	IDA	International Development Association
EAC	East African Community	IEA	International Energy Agency
EAPP	Eastern Africa Power Pool	IFU	Investment Fund for Developing Countries (Denmark)
		IMF	International Monetary Fund

IPP	independent power project	PPI	Private Participation in Infrastructure (World Bank)
IRENA	International Renewable Energy Agency	PPP	public/private partnership
JICA	Japan International Co-operation Agency	RE	renewable energy
KfW	KfW Development Bank (Germany)	SADC	Southern African Development Community
kV	kilovolt	SAS	Sustainable Africa Scenario (IEA)
kW	kilo-watt	SCADA	Supervisory Control and Data Acquisition
kWh	kilo-watt hour	SDG	Sustainable Development Goal
kWp	kilo-watt peak	SEFA	Sustainable Energy Fund for Africa
LDC	least developed country	SEforALL	Sustainable Energy for All
LIC	low-income country	SHS	solar home system
LMIC	lower, middle-income country	SSA	sub-Saharan Africa
LNG	liquefied natural gas	T&D	transmission and distribution
LPG	liquefied petroleum gas	TCN	Transmission Company of Nigeria
MDB	multilateral development bank	TDB	Trade and Development Bank of Eastern and Southern Africa
MOEE	Ministry of Electricity and Renewable Energy (Egypt)	Team Europe	European Union, its member states and institutions (formerly EI & MS)
MOMA	Mozambique-Malawi (MOMA) Power-Transmission Interconnection	TREP	Transmission Rehabilitation and Expansion Programme (Nigeria)
MSW	municipal solid waste	TWh	tera-watt hour
MVA	megavolt ampere	UMIC	upper, middle-income country
MW	mega-watt	UN	United Nations
MWp	mega-watt peak	UNFCCC	United Nations Framework Convention on Climate Change
NCI	North Core Interconnection	WAPP	West African Power Pool
NDC	Nationally Determined Contributions	WBG	World Bank Group
ODA	official development assistance	WTE	waste-to-energy
OECD	Organisation for Economic Co-operation and Development	ZTK	Zambia-Tanzania-Kenya Interconnector
OMVG	Gambia River Basin Development Organisation SAPP		
PIDA	Programme for Infrastructure Development in Africa		

Foreword

The annual report on SDG7 is a flagship publication for the Secretariat of the Africa-EU Energy Partnership, reflecting our mandate to promote access to sustainable energy services in Africa through leveraging the strength of the long-standing energy partnership with the EU. This second edition, prepared during 2022, builds on the work done in 2021, in the inaugural report, where the hopeful message emerged that SDG7 is achievable. This conclusion was made valid by contextualising the monetary funding gap often mentioned in efforts towards SDG7 within broader economic metrics like GDP and the cost of electricity outages in Africa. This created an ability to comparatively understand the magnitude of the funding gap and see that the relative size is manageable even though the absolute values initially appear high. Indeed, last year's report concluded that the cost of inaction would be higher than the cost of pursuing SDG7 successfully.

This year has been extremely eventful from an energy perspective. The Russian aggression on Ukraine has brought energy security to the top of the EU agenda, for the first time in years. This has led to a rapid acceleration of EU ambitions on energy transition, with renewable energy roll-out being brought forward and energy efficiency receiving renewed attention. Short-term measures to overcome the unexpected absence of Russian gas have included a greater reliance on fossil fuels, leading to much debate about balancing energy security with

climate security. A search by the EU for new suppliers of gas has opened new possibilities for partnership with Africa, while feeding fundamental debates on the continent about the role of gas and reconciling its use as a transition fuel with planetary tolerances relating to the emission of fossil fuels. The hosting by Egypt of COP27 was preceded by an AU policy document called "African Common Position on Energy Access and Just Energy Transition" in which an effort was made to reconcile these different interests and imperatives.

From the international domain this balancing has also been addressed with increasing focus, manifesting in the conclusion of the first Just Energy Transition Partnerships, bringing relatively large amounts of climate finance to bear in resolving the energy challenges of Africa. This is a new development in the journey towards SDG7 in Africa that may receive attention in future editions of this report.

Within this multi-faceted context this year's edition of the SDG7 report was commissioned. Like in 2021, African governments and the EU were shown to be leading the charge in investing in SDG7-compliant energy infrastructure in Africa. The ultimate focus of the report is again determining whether collectively we are on track to reach SDG7 in 2030. With this in mind, deeper analysis of investment trends constitutes the intellectual centre of gravity of this edition. What develops in the pages to follow is a careful analysis of investment

trends over multiple years, to understand the rate of change. This is then projected forward to establish when SDG7 is likely to be reached if the present trends hold into the future.

While the 2021 report showed that SDG7 is achievable, this second edition reveals that investment trends predict SDG7 to be reached by approximately 2034. This means that SDG7 is in the process of being achieved, that the target of 2030 will require further acceleration, but most importantly that money may not be a fatal constraint. The funding is growing to reach SDG7, probably a few years later than hoped for. The focus now needs to expand to long-lead items required for SDG7 in Africa. With on-grid electrification leveraging very affordable renewable energy delivering far more affordable electricity per unit than solar home systems, the urgent densification of the electricity grid in Africa may well be an example of a long-lead item needing to be tackled immediately to ensure SDG7 is achieved no later than the required funding will allow.



Johan van den Berg

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1. Executive Summary

The SDG targets and the Africa-EU Energy Partnership

This second annual report continues an investigation into European and other financial flows to Africa, which began with the first AEEP European Financial Flows report published in August 2021. That first edition analysed data from 2014-2019. This second edition analyses financial flows for the whole 2014-2020 period, and evaluates the trends towards meeting the globally-agreed SDG7 goal to ensure ‘access to affordable, reliable, sustainable and modern energy for all’.

The Sustainable Development Goals (SDGs), agreed at the [United Nations General Assembly](#) in 2015, comprise 17 interlinked goals designed as a ‘blueprint to achieve a better and more sustainable future for all’. Africa, Europe, and the wider international community aim to achieve the SDG objectives by 2030 – for SDG7 this means giving some 600 million more African consumers access to affordable and sustainable modern energy that does not further stress environments that are already severely affected by climate change. Political dialogue and data mapping on achieving SDG7 in Africa are core to the mandate of the Africa-EU Energy Partnership (AEEP), the publishers of this report.



By scrutinising data over several years, this report aims to assess the quantity, quality and equitability of European contributions to SDG7, whilst also highlighting opportunities to accelerate progress through partnership. To achieve this, it triangulates multiple, credible data sources – from African national governments, institutions and development banks; the development finance institutions (DFIs) of European Union (EU) Member States, other European and non-European states; EU financial institutions; the multilateral development banks (MDBs) and international organisations, including the Organisation for Economic Co-operation and Development (OECD), the International Energy Agency (IEA) and Sustainable Energy for All (SEforALL). It further leverages the AEEP network to identify emerging trends, initiatives and opportunities to accelerate progress.

The inaugural AEEP report (the 2021 edition) found that SDG7 in Africa could be achieved with the mobilisation of considerable resources. It showed a significant funding gap, which required an optimal alignment of effort and a scale-up of activities to overcome. It also found that individual actors were making impressive progress – notably the national governments and African development institutions, which have been playing a vital and leading role in meeting the continent’s ambitions.

The report further identified major contributions from an active and influential international community, with an essential European contribution to meeting the SDG7 challenge. It found that over the six-year period, EU institutions and EU Member States – collectively known as Team Europe – issued EUR 3.8 billion of the global total of EUR 7 billion in grants committed to SDG7-compliant projects and capacity building in the continent. It also found European contributions had high ‘grant elements’ and thus brought an even

greater qualitative value to the projects they leveraged. The grant element is based on the OECD's measure of grant equivalence, which measures the net flow of finance. It equates to loans committed minus the amount repaid.

Adding even more value, Team Europe funding brought greater concessionality to the financing flows to Least-Developed Countries (LDCs), recognising the LDC's greater developmental needs. However, the report concluded that an even greater effort was needed to ensure an equitable flow of ODA between African countries.

At the same time, the report's assessment of private sector investment highlighted the importance of blended finance in mobilising private capital flows to Africa. It found European funding had a substantial impact in leveraging private sector contributions to African SDG7 projects.

A mapping of emerging contributors to SDG7 identified multilaterals and other funds, EU member states, increasingly the United States of America (USA), and also the Middle East and Asia. It showed the People's Republic of China had become a major financier of African infrastructure in recent years, but could not quantify its contribution to SDG7 in the absence of robust data, amid rising concerns about the sustainability of this category of debt made available largely to the public sector in LDCs.

The report suggested that annual investments needed to be increased by 350% or more to reach SDG7 by 2030. This calculation was based on IEA projections of the financing need, compared to the average annual investment into Africa from 2014 to 2019.

The report found this target to be of absolute significance, but also relatively achievable, given that the approximate average funding gap per year equated to 3.1% of Africa's GDP¹, and 0.5% of EU gross national income², and was

also roughly equivalent to the costs of African power outages and electricity inefficiencies.

The cost of inaction was therefore found to be higher than the cost of action.

An updated outlook for SDG7

The addition of the most recent data for 2020 in this edition provides a seven-year period over which trends can be further analysed. Consequently, this 2022 edition focuses on these overall trends and the rate-of-change over the entire period. This gives scope for a wider view on the likelihood of success in achieving SDG7, as compared to the 2021 report approach, which had centred on comparisons to GDP and electricity-losses.

Analysis of these most recent figures reinforces the central finding of the 2021 report that sizeable increases in funding are needed to stimulate growth in energy access and to achieve SDG7 by, or soon after, 2030.

Encouragingly, the findings also strengthen, and add further detail to, the conclusion **that a realistic pathway towards closing the investment gap exists**, provided a number of conditions are met by the key stakeholders. In this context, Europe's major commitments of increased financing and technical assistance will play a critical role, although not the only one.

Great progress has already been made across the continent in significantly improving access levels and other key energy targets. This is shown in the data, and also illustrated in the case studies, and profiles included in this report. It is essential, however, that external lenders and international financiers, along with African national governments and financial sources, commit and disburse more money accompanied by the necessary technical assistance.

1 International Monetary Fund, data for 2019.

2 European Union, data for 2019.

This will maintain the positive trend recorded over the past seven years, so that Africa can achieve SDG7 in good time based on the following commitments:

The requirement for multilateral and external public sector financiers, such as Team Europe, to maintain or increase the trajectory of commitments that they have already delivered over the past seven years, including technical assistance.

African national governments must also increase their commitments. While it is unrealistic to place the burden entirely on increased national public sector spending across the continent, the scenarios under which SDG7 is achieved by 2030 or soon after nevertheless assume that most of their energy-spending will be directed towards SDG7.

African national governments and external state and multilateral lenders must urgently work together to catalyse substantially increased participation from domestic and international private sector investors and lenders. To this end, efforts to mobilise other sources of finance that have been discussed over several years (such as local markets and pension funds) must be accelerated.



The combination of ODA, private investment and African government spending into SDG7 increased to **EUR 21 billion** in 2020.

The IEA has estimated that investments of EUR 25 billion/year are needed from 2022 to 2030, amounting to a total of EUR 200 billion over the whole period, to reach the Sustainable Africa Scenario (SAS) for SDG7 as detailed in IEA's 2022 *Africa Energy Outlook*.

Every year, Africa is getting closer to that benchmark. Data compiled from multiple sources (and analysed in detail in this report), show

that the combination of ODA and private investment into SDG7 and African national government spending on energy increased by 37% from EUR 15.2 billion in 2014, to EUR 21 billion in 2020.

If, between 2022 and 2030, the current rate of commitments for each category of finance continues to be calculated at 3.3% year-on-year, we can expect the IEA's EUR 200 billion benchmark to be passed in 2034 and for total annual investments to average EUR 16.6 billion.

Whilst somewhat short of the original SDG7 commitment, this is an achievable pathway to realising the finance soon after 2030. **A further, more ambitious pathway to achieving total SDG7 investment of EUR 200 billion by 2030, would require a year-on-year growth rate of 9.7%.** This would involve finding an additional EUR 60 billion or EUR 6.6 billion a year between 2022 and 2030.

These pathways for achieving the IEA's SDG7 benchmark are shown in Figure 2. They illustrate the increases in funding needed to reach the IEA's benchmark in a timely manner. The columns defining the baseline pathway illustrate the likely outcome if spending increases at the average achieved over the past seven years. The starting value of this trend in 2021 is EUR 13.7 billion, which is significantly less than the actual total invested in 2020. This reflects the line of best fit derived from the average performance from 2014-2020. The columns for the 2030 pathway show the increase needed above the already established trend to achieve the target sooner.

Inevitably, the amounts committed will continue to fluctuate, perhaps as strongly as they have done in past years. It is impossible for any statistical projection to capture, or predict, the vagaries of policies and economies in all African countries and their many international partners. However, the underlying dynamic remains the same.

Figure 1: SDG7 commitments, 2014-2020 (EUR billions)

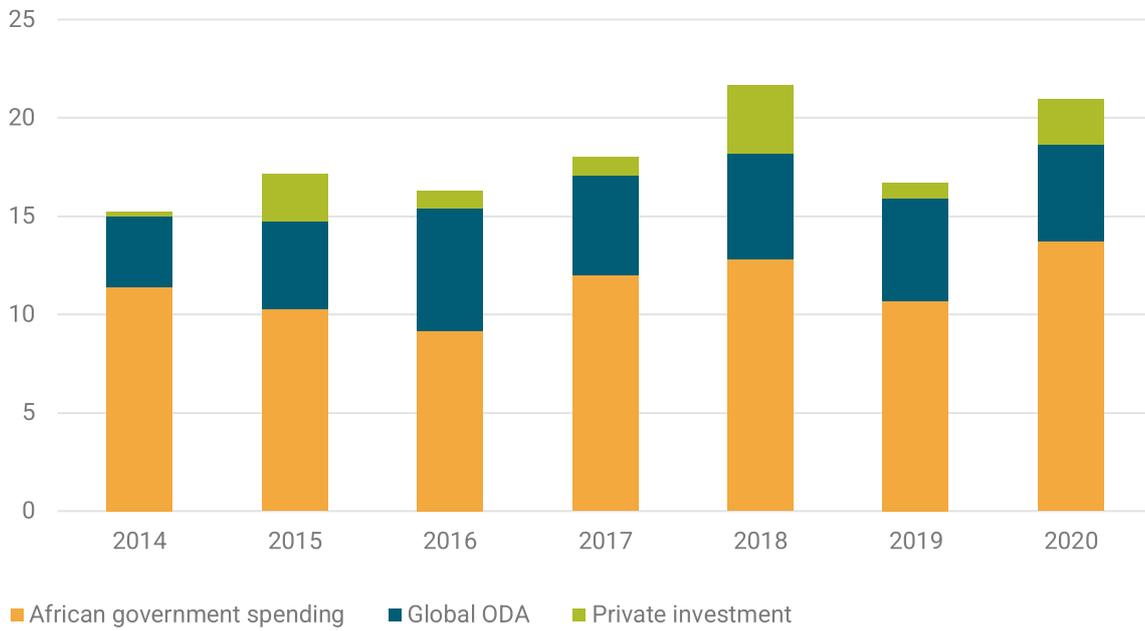
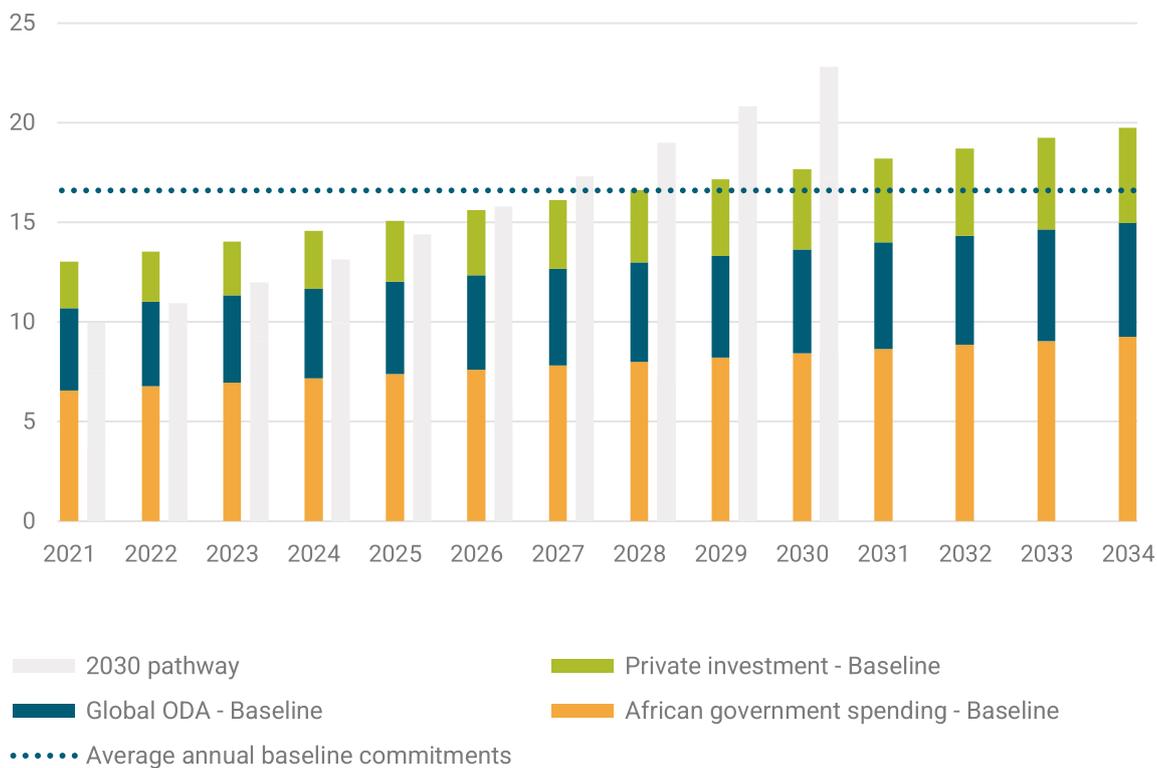


Figure 2: Achievable pathways to SDG7 (EUR billions)



SDG7 will be financed and achieved through the contributions of three key groups of stakeholders: African national governments, the international providers of ODA, and private investors.

So what is needed to be sure of a clear path towards SDG7 in, or soon after, 2030 is not just for each category of investing stakeholder to maintain its historic record of gradually increasing commitment, but for the weight assumed by each category to change, and for the private sector – currently the least important contributor – to play a much bigger role, with national governments opening the space for this to happen through a

range of policy reforms and incentives, where necessary.

consistent support over the past seven years has provided a foundation for ever more multilateral and private sector commitments, which now both exceed EU contributions (See Figure 3). Many EU Member States are strong contributors to multilaterals, so we expect this element to include a significant amount of EU support comparable with previous years.³ The continuation of this trend is essential for the eventual achievement of SDG7.

It is likely that, in the coming decade, EU finance will also become a leading catalyst of additional private sector investment.

A breakdown of Team Europe’s commitments shows where it is already most active. It committed **EUR 1.93 billion to SDG7-projects** in 2020, predominantly directed at renewable generation (EUR 1.1 billion), and transmission and distribution (T&D) projects (EUR 778 million) (see Figure 4).

Team Europe does not only provide ODA funding, but it has provided the vast majority of ODA financing for SDG7 projects between 2014 and 2020 with EUR 12.1 billion (see figure 5).

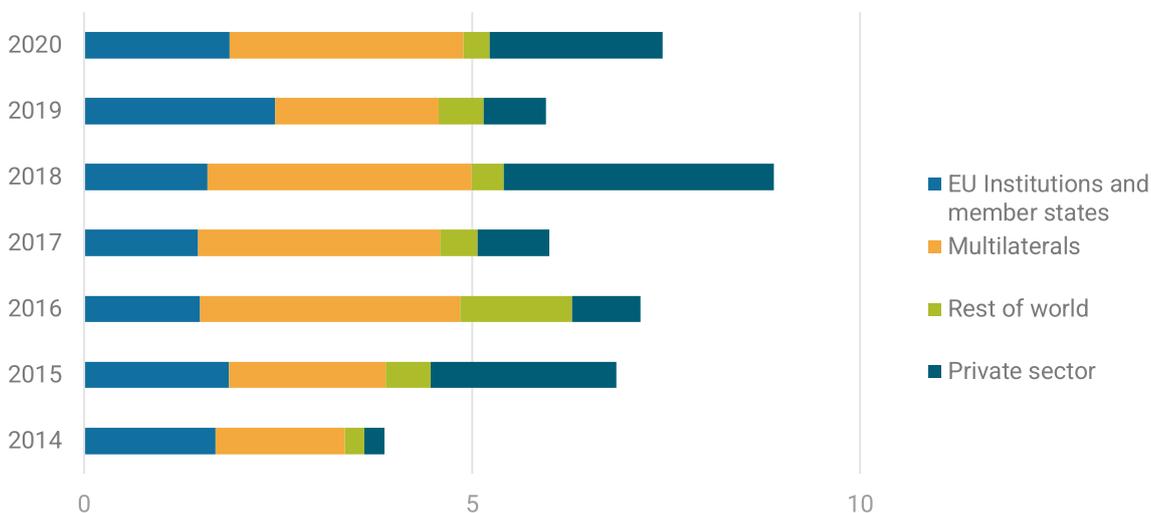


Team Europe committed **EUR 1.93 billion** to SDG7 projects in 2020.

Team Europe catalyses funding from other partners

Team Europe continues to provide significant finance for SDG7 projects in Africa. Its

Figure 3: International support for SDG7 in Africa (EUR billions)



3 Fluctuations in the amounts committed from 2018 to 2020 may be due, in part, to the diversion of funds towards healthcare and economic recovery programmes related to the Covid-19 pandemic in 2020.

While ODA loans were the preferred financial instrument, with EUR 1.3 billion (68%) provided, ODA grants accounted for EUR 466 million or 24% of the total SDG7 commitments in 2020 – broadly in line with previous years. ODA Equity investments, and Other Official Flows (Non-ODA), totalled EUR 87 million and EUR 71 million respectively.



Team Europe provided **EUR 1.3 billion** in ODA loans to SDG7 projects.

Examining the distribution of ODA financing across the income groups in 2014-2020, Team Europe provided EUR 5.1 billion to lower middle-income countries (LMICs) and EUR 4.2 billion to LDCs.

The multilaterals provided the most to LDCs across the study period with EUR 6.3 billion.

Comparing all financiers in 2020, Team Europe continued to provide the majority of ODA loans (EUR 1.3 billion) and grants (EUR 465 million) to SDG7 projects (see Figure 6). The multilaterals predominantly provided ODA loans of in the aggregate of EUR 1 billion and grants in the aggregate of EUR 352 million.

Data for the rest-of-world shows relatively low levels of ODA financing, compared to Team Europe and the multilaterals.

Figure 4: Team Europe SDG7 finance by sector, 2020 (EUR)

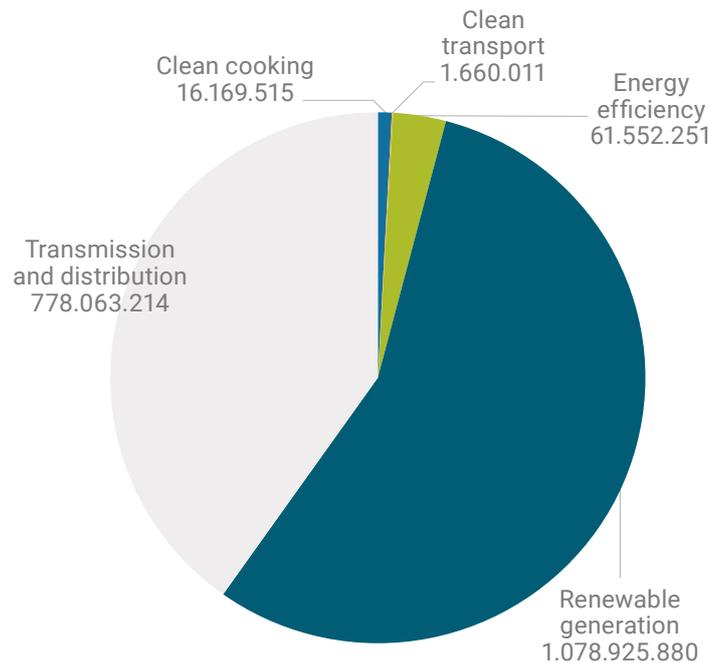


Figure 5: Figure 5: ODA financing of SDG7 in Africa by country income group, 2014-2020 (EUR billions)

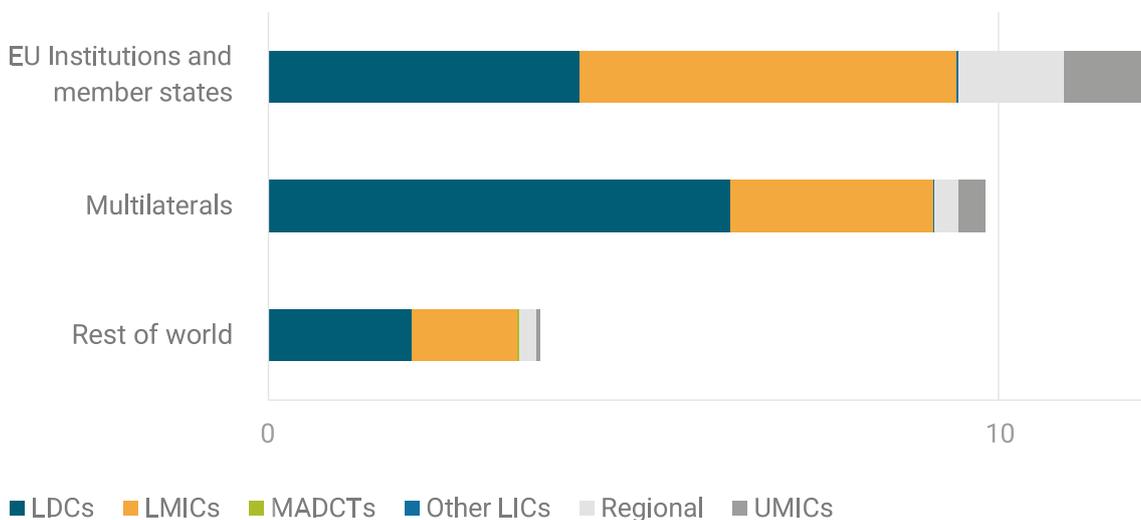
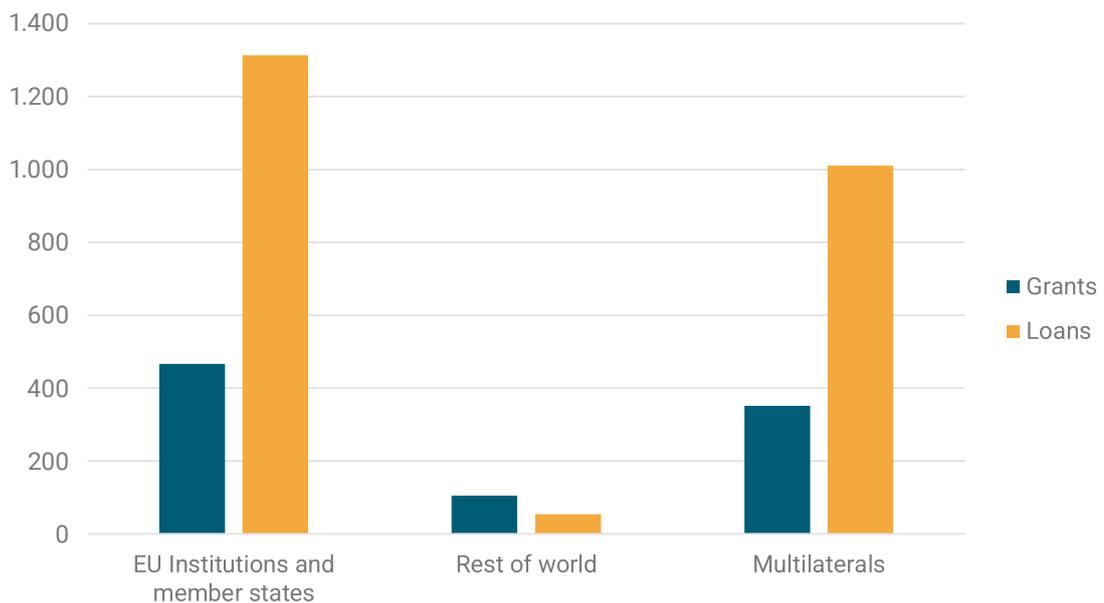


Figure 6: ODA grant and loan funding of SDG7 projects, 2020 (EUR millions)



Focus on transmission and distribution

The focus on investment in the T&D infrastructure in this year’s report is a recognition of its essential role in solving the continent’s energy supply challenge. **An upgraded T&D infrastructure offers the best route to ensuring low-cost supply, as well as providing accessible energy for Africa’s populations.** The present lack of adequate transmission networks

has disproportionately driven SDG7 solutions towards off-grid solutions.

While distributed energy will play a vital role in achieving SDG7, it is more expensive. So, until competitive pressures and advances in technological and commercial models lead to price reductions, its adoption may suppress

economic growth, or at least not provide the optimum conditions for it. This matters because growth can mutually reinforce SDG7 by driving demand and creating the ability to pay for it.

Grid extensions have the greatest capacity to bring the most affordable electric power to the largest number of people providing they advance hand-in-hand with the development of large-scale wind and solar PV power plants procured in well-designed auction systems. More work is, of course, needed on auction systems in many countries, and the price of distributed energy systems is also likely to fall. But despite these qualifications, **the more people who are supplied with electricity electrified by grid extension, the more affordable – and therefore the more achievable, SDG7 – will be.**

As the development of T&D systems have long lead-times, delays in expanding grids and network capacities implies a greater use



Grid extensions

have the greatest capacity to bring the most affordable electric power to the largest number of people if advanced hand-in-hand with well-designed and developed large-scale wind and solar PV power plants.

of distributed energy and therefore increased total cost. In recognition of this, African and European institutions and national governments are committing more money and effort to speed-up progress in this direction.

To illustrate these important trends, the 2022 report includes detailed profiles and case studies of transmission interconnection projects and other electrification schemes. These examples show where progress is being made and how bottlenecks in both financing and implementation can be overcome.

The creation of a fully interconnected transmission grid between all the countries and power-pools of the continent is a separate ambition from SDG7, but the two aims are closely related. **The achievement of SDG7, and the creation of an African Single Electricity Market (AfSEM), will advance hand-in-hand.**

The likely cost of an African 'super-grid' would be within the scope of the climate finance commitments promised at Paris in 2015, and possibly even comparable to the Just Energy Transition funding extended to South Africa at COP26, if it were extrapolated to a Pan-African scale, meaning that precedents for this level of investment already exist.

Other trends have emerged in the past year as strong areas for potential co-operation and development; these are the rapid progress now being demonstrated in the adoption of new technologies, such as waste-to-power, green hydrogen (GH₂), green ammonia, and – on the micro-scale – innovations in clean cooking.

Team Europe has played – and will continue to play – a vital role in supporting and encouraging these technologies, many of which offer unique opportunities for African countries because of their abundance of renewable natural resources.

European support for GH₂ research in Africa is targeting an aspiration to have at least 40 GW

of electrolyser capacity installed on the continent by 2030.⁴ This objective is expected to unlock business opportunities on both the supply and demand side for energy-intensive industries.

The potential for already established technologies is also large. Beneficial elements, such as the increasing standardisation of solar, wind, and distributed energy technologies are, already in place to permit the energy transition to contribute to universal access. However, the lack of the correct enabling environment, in the form of the right laws and regulations, remains an impediment.

New technologies, green hydrogen and clean-cooking innovations are strong areas for potential co-operation and development.

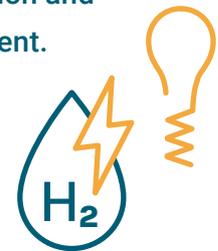
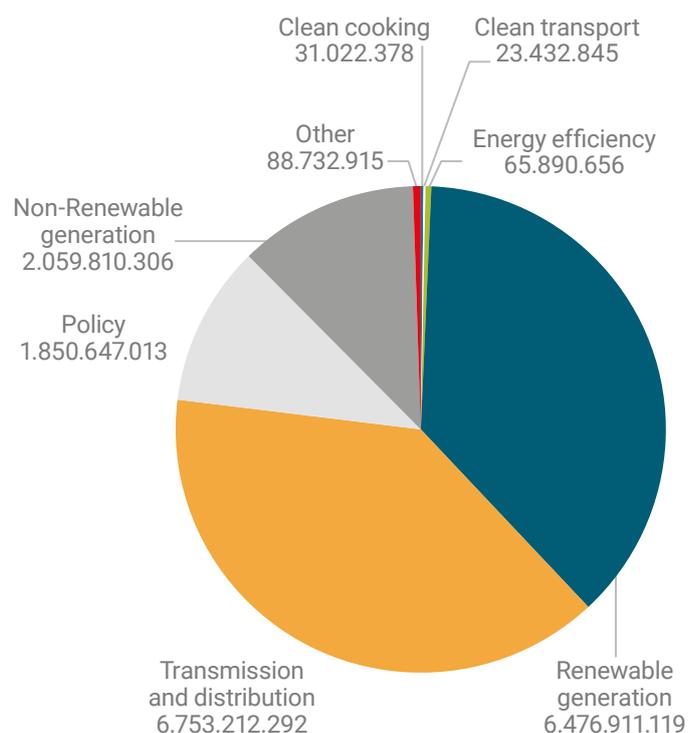


Figure 7: Total energy-related finance by sector, 2020 (EUR)



⁴ IRENA, 2020. 'Green Hydrogen Cost Reduction: Scaling-up Electrolysers to Meet the 1.5°C Climate Goal'

Maintaining and increasing efforts

Bringing more resources to bear against these challenges was always going to be a demanding task, and is likely to be even harder in the aftermath of Covid-19 pandemic, as the world continues to adjust to the pandemic's impact and to new risks to food and energy security, as well as inflation, that have been exacerbated following the Russian military aggression against Ukraine.

However, the analysis of financial flows and the evidence from the case studies featured in this report show that developments are heading in the right direction, but that huge potential for faster and more dynamic growth remains untapped. An accelerated and intensified drive is required to meet SDG7 in a timely way.

Box 1: Assessing future rates of change in SDG7 commitments

One of the questions addressed in some detail in this 2022 edition is whether the trajectory of financial commitments from the main supporters of SDG7 can show us what might happen, or what ought to happen, over the rest of this decade for the target to be hit by 2030 or soon afterwards.

A key motivation for asking this question is that despite inevitable year-on-year fluctuations, the 2014-2020 figures suggest that the extent of the commitments is steadily increasing. Does this encouraging indicator point to a successful outcome, and what needs to happen for this to be so?

To provide an answer, we have used a simple – linear – annual rate-of-change, in other words a straight-line projection. This assumes that, when averaged out, the annual increases in financing from 2021 to 2030 will be the same as those achieved over the 2014-2020 period. To find the 'line of best fit' for each category of stakeholder, we have applied a linear regression. This is a statistical technique commonly used to identify trends in fluctuating datasets.

Although the money put towards SDG7 is largely infrastructure investment, we found no justification for using the measure of Compound Annual Growth Rate (CAGR) in these projections. This is a rate for measuring capital growth, rather than expenditure. An upward curving parabola, it describes the exponential growth of an investment, assuming its annual profits are all reinvested at the end of each year.

The more private sector participation there is in SDG7-compliant projects, the more likely the occurrence of some compound effects – and these would be highly desirable. However, this cannot be expected from ODA or African national government energy funding. However, the potential for achieving exponential growth, and thus rapidly accelerating the delivery of SDG7, is one of the main reasons for encouraging greater private sector participation in Africa's electricity supply industries (ESIs) – from generation through transmission and distribution to off-grid and distributed power.

Total identified investment in Africa's energy sector (2014-2020)

Includes ODA and non-ODA inflows and private finance

EUR 115.2 billion
(commitments)

EUR 35.5 billion
(disbursements)

...of which: commitments to SDG7

EUR 46.2 billion

(with a further EUR 9.3 billion to policy support & capacity building)



SDG7 commitments by sector (2014-2020)

in EUR billion



Renewable energy **28.4**



Transmission and distribution **14.8**



Clean cooking **2.8**



Energy efficiency **0.29**

Other **0.02**

African financing of energy (2014-2020)

National governments:

EUR 80 billion

Development institutions:

EUR 5.9 billion



7 AFFORDABLE AND CLEAN ENERGY

EUR 25 billion



SDG7 financing needs using the IEA's Sustainable Africa Scenario (EUR per year)

Source of SDG7 commitments (2014-2020)

in EUR billion (Includes Policy and capacity building)



*excluding African and European multilaterals
** excluding China | *** including UK

EI & MS commitments to SDG7 (2014-2020) by...

...Financial instrument:

Grants: **EUR 3.6 billion**

Loans: **EUR 8.1 billion**

Equity: **EUR 394 million**

...Recipient income group:

LDCs: **EUR 4.4 billion**

LMICs: **EUR 5.3 billion**

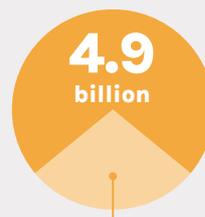
UMICs: **EUR 1.3 billion**

Other (incl. regional projects): **EUR 1.5 billion**

Total energy-related commitments by all donors in 2020

EUR 17.3 billion

ODA commitments to SDG7 **EUR 4.9 billion**



of which EI & MS **EUR 1.9 billion**

African spending on energy **EUR 13.7 billion**

13.7 billion

2.2 billion

Private sector **EUR**

2. Introduction

Background

This report is the sequel to the 2021 Report on European Financial Flows on SDG7 to Africa which was published in August 2021.

That 2021 report focused strongly on the policy and technical considerations of the financing of SDG7 in Africa. The current 2022 edition is more concerned with priorities and outcomes. As such, it provides more detailed reporting of stakeholders, relevant projects, and the beneficiaries of those projects.

A key intra-sectoral focus, which the 2022 edition has chosen to report on in detail, is the question of how SDG7-compliant finance has been, and will be, directed in the future to improve transmission infrastructure and, in particular, the interconnection of African countries and the five African power pools.

Whilst forming just one part of the continent's ESIs, it has been commonly observed that the inadequacies of transmission grids in terms of reach, resilience, capacity and interconnection combine to create one of the prime limiting factors in adding new generation capacity, increasing the proportion of variable RE generation, and enabling the wheeling of power within, and between, countries.

Clearly, this is a dynamic area and, as reported in section 5 (*Building an interconnected continent to achieve SDG7*), the landscape is changing rapidly. In particular the modelling and planning exercises currently underway as part of the Continental (Generation and Transmission System) Master-Plan (CMP) will shortly set a new agenda for the development of generation power plants and transmission interconnections across the continent.

This 2022 edition profiles a number of current projects at various stages of development. These have been selected for illustrative purposes. The choice of profiled projects is neither meant to indicate any order of priority, nor to anticipate future policy decisions on generation power plants and transmission interconnections, which must ultimately wait for the outcome of the CMP modelling process.

In terms of data, this 2022 edition has benefited from a further year of figures. Its analysis of financial trends takes in the commitments made in 2020. At the same time, the opportunity has been taken to look back over the whole funding period from 2014 to 2020 and to draw-out broad and solid conclusions based on the entire dataset.

Structure of the report

As with the 2021 report, the main objective of this 2022 edition is to assess the quantity, quality and equitability of European contributions to SDG7. Commissioned by the AEEP Secretariat, it is also intended to help guide future policy and funding.

It starts with a thorough overview of the role played by African national governments in the funding of projects to SDG7, in recognition of Africa's primary role in financing its energy industries. This section analyses the contributions of African national governments, as well as African development and commercial banks, and other institutions to achieving universal energy access for their populations.

Next, this 2022 edition describes and analyses the growing trend of contributions to SDG7 by Team Europe, and the quality of those contributions. Europe continues to be

the largest international donor financing Africa's energy sectors.

There then follows a section which looks in detail at the destinations of SDG7-compliant financing across the continent. In particular, the edition describes how partnerships between African institutions and national governments and Team Europe are contributing to the development of an energy-interconnected continent through support for existing power-transmission and interconnection projects, and to the development of the CMP-Plan – itself a necessary prerequisite for the eventual achievement of the AfSEM.

The edition then looks at the contribution to SDG7 from the private sector, and the role of finance from Team Europe in leveraging more private sector participation in the sector.

Next follows a section examining how electrification projects are advancing on the ground. The detailed perspectives, which these profiles provide, are intended as an illustration of how progress to SDG7 is already being achieved project-by-project, community-by-community, and region-by-region.

The edition then reviews the contributions to SDG7 by governments and multilateral organisations from other parts of the globe. It then looks at trends in types of SDG7-compliant funding, how they are evolving and Team Europe's role in that.

Continuing the trend of examining specific projects and developments taking place on the ground, a set of reports then follow on the role played by emerging technologies – an area which shows every indication of increasing importance, especially in the context of the need to adapt and mitigate the effects of climate change on African nations and the world. This leads into a section specifically on European support for climate finance in the context of SDG7 in Africa.

Based on a summation of the research and analysis described above, this edition then measures global progress towards SDG7 in Africa and addresses the financing gap by comparing the estimates of total investment requirements needed to achieve the goal with financial flows over the study period.

Data and methodology

The research underpinning this 2022 edition is based on the production of as comprehensive and robust a dataset as possible comprising commitments and disbursements to SDG7-compliant projects in Africa for the period 2014-2020 from public donors, African national governments and development institutions and the private sector⁵. However, it is important to note that this dataset is by no means complete, thereby reflecting the dispersed and disparate nature of data on the African continent. All EU member state and OECD member financing has been captured, but limited data is available for other actors, including African development banks and other multilateral organisations.

The dataset is built on project-level data to the greatest extent possible. This approach ensures that double-counting is avoided. In some cases, project-level information is unavailable, at which point aggregated data published by credible organisations is used, if not already captured.

Given that contributions towards SDGs are of a certain qualitative standard, only public finance classified as ODA or Other Official Flows is included. Non-ODA finance (such as export credit) is omitted, as are public financial flows where the levels of concessionality are opaque.

Public finance data for 2014-2020 is sourced from the OECD DAC's Creditor Reporting System (CRS). Due to this, the 2022 report uses



Europe continues to be the **largest international donor** financing Africa's energy sectors.

5 See full methodology for full definitions

OECD-defined categories, despite their not precisely matching those used by the SDGs. The OECD methodology for categorising ODA changed in 2019. Prior to this date, the face value of concessional finance, which met certain criteria, was classified as ODA, whereas from 2019 onwards, only the 'grant equivalent' of this finance is classed as ODA. For comparability across the study period, and due to the lack of grant equivalent data reported by donors, this 2022 report uses the previous definition of ODA for the entire study period.

Data on non-OECD member financial flows is not always published and often lacks detail. There is also no comprehensive dataset on private sector investment in energy and, as such, data has been sought from a number of sources, including the World Bank's Private Participation in Infrastructure database, a number of industry associations, including GOGILA, and the African Mini-grid Developers Association, Bloomberg New Energy Finance's Climatescope, and African Energy Live Data, among others.

Very limited information is available in the OECD DAC CRS as to which SDG (if any) an investment is targeted. This data has only been provided since 2017 and few donors submit this information. To remedy this, OECD and private data, which is not specified as SDG7, is assumed to be so, if it is directed at the following sectors: renewable energy (RE); ; transmission and distribution (T&D); ; energy efficiency; clean cooking; clean transport.

While not directly contributing towards SDG7, support for policy and capacity-building by means of technical assistance is reported, due to it being an important enabler for additional investment into SDG7.

The 2022 report endeavours to obtain African national government spending exclusive of recurrent expenditure, however, in some countries, only total departmental spending is available. Furthermore, while budget reporting

has improved markedly in recent years, it is still not possible to identify SDG7-only spending. The spending reported may, therefore, include non-SDG7 investments.

Definition of SDG7 financing

The dataset for this report combines several sources of information and therefore a consistent mapping of data was required to present SDG7 financial flows in a reliable manner. The definitions of reported financial flows are given below:

SDG7: all public funds⁶ (ODA and Other Official Flows) and private finance that aligns with OECD DAC sector codes for sustainable energy

SDG7-compliant: SDG7 as defined above including policy and capacity building

Energy-related: defined as all (SDG7, policy and capacity building and non-SDG7) finance directed to Africa between 2014 and 2020.

Non-SDG7: finance directed to projects that do not align with OECD DAC sector codes, or where the finance type or origin could not be identified.

Defining official development assistance

Official development assistance flows are defined as those flows to countries and territories on the DAC List of ODA Recipients and to multilateral development institutions which are:

Provided by official agencies, including state and local governments, or by their executive agencies and Each transaction of which is administered with the promotion of the economic development and welfare of developing countries as its main objective and is concessional in character.

In DAC statistics, this implies a grant element of at least:

45% in the case of bilateral loans to the official sector of LDCs and other LICs (calculated at a rate of discount of 9%),

15% in the case of bilateral loans to the official sector of LMICs (calculated at a rate of discount of 7%),

10% in the case of bilateral loans to the official sector of upper middle-income countries (UMICs) (calculated at a rate of discount of 6%), and

10% in the case of loans to multilateral institutions (calculated at a rate of discount of 5% for global institutions and multilateral development banks, and 6% for other organisations, including sub-regional organisations).

Loans whose terms are not consistent with the International Monetary Fund (IMF) Debt Limits Policy and/or the World Bank's Non-Concessional Borrowing Policy are not reportable as ODA.

Comparison with the EU Voluntary Review on SDGs

This AEEP Report on European Financial Flows on SDG7 to Africa is not the only research into the financing of SDGs that the European Commission is supporting. It is instructive to read its findings in parallel with other work currently underway.

One important study yet to be published is the EU Voluntary Review on SDGs (EUVR), whose objective is to estimate how the collective external action of the EU and its MS has contributed to the SDGs between 2015-2020, taking into account the interlinkages between the

SDGs and adjusting for the gaps in reporting SDG alignment to the OECD.

The scope of the EUVR's work includes all developing countries in all regions of the world. It also used a list of 29 OECD purpose codes for SDG7 compared to the AEEP's 17. A final difference is that it focused on deflated disbursements⁷, while this report uses project commitments⁸. The former allows the EUVR to evaluate what has actually been spent. By contrast, this report's use of commitments allows it to project future levels of finance required for SDG7 – an essential part of its purpose. Disbursements over a set period tend to be somewhat lower than commitments because of the time lag between when they are reported. So that totals will not align directly.

Despite these quite substantial differences in approach, each study has reached similar conclusions about the amounts of African finance from EU institutions and member states to SDG7 in 2020. This report has found that disbursements in 2020 from EU institutions and member states to be EUR1.67bn compared to EUVR's EUR1.63bn. The EUR40m difference can be explained by EUVR's use of 'deflated disbursements' and the AEEP's use of a USD to EUR exchange rate.

7 Defined by the OECD as "The release of funds to or the purchase of goods or services for a recipient; by extension, the amount thus spent. Disbursements record the actual international transfer of financial resources, or of goods or services valued at the cost to the donor"

8 Defined by the OECD as "A firm obligation, expressed in writing and backed by the necessary funds, undertaken by an official donor to provide specified assistance to a recipient country or a multilateral organisation. Bilateral commitments are recorded in the full amount of expected transfer, irrespective of the time required for the completion of disbursements."

3. Charting the Recovery of the African Funding of SDG7 Goals

Public spending directed to the energy sector

African national governments, multilaterals and development finance institutions are playing a crucial and leading role in the effort to achieve SDG7 in Africa by 2030. In 2020, an

estimated EUR 15.6 billion of public spending was directed to the energy sector from the budgets of 47 African countries and five multilaterals and finance institutions (See Figure 8). This was the highest commitment amount for a single year across the seven-year study period and showed a marked improvement compared to 2019.



In 2020, **EUR 15.6 billion** of public spending was directed to the energy sector.

It should be noted that it is not possible to identify SDG7-specific funding from African national government budgetary spending and, therefore, the figures presented may be overinflated. This 2022 edition has based its projections for the likely achievement of SDG7 on the basis that 50% of Africa national government energy expenditure qualifies.

It is reasonable to assume that a high or increasing proportion of energy expenditure in national budgets will qualify, given the

overwhelming urgency and importance of universal energy access to populations and governments. The present edition has made a considerable effort to capture the investments of regional economic communities and power-pools.

African national government spending

African national governments already play a critical role in the development of the continent's energy sectors. Figure 8 shows that in 2020, total national budget spending directed at the energy sector totalled **EUR 13.7 billion**, identified from 47 African national governments. It marks a recovery compared to 2019 and continues the trend of strong support from domestic governments to the energy sector.

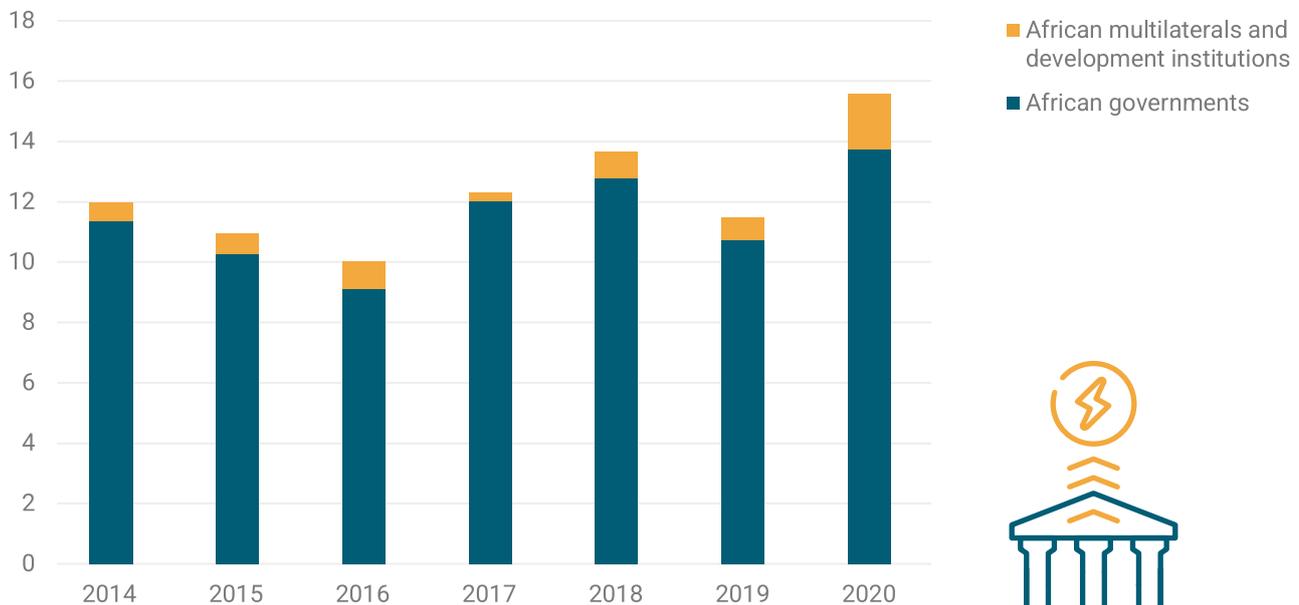
Compared to global energy-related commitments of EUR 17.3 billion made by all donors in 2020, African government spending equated to 79% of this total. This, in itself, is a strong indicator of the crucial role of African national governments in achieving SDG7.

Data on African national government spending indicates that the commitments remain highly concentrated amongst countries with

Box 2: Agenda 2030 and Agenda 2063

The achievement of SDG7 ('Agenda 2030') is crucial to achieving Africa's continental development plan, 'Agenda 2063', and relies on the continued support of African national governments and African Union Member States. The two mandates are complementary, especially in the long-term plan's industrialisation, job creation, peace and prosperity dimensions.

Figure 8: Funding of energy-related projects by African national government and development institutions, 2014-2020 (EUR billions)⁹



larger budgets and more financing means at their disposal. Simply put, Egypt's and South Africa's contributions dominate. Spending by these two national governments alone has outstripped the commitments of the rest of the continent combined during the seven-year period. From 2014-2020, South Africa's total commitments to the energy sector accounted for 30% of the total, Egypt's spending totalled 25%. Spending by the remaining 45 identified governments equated to 45% of identified finance, or EUR 40 billion (see Figure 9). Due to this disproportionality, fluctuations in the commitments made by Pretoria and Cairo are responsible for significant changes in the overall data picture.

This gap has narrowed over time, however, and in 2020, other African national government contributions increased to 60% of total spending. Furthermore, an increase in spending by other African national governments was almost entirely responsible for the substantial difference in spending between 2019 and

2020. Notable increases in spending have come from countries including **Angola, Tanzania and Algeria**, which account for 16.7%, 8.3% and 7.8% of the African total respectively. It is also worth noting that budget data has become increasingly available, meaning that many countries excluded from previous years are now contributing to a clear picture of the overall data trends across Africa's power sectors.



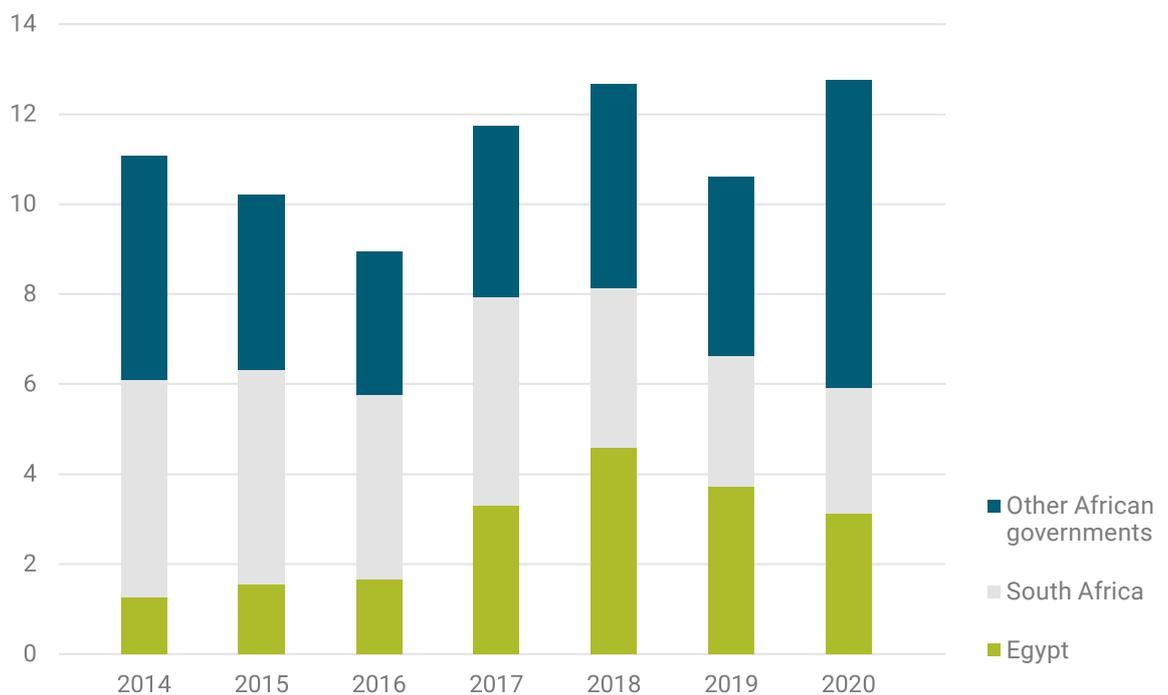
Egypt and South Africa had the biggest government spending on energy-related projects.



Notable increases in spending have come from countries such as **Angola, Tanzania and Algeria**.

⁹ African multilateral and development institution spending is for SDG7-compliant projects, while African national government spending is all energy-related.

Figure 9: National government spending, 2020 (EUR billions)



In tune with data trends identified from African national governments, the average annual spending in the group of UMICs has been significantly higher over the 2014-2020 period, than that of the two lower income country groups. However, this distance has reduced over time, with the gap between the UMIC and LMIC groups being relatively small in 2020, with UMIC spending an average of EUR 0.52 billion compared to EUR 0.37 billion for LMIC countries (see Figure 10).

The narrowing of the difference is mostly explained by a clear and consistent reduction in average annual expenditure by the UMIC group from EUR 1.05 billion in 2014. This is largely driven by the marked annual reduction in government energy spending by South Africa.

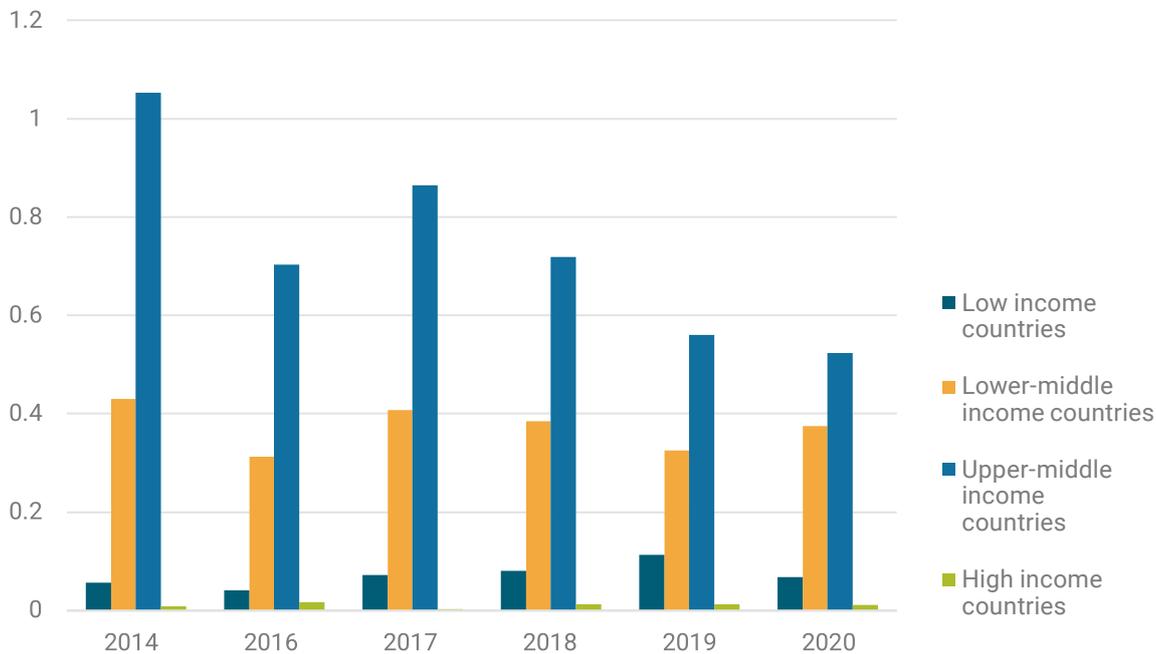
Countries from the low-income bracket have made relatively minor contributions to the continent's power sector, reflecting difficult

budgetary constraints among some of the world's poorest nations. Income inequality amongst African countries remains a major challenge, and donor support directed towards low-income countries (LICs), in particular, remains critical in developing sustainable energy sectors.

African development banks and development finance institutions

African development banks and development finance institutions are continuing to play a major role in the development of African energy sectors. In 2020, they committed EUR 1.8 billion to energy financing. This was the largest amount ever by a significant margin – more than double the figure for 2019, and triple that of 2014. These institutions are ac-

Figure 10: Average annual government spending by per-capita income group, 2014-2020 (EUR billions)



tive across a diverse range of SDG7 projects in renewable energy and capacity-building.

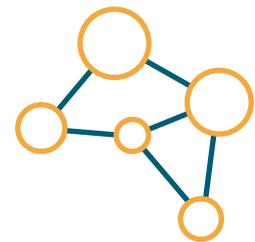
Data has been collected from six African development banks, namely the Development Bank of South Africa (DBSA), the African Development Bank (AfDB), the African Development Fund (ADF), the Banque ouest-africaine de développement (BOAD), the Eastern and Southern Trade and Development Bank (TDB), and the ECOWAS Bank for Investment and Development (EBID) (see Figure 11). It is worth noting that there are various institutions which could not be included in the analysis due to data constraints – as such, the overall figure for funding is certain to be higher than discussed here.

The AfDB has become the largest contributor to SDG7-compliant finance amongst African development banks and multilaterals. In 2020, it contributed close to EUR 1.45 billion.¹⁰ Major

projects identified within the data for 2020 include a EUR 407 million commitment to T&D in Angola – a project to construct central-south transmission line, enhancing the distribution of RE in the south and aiming to alleviate the use of 46.7 billion litres of diesel per year.¹¹ The AfDB also notably committed EUR 23.2 million of policy support to Madagascar via its Fragile States Facility.

In keeping with previous years, T&D was the major focus of financing efforts by African banks in 2020, with a total of EUR 892 million. This was followed by policy and capacity building with EUR 677 million, while RE generation projects accounted for EUR 347 million.

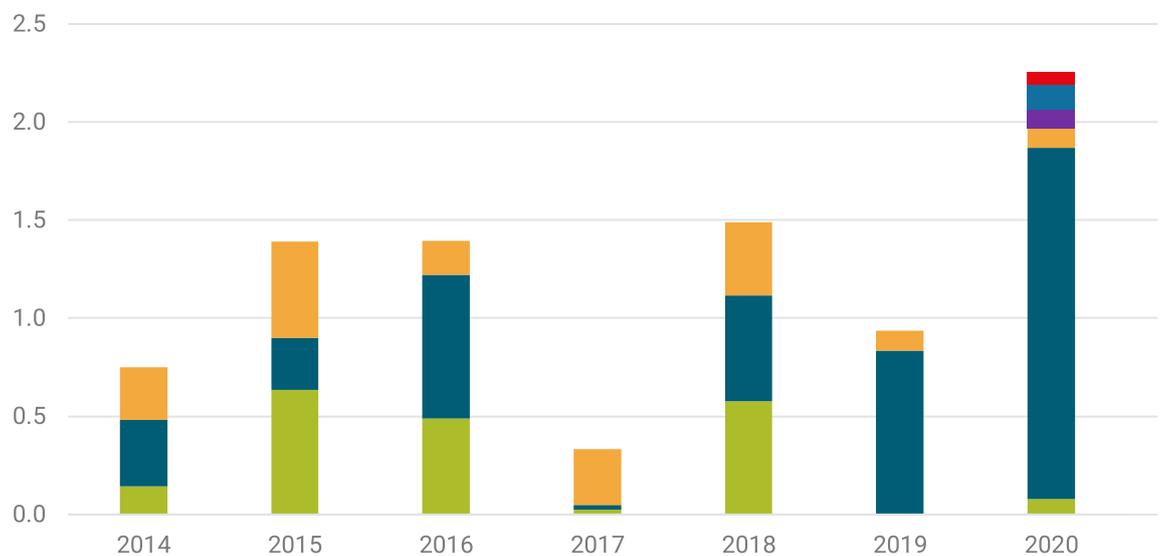
African banks focused financing efforts on T&D with a total of EUR 892 million in 2020.



¹⁰ The AfDB figures are for its Middle Income Fund, NEPAD, Ordinary Capital, and African Private Sector Assistance Fund

¹¹ <https://www.afdb.org/en/news-and-events/press-releases/angola-african-development-bank-funds-530-million-electricity-project-expand-renewable-energy-and-regional-connectivity-42723>

Figure 11: Energy-related financing by African development banks, 2014-2020 (EUR billions)



- ECOWAS Bank for Investment and Development
- Banque Ouest Africaine de Développement
- African Development Bank
- Eastern and Southern Trade and Development Bank
- African Development Fund
- Development Bank of Southern Africa

The ADF has also made substantial contributions, peaking in 2015 with EUR 494 million. SDG7-compliant commitments in 2020 included a hydroelectric project in Central Africa, and policy support in Madagascar of EUR 13.9 million and EUR 13.4 million respectively.

The TDB was also active – with a notable commitment to African regional RE projects in 2020 to the tune of EUR 105 million, with a further EUR 25 million being committed to financing climate infrastructure projects via a 10-year loan facility.

The EBID made commitments to several notable SDG7-complaint projects across countries in West Africa – including rural electrification in Sierra Leone, and RE projects in Mali, Togo and Benin.

The DBSA made significant contributions in 2015, 2016 and 2018, but have contributed a

relatively minor percentage of overall funding in the other years under examination. However, DBSA was responsible for significant support to a solar energy project in Angola for 2020, committing EUR 80 million.

4. Trends in European Contributions to SDG7 in Africa

Review of 2014-2020

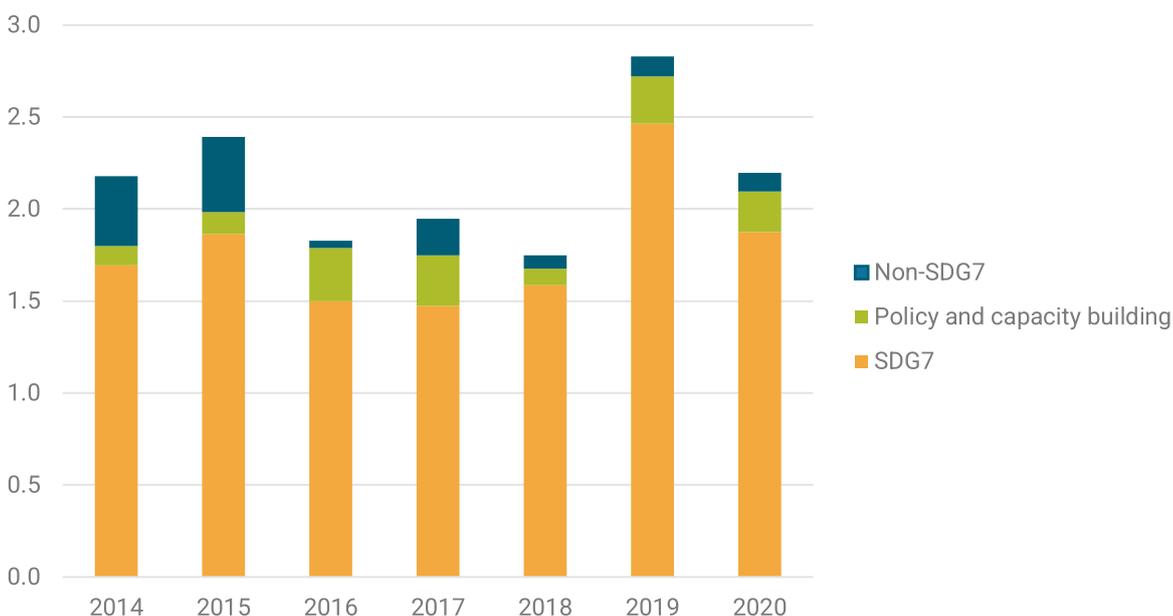
Over the 2014-2020 study period, EU institutions and member states (Team Europe) have contributed a total of EUR 15.1 billion to energy-related projects in Africa, an annual average of EUR 2.16 billion. **Total commitments made to SDG7, and related policy and capacity-building projects over the same period, were EUR 13.8 billion, rising from EUR 1.8 billion in 2014, to EUR 2.1 billion in 2020 (see Figure 12).** Team Europe has consistently been at the forefront of financing SDG7 in Africa and are second only to multilaterals in total commitments made. However, Team Europe donors also provide substantial core contributions to multilateral organisations.¹²

The latest data for 2020 shows EUR 2.2 billion was committed to energy-related projects.

While this is a decrease compared to 2019 (EUR 2.8 billion), **SDG7 commitments in 2020 were the second highest across the study period.** This is despite the Covid-19 pandemic, and the subsequent diversion of public spending towards economic recovery and emergency healthcare programmes.

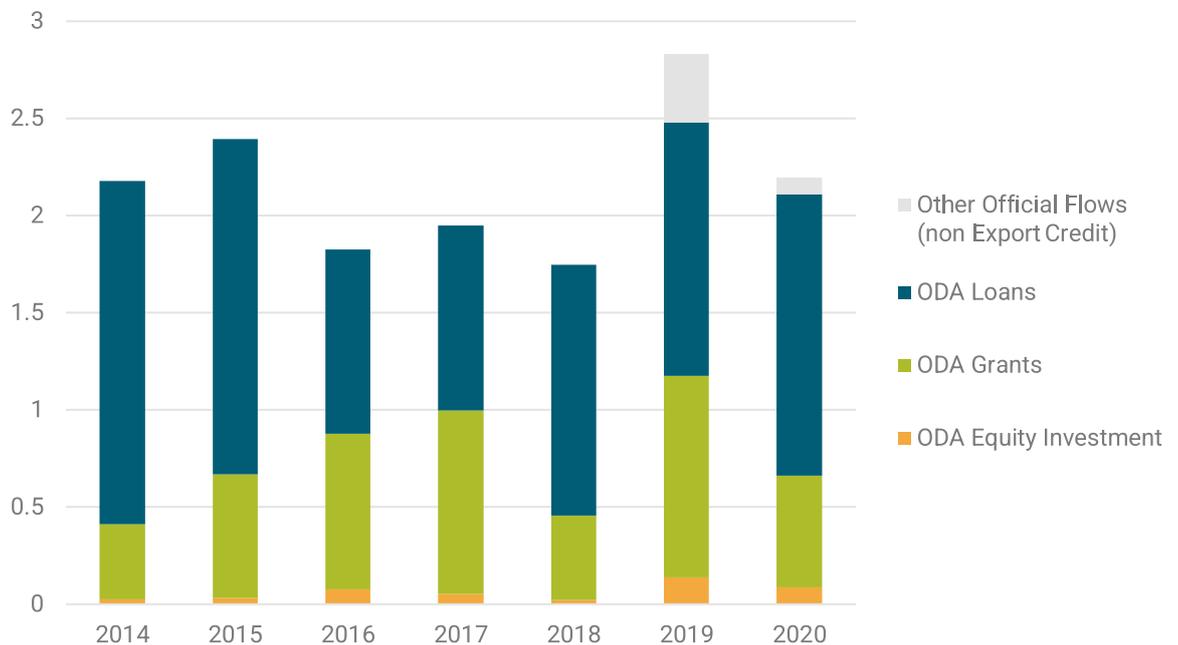
Overall, the rising trend in SDG7 commitments has coincided with the continued reduction in commitments to non-SDG7 projects, falling from EUR 382 million in 2014, to EUR 98 million in 2020. Policy and capacity-building programmes have remained a key focus for Team Europe across the study period, rising from EUR 103 million in 2014, to EUR 161 million in 2020, with peaks in 2016, 2017 and 2019 at EUR 292 million, EUR 276 million and EUR 256 million, respectively and averaging EUR 185 million a year.

Figure 12: Total commitments to energy in Africa made by EU Institutions and member states, 2014-2020 (EUR billions)



¹² EIB and EBRD are included as EU institutions.

Figure 13: Team Europe commitments, by finance-type, 2014-2020 (EUR billions)



Financing by donor

EU member states made commitments worth EUR 9.8 billion to energy-related projects between 2014 and 2020, with an annual average of EUR 1.4 billion. EU institutions made total commitments of EUR 5.3 billion and had an annual average of EUR 757 million.

EU member states predominantly provided ODA loans to energy-related projects, whereas EU institutions provided almost equal amounts of ODA loans and grants.

Financing by recipient country

Amongst the top ten recipients of SDG7-compliant finance from Team Europe, between 2014 and 2020, three were LDCs (**Zambia, Mozambique and Uganda**), while the remainder were upper, middle and lower middle-income countries. **Morocco** received the highest amount of commitments with EUR 2.5 billion between 2014-2020, followed by **South Africa** with EUR 1.2 billion, and **Nigeria** with EUR 829 million.

Team Europe has continued to provide significant financing to LDCs. It increased all energy-related commitments to them from EUR 384 million in 2014, to EUR 781 million in 2020.

Grant funding for LDCs accounted for 54% of Team Europe’s total SDG7-compliant ODA grant commitments – a testament to their focus on this group (see Figure 15). They also provided large sums of grant funding to LMICs.

Figure 14: Team Europe SDG7-compliant commitments, by recipient country, 2014-2020 (EUR)

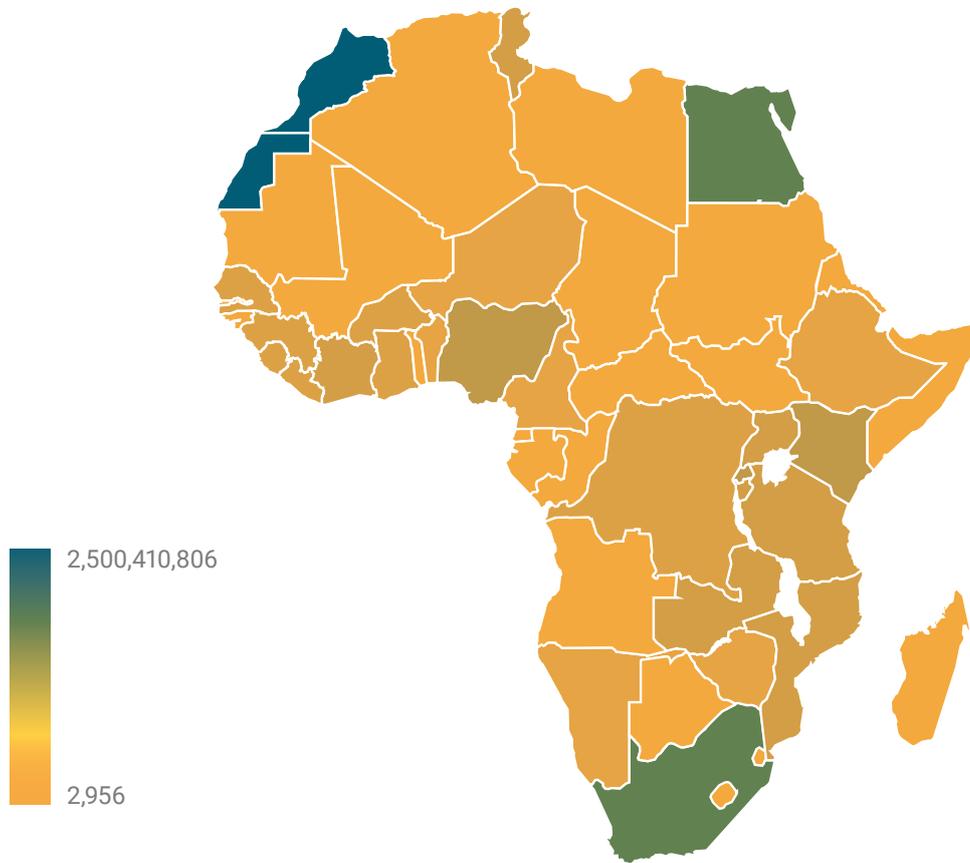
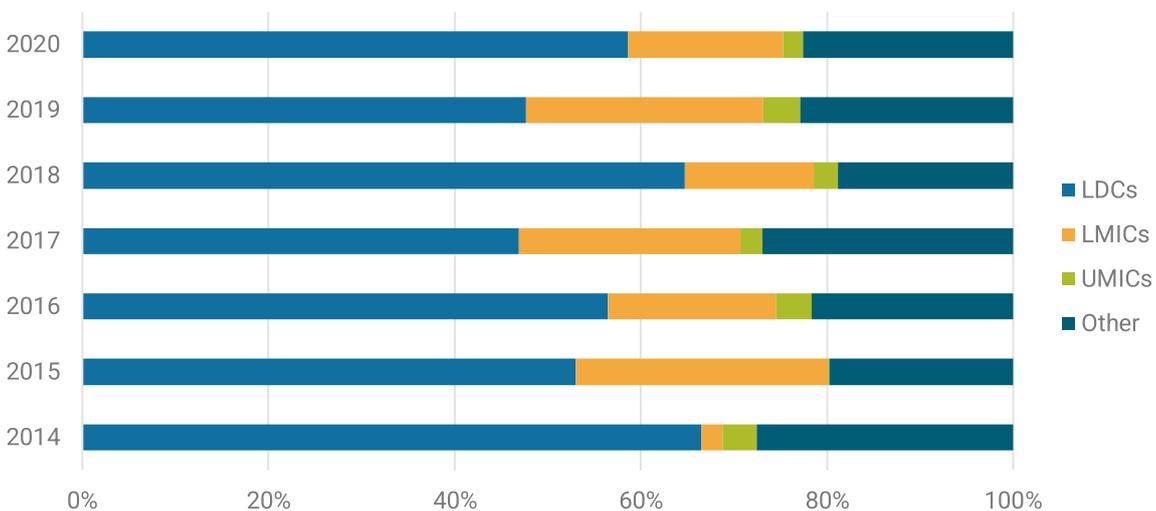


Figure 15: EU institutions and member states' ODA grant funding to SDG7-compliant projects, 2014-2020 (%)



Financing by sector

Team Europe committed EUR 7.5 billion to RE and EUR 4.6 billion to T&D projects between 2014 and 2020 (see Figure 16). Both RE and T&D are primary focuses of European donor efforts, accounting for 55% and 34% of total commitments respectively.



European donor efforts are primarily focused on RE and T&D, accounting for **55%** and **34%** of total commitments respectively.

T&D projects, funded by Team Europe donors, were dominated by centralised on-grid projects. Policy and capacity-building projects, which lay the groundwork for project development and support the investment environment, received EUR 1.3 billion over the study period.

Clean cooking projects – such as those aiming to replace firewood with charcoal as cooking fuel – have not seen consistent amounts of investment. Commitments peaked in 2015 at EUR 69 million, followed by

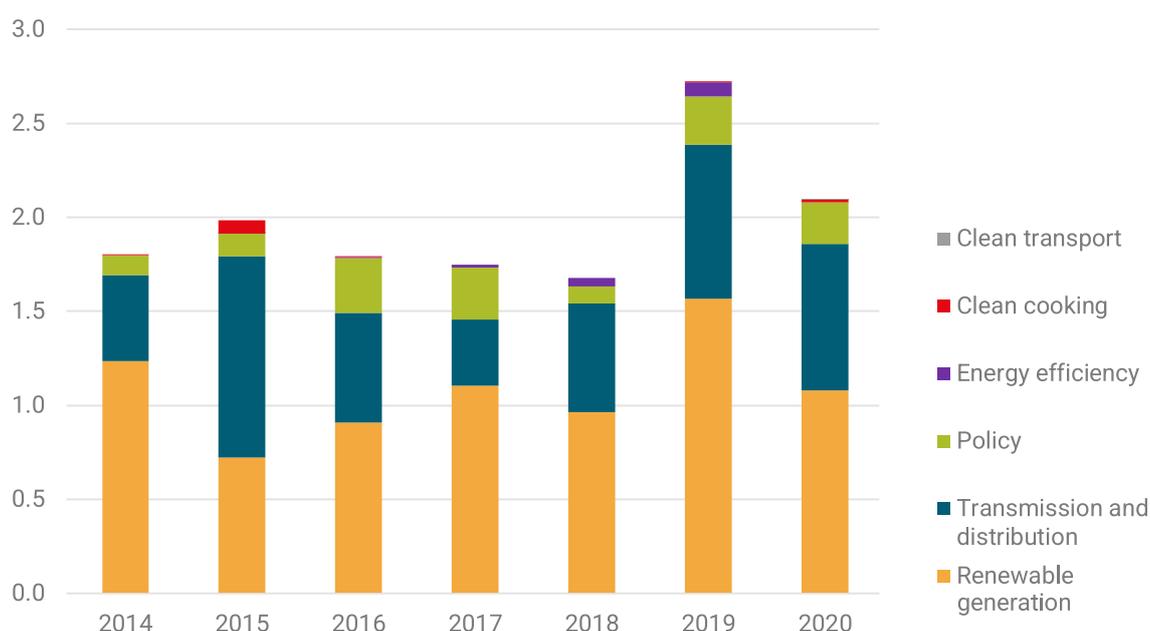
no significant investments until 2020, when a further EUR 16 million was committed, indicating a resurgence of interest in this area, linked to the much higher priority now given to climate finance. Commitments to energy efficiency projects have increased year-on-year since 2015, reflecting the growing importance and necessity of this type of project.

Commitments to non-SDG7 projects by Team Europe have been trending downwards since 2015. Non-RE generation and upstream oil and gas infrastructure for the period 2014-2020 account for EUR 642 million or 49% and EUR 494 million or 38% of total non-SDG7 commitments respectively.

Regional economic communities and power-pools

Regional economic communities (RECs) and regional power-pools play a crucial role in not only promoting cross-border economic integration, but also in facilitating investment in the African energy sector. Table 1 shows the

Figure 16: EU institutions and member states' funding of SDG7-compliant projects, by sector, 2014-2020 (EUR billions)



distribution of all Team Europe energy-related financing between 2014 and 2020 by RECs.¹³

The Community of Sahel-Saharan States, comprising 29 African countries, received the highest amount of energy-related commitments with EUR 7.3 billion, followed by the Common Market for eastern and southern Africa (EUR 3.1 billion) and the Economic Community of West African States (EUR 3 billion). As some countries are part of more than one REC, there may be overlap in the ultimate destination of some of these funds.

Team Europe commitments to T&D projects were directed predominantly towards countries within the western and southern African power-pools (WAPP and SAPP). Between 2014 and 2020, donors pledged EUR 1.7 billion to projects in WAPP, and EUR 1.4 billion to those in SAPP (see Table 2). These projects are almost exclusively on-grid, centralised projects supporting regional integration and cross-border electricity trade – some of these projects are profiled in section 5.

Table 1: Team Europe commitments to SDG7 projects, by REC, 2014-2020 (EUR)

Regional Economic Community	Commitments (EUR)
Arab Maghreb Union	2.926.281.187
Economic Community of Central African States	398.140.211
Southern African Development Community	2.865.672.165
Community of Sahel–Saharan States	7.391.986.842
Economic Community of West African States	3.094.871.984
Common Market for Eastern and Southern Africa	3.185.764.443
East African Community	1.765.140.340

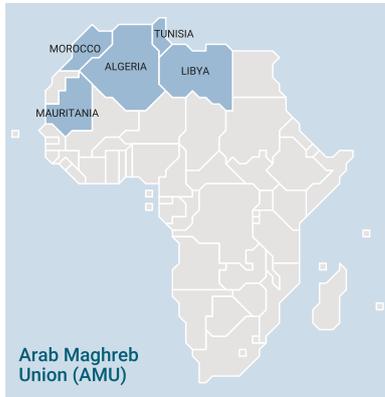
Table 2: Commitments to SDG7 projects, by power-pool, 2014-2020 (EUR)

Power Pool	Amount (EUR)
Maghreb Electricity Committee	391.494.089
Southern African Power-Pool	1.407.656,902
Central African Power-Pool	30.271.759
West African Power-Pool	1.679.144.999
East African Power-Pool	985.016.945

¹³ A full breakdown of each REC can be found in the methodology.

Map 1: RECs and Power Pools

African Union Regional Economic Communities



Regional Power Pools

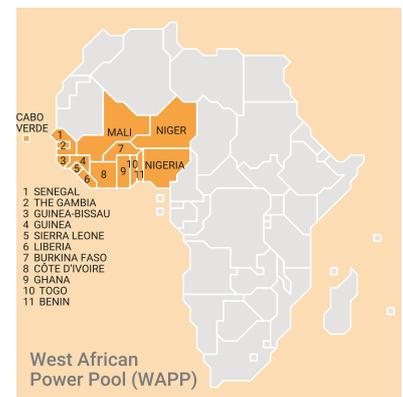
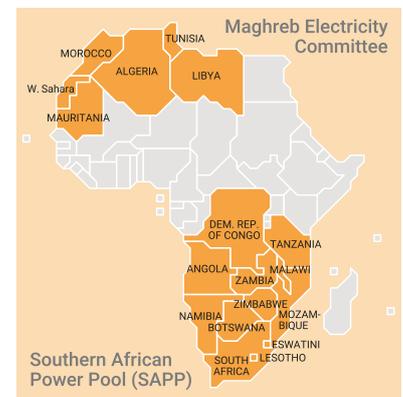
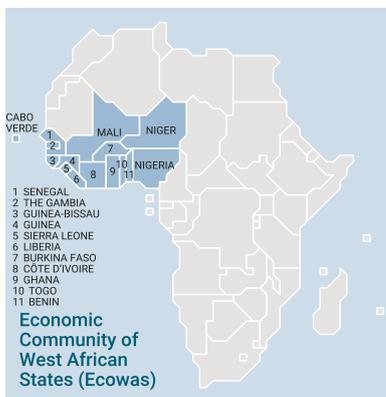
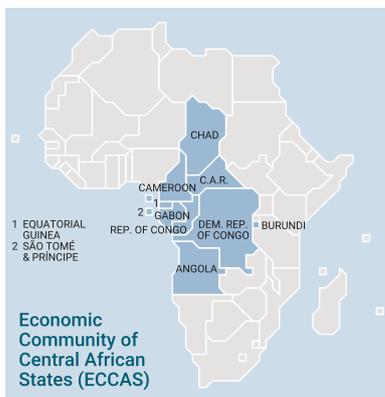
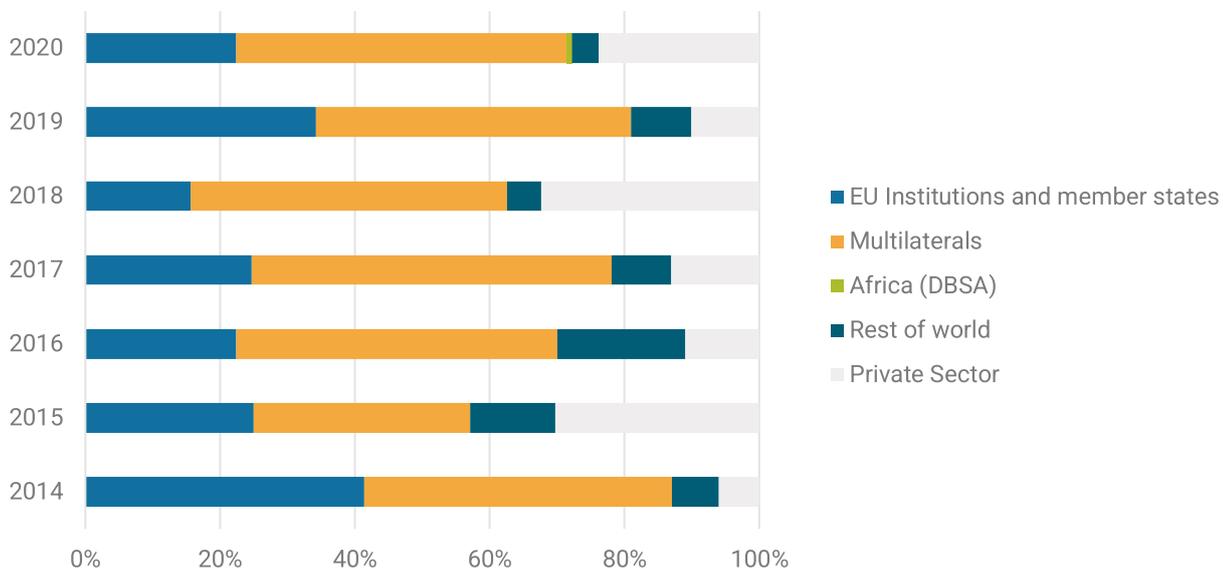


Figure 17: Funding to SDG7-compliant projects, by donor, 2014-2020 (%)



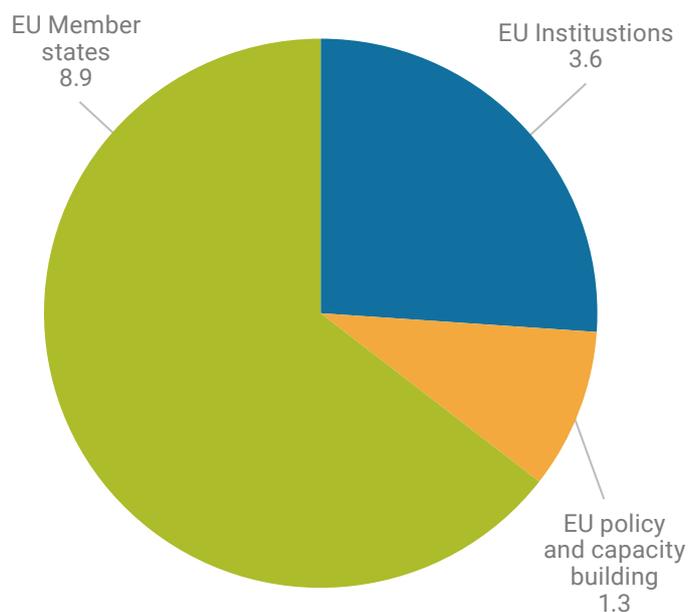
European contributions to SDG7 projects, 2014-2020

As noted above, since 2014, EU Institutions and Member states have consistently provided more SDG7 finance than non-EU governments. Multilateral organisations have, however, provided the vast majority of relevant commitments – a total of EUR 25.5 billion over the seven-year period – but Team Europe continued to provide substantial amounts of funding through core contributions. The consistency of Team Europe’s approach and its role in supporting and catalysing other sources of finance is evident from these figures.

Looking within Team Europe’s sizeable contribution to SDG7 in Africa, we can see that EU member states have provided the vast majority of financing, committing EUR 8.9 billion over the study period (see Figure 18) plus EUR 571 million in policy and capacity building.

EU institutions, however, still play a crucial role, having provided EUR 3.6 billion of total SDG7 commitments, plus EUR 723 million in policy and capacity building.

Figure 18: EU institutions and member states’ SDG7-compliant commitments to Africa by donor, 2014-2020 (EUR billions)



Renewable energy

Looking more deeply into Team Europe’s provision of EUR 7.6 billion towards the financing of RE projects since 2014, renewable energy generation from multiple technologies and grid-based solar received the largest number of commitments with EUR 2.4 billion and EUR 2.3 billion, respectively.

A lot has been going on within this broad envelope of financial support. In 2014, grid-based

solar dominated commitments as the investment landscape for solar in Africa began to open (see Figure 19). Since then, hybridised RE solutions have become increasingly prominent, as projects sought to harness the flexibility and cost-savings made possible by this technology. The influence of other factors can also be detected in the numbers. For instance, in 2018, the

financial close of some large-scale solar projects in North Africa, particularly in Morocco, resulted in the highest amount of finance for solar since 2014.

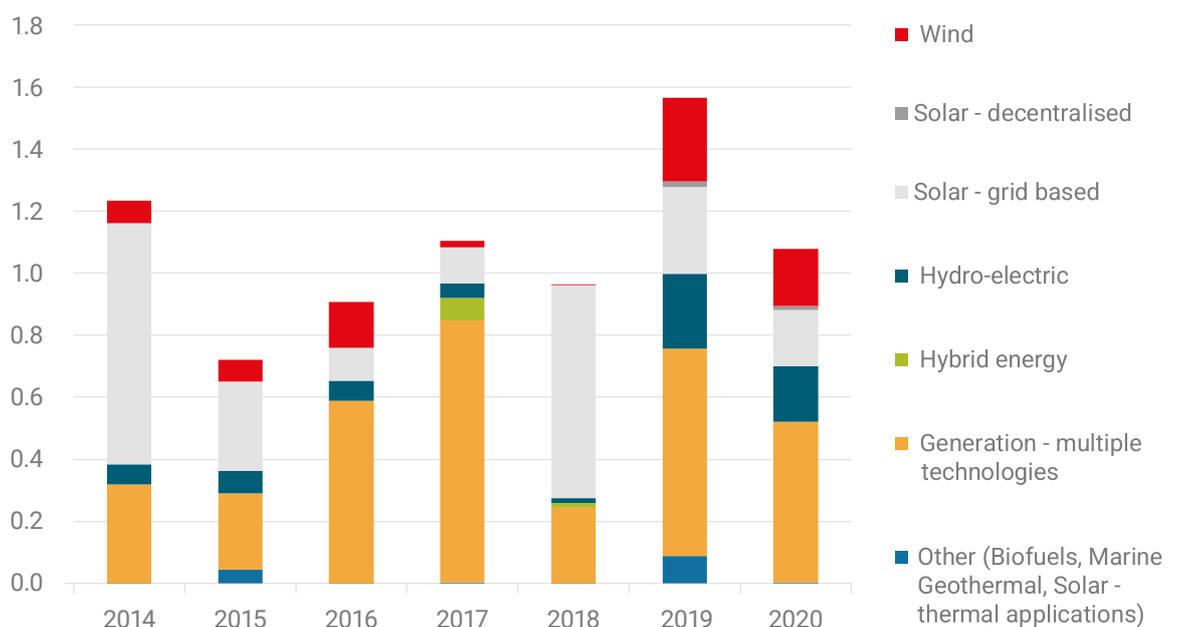
A number of the multiple technology generation projects that were financed by Team Europe between 2014 and 2020 were provided through large-scale public procurement programmes, such as Get FIT and ElectriFI in Zambia in 2017, or DFI-backed sector programmes, such as the Regional Liquidity Support Facility, which is connected to the African Energy Guarantee Facility.

Finance for hydroelectric projects resurged between 2019 and 2020 with funding provided for a number of large-scale hydroelectric projects across Africa. The largest investment in Morocco received a EUR 170 million commitment in 2020 from the European Investment Bank (EIB) for the ‘construction of a pumped storage power station in Abdelmoumen; extension of the Afouer pumped storage power station, and construction of a hydropower plant (HPP) at Tillouguit’¹⁴.



Renewable energy generation from multiple technologies received the largest number of commitments with EUR 2.4 billion.

Figure 19: EU institutions and member states’ commitments to RE, 2014-2020 (EUR billions)



Transmission and distribution

T&D projects are vital to increasing energy access and strengthening domestic infrastructure. Team Europe's EUR 4.6 billion commitment to T&D projects between 2014 and 2020 was almost exclusively directed towards large-scale grid projects. Of the total amount, EUR 3.4 billion was given in the form of ODA loans, and EUR 1.2 billion as ODA grants.

These themes are explored in more detail in chapter 5.

Team Europe has directed its support for T&D projects where it is most needed. LDCs received almost half of the total commitments. One of the largest T&D projects was the EUR 148 million investment in 2020 from the EIB to construct a 225 kV interconnection between Guinea and Mali as part of the Côte d'Ivoire, Liberia, Sierra Leone and Guinée interconnection project (See [West African Interconnection Projects](#)). The project will look to support regional electricity trade, but also boost rural electrification along the transmission line's route.

Energy efficiency

While the focus of achieving SDG7 in Africa has been predominately on increasing generation capacity and improving T&D infrastructure, energy efficiency is a key component of achieving SDG7 and wider climate targets, especially as African countries develop and become more energy-intensive.

Over the study period, Team Europe committed a total of EUR 211 million to energy efficiency projects and have been increasing year-on-year, from just EUR 542,059 in 2015, to EUR 62 million in 2020, with a peak of EUR 79 million occurring in 2019. LDCs and LMICs received 38% and 47% of total commitments respectively.

Clean cooking

The clean cooking sector has consistently not received the levels of investment needed. According to SEforALL's 2022 SDG7-tracking report, sub-Saharan Africa (SSA) is the only region in the world where the number of people without access to clean cooking fuels or technologies is rising. 19 of the 20 countries with lowest access to clean cooking are in Africa.¹⁵

Table 3: Largest recipients of Team Europe funding for T&D projects, 2014-2020 (EUR)

Country	Commitments (EUR)
South Africa	657.651.132
Nigeria	563.095.210
Kenya	389.624.400
Tanzania	312.862.376
Rwanda	265.785.848
Morocco	235.694.929

Between 2014 and 2020, Team Europe provided EUR 86 million to clean cooking projects. This was the second largest contribution made over the study period, behind multilateral organisations. One of the largest commitments was EUR 14 million from the European Development Fund for a project in Tanzania. New business models are emerging, which could be the target of further funding (see Chapter 10: [Clean cooking: Models still emerging, but scale needed](#)).

Disbursements

Over the study period, Team Europe disbursed EUR 9.4 billion to SDG7 and policy and capacity-Building projects in Africa. The average annual disbursement was EUR 1.3 billion, and 2016 was the only year where disbursements of EUR 1.9 billion exceeded commitments of EUR 1.7 billion. However, there is no direct correlation between a commitment and disbursement in any given year, as disbursements will typically lag behind their respective commitment.

89% of total Team Europe disbursements between 2014 and 2020 supported SDG7 and policy and capacity-building projects. As

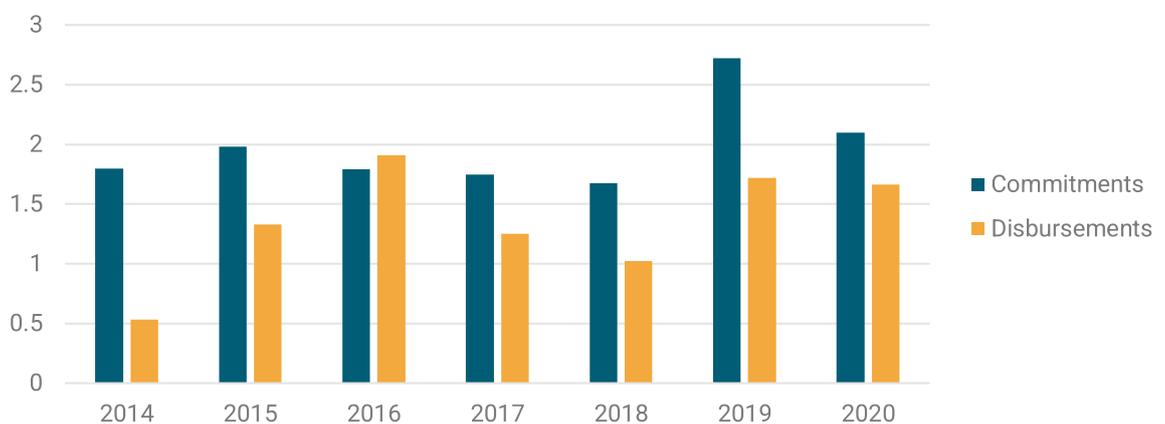
expected, analysis of disbursements by sector shows a similar trend to that of commitments (RE 51%, T&D 30% and policy and capacity-building 10%).

ODA commitments by Team Europe

Team Europe funded SDG7-compliant projects in Africa between 2014-2020 almost exclusively via ODA loans, grants or equities, providing as much ODA finance as all the multilaterals, and more ODA grants than any other category of donor. ODA loans accounted for EUR 8.4 billion, ODA grants EUR 4.6 billion, and ODA equity investments EUR 409 million. By contrast, during these years, Team Europe provided just EUR 385 million of non-ODA finance – emphasising its commitment to sustainable finance in Africa.

ODA grants increased from EUR 368 million in 2014, to EUR 557 million in 2020. Despite a dip in 2016/17, ODA loans remained at a relatively stable annual average of EUR 1.2 billion. Furthermore, in 2016/17, ODA grants overtook ODA loans for the only time during the study period.

Figure 20: EU institutions and member states' commitments and disbursements to SDG7-compliant projects, 2014-2020 (EUR billions)



Grant element of European finance for SDG7

ODA loans provided by EU institutions and member states to SDG7-compliant projects show a high level of concessionality, as demonstrated through the quantifiable 'grant element', considering loan interest rates, grace periods and other terms and conditions (See **Box 3: Explaining the Grant Equivalent**).

Analysis of Team Europe ODA loan disbursements to SDG7 shows that, between 2015 and 2020, the grant element increased from 48% in 2015, to 59% in 2020¹⁶, with an average of 53% for the entire study period (See Figure 22).

Appropriately, its ODA loans to least-developed countries contained the highest amount of grant element (56%), indeed ODA loans to LMICs and UMICs had grant elements of 51% and 45% respectively.

Figure 21: Team Europe ODA loans and grants to SDG7-compliant projects, 2014-2020 (EUR millions)

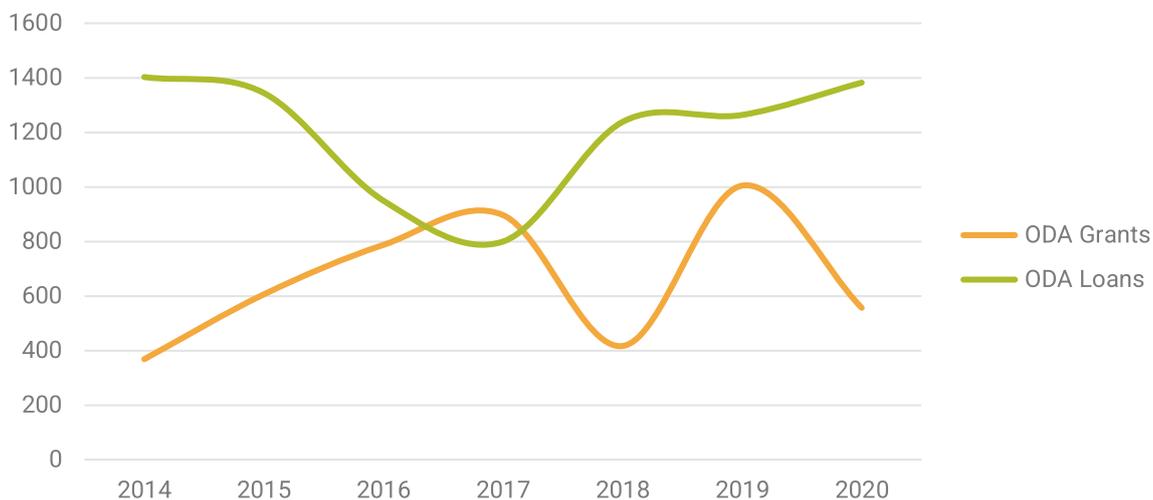
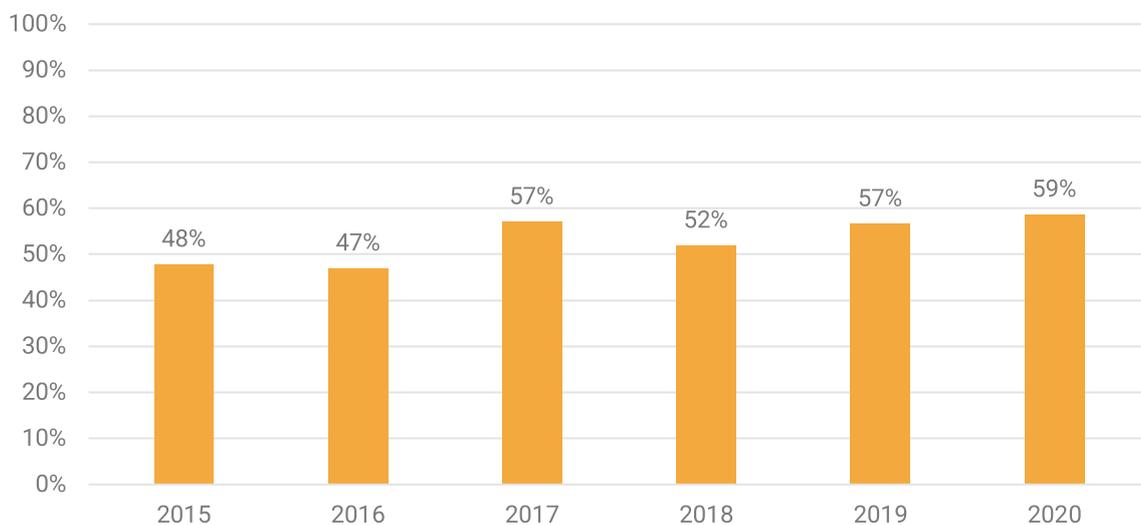


Figure 22: Grant element of EU institutions and member states' SDG7-compliant finance, 2015-2020 (%)



¹⁶ This is based on an analysis of 404 individual project disbursements from Austria, Belgium, the European Investment Bank, France, Germany, Italy, Portugal and Spain.

Box 3: Explaining the grant equivalent

ODA can take the form of (i) grants, where financial resources are provided to developing countries free of interest and with no provision for repayment, or (ii) soft loans, which have to be repaid with interest, albeit at a significantly lower rate than if developing countries borrowed from commercial banks and/or bilateral development finance institutions.

Until recently, grants and loans were valued in the same way, i.e. by recording the flows of cash that were granted, or the face value of loans that were lent, to developing countries, deducting any repayments on the loans. This 'cash basis' or 'flow basis' method was used to produce ODA headline figures until 2018 (reporting on 2017 ODA spending).

The method was simple, but it did not reflect actual efforts by donor countries: a grant represents a bigger effort than a loan and a loan with a very low interest rate, whilst a long repayment period represents a bigger effort than a loan with a higher interest rate and a short repayment period.

That is why DAC members decided, at their 2014 High-Level Meeting, to introduce a new way of measuring aid loans to better reflect the actual effort by donor countries – and their taxpayers: only the 'grant equivalent' of loans would now be recorded as ODA. The more concessional the loan, the higher the ODA value.

Money today is worth more than the prospect of the same amount in the future. Any comparison of money now, and in the future, must take account of the rate at which money loses value. A sum of money in the future can be reduced to its value today by applying a discount rate. A discount rate is an interest rate applied in reverse; it applies tomorrow's value to today's money. Grant element calculations use discount rates to reduce the expected future reflows from a financial transaction to the value they would have today. If the value of expected future reflows in today's money is lower than the amount extended today, then the difference represents a 'gift'. This gift portion is called a grant equivalent if expressed as a monetary value, and a grant element if expressed as a percentage of the extended amount.

Instead of recording the actual cash flows between lender and borrower, the headline measure of ODA is based on the 'grant equivalents' of the loans.

This provides:

- | A more realistic comparison of loans and grants
- | Stronger incentives to use grants and highly concessional loans, which will continue to play a key role in mobilising resources to support the Sustainable Development Goals (SDGs).

Source: OECD DAC

Multilateral contributions

Multilateral organisations play a crucial role in funding SDG7 in Africa, and have collectively provided the largest amount of commitments over the study period with EUR 18.6 billion¹⁷. EU member states contribute a significant amount of funding through core contributions that enable this financing.

The OECD provided data for multilateral contributions from its members for 2014-2020. Analysis of the data shows that **the collective EUR 36.1 billion contribution of EU member states to multilaterals is more than that of all the other donors combined.**

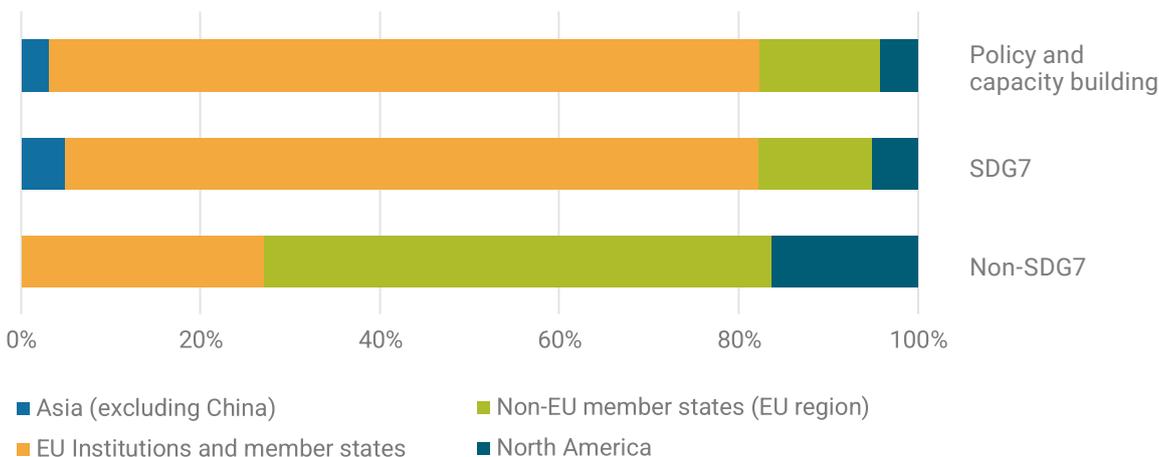
OECD data for 2019 and 2020 provides more granularity on project details, so we are able to directly track finance from OECD members, through multilaterals and onward to projects.

Between 2019 and 2020, Team Europe provided EUR 410 million in core contributions to multilaterals which were directly used to finance SDG7 and policy and capacity-building projects in Africa.



Multilateral organisations have collectively provided the largest amount of commitments with **EUR 18.6 billion.**

Figure 23: Core contributions to multilaterals for SDG7-compliant projects, 2019-2020 (%)



Box 4: Nigeria renewable energy programme shows funding in action

The Nigeria RE Programme (NREP) is an example of how European support for multilateral financing is contributing towards achieving SDG7 by developing T&D networks and RE projects.

The programme was developed to improve RE development and electricity affordability through the strengthening and improving of ‘last mile’ connections for electricity consumers in Nigeria.

¹⁷ Excluding African and European Multilaterals to avoid double counting.

NREP's funding requirement of EUR 115.1 million is financed by means of the Climate Investor One (CI1) multi-donor facility. The EU has provided a EUR 10.1 million top-up contribution.

NREP supports the rehabilitation of existing T&D networks and construction of hybrid RE projects. One of its main functions is to finance essential elements of projects that are commonly regarded as an additional non-commercial cost by private sector financiers, but which are nevertheless essential.

According to The Hague-based Climate Fund Managers (CFM) senior investment manager Akitoye Ogboye, "most of the investment focus is typically on the part-generation of RE, such as solar, or wind. Batteries are typically seen as a burden on the investment, sometimes an unnecessary burden. So, what the NREP facility does is essentially a top-up to allow CI1 to invest into battery, transmission or grid improvement".

One NREP project to go ahead is a 2.5 MW embedded hybrid solar power plant in Kaduna, a major city in northern Nigeria. NREP awarded a construction contract for the plant to the London and Abuja-based privately-owned RE company, Konexa. This project is being undertaken under a sub-franchising agreement with local electricity distributor, Kaduna Electric, and will use both electricity generated from the Gurara HPP and solar energy.

Konexa will deploy an integrated energy platform strategy where electricity generation, transmission and distribution are merged. Under the sub-franchising agreement, Konexa will rehabilitate and expand the existing T&D network infrastructure, and improve revenue collection and service delivery through the deployment of smart-metering and utility management. To scale this project and ensure long-term affordability for consumers, Konexa will build mini-grids in areas where there is no on-grid electricity access.

The Kaduna project is seen as an effective pilot for sub-franchising in the Nigerian electricity sector. Most importantly, the project should ensure the provision of 24/7 on and off-grid RE electricity to consumers within the franchise area in Nigeria's northern region, where insecurity and the poor state of infrastructure have hindered the provision of affordable and stable on-grid electricity supply.

NREP is also in the process of adding more energy access projects to the portfolio, aiding Nigeria's ability to meet net zero targets.

CI1 is managed by CFM; it was originally set-up by Dutch DFI Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden (FMO) to facilitate early-stage development, construction financing and refinancing to fast-track RE projects in developing countries.

CI1's funders, following the facility's first EUR 368 million close in June 2017, included the Dutch Ministry of Foreign Affairs' Directorate-General for International Co-operation (DGIS), Atradius Dutch State Business, De Nederlandse Waterschapsbank N.V. (NWB Bank), Aegon Asset Management and FMO – all from the Netherlands – plus Norwegian pension fund Kommunal Landspensjonskasse (KLP), South Africa's privately-owned Sanlam Investments Holdings, and the UK's Royal Borough of Windsor & Maidenhead Pension Fund.

5. Building an Interconnected Continent to Achieve SDG7

Efficient grid development

The past several years of ESI development in Africa have shown there is no route to achieving SDG7 – or other vitally important goals – without a thorough and continent-wide improvement in T&D infrastructure. Transformation, as an example, would not only be a great advance in bringing affordable and sustainable power to all, but would also support the shift to non-greenhouse-gas emitting forms of energy.

The problem is not just that the grid infrastructure does not extend into many of the places where hundreds of millions of people live without access to clean, sustainable and affordable energy, but also the inadequacies of transmission networks are a substantial constraint to adding new variable RE (solar and wind) generation capacity – which is now often the cheapest and quickest way of adding power to the grid.

It is clear that grid extensions have the greatest capacity to bring the most affordable electric power to the largest number of people. **The more people who are supplied with electricity in this way, the more affordable, and therefore the more achievable, SDG7 will be.** The cost difference was quantified in recent AEEP research (Policy Brief 2022/02: Wind Energy; Joining Forces for an African Lift-Off) which found on-grid electricity from large-scale wind and solar PV power plants procured in well-designed auction systems (at wholesale level) can be up to 30-times cheaper than electricity from distributed energy systems (solar home systems – SHS). It can also be up to 15-times cheaper than electricity generated by mini-grids.

To date, a lack of adequate transmission networks has disproportionately driven SDG7 solutions towards off-grid and distributed energy-schemes. These have their place. SHS and commercial and industrial (C&I) business models are aiming to marginally undercut grid prices rather than to achieve a lower overall levelised cost of energy (LCOE). DFIs support this because they find it a bankable approach. However, as the power these schemes supply is more expensive, sometimes by a wide margin, they also risk suppressing the very economic growth which could mutually reinforce SDG7 by driving demand and creating the ability to pay for it.

Evidently, many countries in Africa lack auction systems to take advantage of the potential benefit from cheap wholesale RE power. Also T&D developments have long lead-times and are hard to finance and implement. In general, the national utilities responsible for grid projects are financially weak. The consequent delays in expanding grids and network capacities are behind the shift of private sector investor interest away from utility-scale generation projects towards mini-grid and embedded commercial and industrial projects.

In recognition of this, African and European governments and institutions are committing more money and effort to speed-up progress towards efficient grid development.

The inadequacies of **transmission networks** are a substantial constraint to adding new variable RE generation capacity.



Many African countries lack **auction systems** to take advantage of the potential benefit from cheap wholesale RE power.

The need for interconnections

It is not just national transmission grids that need reinforcement if the ambition of universal access to energy is to be achieved. The other main failing in transmission, which is arresting progress towards SDG7, is the lack of interconnections between African countries and also between the continent's five power-pools. Apart from a limited amount of electricity trading in SAPP, opportunities for matching demand and supply hardly exist. This limits commercial opportunities and is another reason why flows of private finance into relevant projects remain well below that which is necessary.



Lack of **interconnections** between African countries and the continent's five power-pools is arresting progress towards SDG7.

Efforts to overcome these problems are not new. Helped by the determined leadership of the African Union Development Agency (AUDA-NEPAD) and its Programme for Infrastructure Development in Africa (PIDA), several power-transmission corridors are gradually being implemented.

These include the North-South, West and Central Africa power-transmission corridors. Key projects within the North-South corridor include the MOMA Transmission Interconnector between Mozambique and Malawi, and the ZTK Transmission Interconnector between

Zambia, Tanzania and Kenya. New interconnectors are also being developed under the umbrella of the West Africa power transmission corridor. These include the North Core Interconnection, and several other regional projects.

Team Europe is playing a central role in supporting and financing these projects, working alongside African

national governments, electricity utilities and African institutions, such as the AfDB.

Across the continent, more than 20 cross-border interconnector projects are at a stage of development between pre-feasibility and construction. However, it is the case that many of these projects are advancing too slowly, despite the evident and urgent need for their being brought into operation.

CMP provides an answer

The development of the CMP, and the related objective of establishing the AfSEM, represent the best vision for overcoming these challenges.

The decision to create the CMP as a blueprint for the AfSEM was taken by energy ministers meeting under the auspices of the African Union (AU) in 2018. A baseline study was completed in 2020. The modelling phase started in 2021 and is scheduled to be completed in 2023.

AUDA-NEPAD is leading the project in co-operation with the AUC, AfDB, UNECA, regional power-pools and regional economic communities (RECs) and development partners.

Key elements of the CMP's modelling process have been funded by the EU Global Technical Assistance Facility (GTAF) and the AfDB. Other elements of the modelling have been funded by IRENA, IAEA, Power Africa, GET. transform, AEEP and the World Bank.

One definitive change has already been achieved during the CMP modelling phase, which was being continued as this 2022 edition was compiled: for the first time, an Africa-wide demand modelling exercise has been carried out using an established and consistent methodology.



20 cross-border interconnector projects are being developed.

It is hard to exaggerate the significance and utility of this step which will, for the first time, produce a consistent picture of the demand projections needed to achieve SDG7 on the continent. “That is the goal,” noted AUDA-NEPAD energy expert and CMP manager Simbini Tichakunda. “We will then be able to say this demand projection is in line with the aspirations of the continent in terms of the Agenda 2063 aspirations, as well as the SDG7 goals. So that is where we’re coming from”.

The demand projections will take account not only of population growth, but also the need to create new opportunities for that growing population, and the trend of urban migration. Furthermore, according to Tichakunda, when “you’re providing employment, you create an environment where you’ll be able to create job opportunities for that population, in addition to giving them access to energy, you need to empower them, so that they can afford to pay for that service”.

According to EU-GTAF transmission planning and modelling expert Tonderayi Gumunyu, demand forecasting according to various scenarios is already well-advanced. The outcomes are expected to be finalised by the end of 2022. The exercise will help to identify the major load centres in a continent-wide system, Gumunyu said, “because identifying the major load centres is an important step towards determining the new large transmission corridors that could be built towards those load centres”.

Preparatory work has also started on generation expansion modelling. Two broad drivers were used to construct main CMP planning scenarios:

- Universal electricity access and sustainable economic development within the context of achieving SDG7 by 2030;
- and Regional integration through co-ordinated planning based on the AU’s vision of an integrated continent where regional

electricity trade enables the efficient usage of Africa’s diverse and abundant resources, regardless of their location.

The CMP scenarios consider the outcomes of low and full regional integration and full continental integration, with the reference or baseline scenario relying only on those interconnectors already built, committed to or planned, and the last envisaging a high level of connection both within, and between, each power-pool.

A long-term planning model, developed in partnership with the International Renewable Energy Agency (IRENA) and International Atomic Energy Agency (IAEA) is being used to develop the least cost generation expansion plans for the various CMP scenarios under consideration. The team is “in the phase of designing the generation expansion plans for the continent”, said Gumunyu. “So, the way we are approaching this is a bottom-up approach. We are depending mostly on information or data being fed from the member countries through the power-pools, and the power-pools then feeding information to us at the continental level”. Summarising the long-term planning model objective, he added: “What is required is to match the demand forecasts with the corresponding generation expansion plans comprising the selected technologies and their respective capacities”. The outcome of this work – expected in 2023 – will be least-cost generation expansion plans and transmission interconnector expansion plans for the continent.

Once this is completed, a third stage of transmission planning will take place. The

“We will then be able to say this projection is in line with the aspirations of the continent in terms of the Agenda 2063 aspirations, as well as the SDG7 goals. So that is where we’re coming from”.

Simbini Tichakunda
AUDA-NEPAD energy expert
and CMP manager

“Once we identify the major load centres, we could then also build large corridors towards those load centres.”

Tonderayi Gumunyu
EU-GTAF transmission planning
and modelling expert.

outcomes of the long-term planning model – together with peak load projections from the demand modelling process, disaggregated to a substation level, and five regional network models – will be used to develop the CMP transmission network simulation model which will output transmission expansion plans requirements within each power and between the power pools or regions. The combination of these models will produce the transmission expansion plan that will underpin development of the actual CMP.

Start of a new phase

The conclusion of the transmission expansion plan will mark the start of a major new phase for the continental ESI.

Considering the well-rehearsed difficulties of financing and building transmission interconnections, AUDA-NEPAD is looking at the quantity of resources needed and into developing consistent systems for project preparation to ensure they are bankable.

The problems of project delivery were underlined by Tichakunda, who said: “What we

have now is a situation where we prepare a project after three years, it struggles to mobilise resources for the next two or three years because it’s still deemed as unbankable... and then you have to update the environmental and social impact assessments because they’re now too old, and the financial assumptions are now too old. So, you repeat the same cycle”.

Further innovations in the pipeline include plans to create a marketplace where there is continual dialogue between the member states and DFIs, who eventually fund the majority of these projects, so that they can provide input during the project preparation cycle and anticipate the evolution of the pipeline.

A third component is innovation in bank financing to help overcome the challenges posed to projects by the weak creditworthiness of some participating electricity utilities – this can create a bottleneck within multi-country schemes.

AUDA-NEPAD is also examining ways of bringing in local and other non-traditional sources of funding, recognising that revenue streams from transmission projects will not be in foreign currency.

Box 5: EU-Africa: The Green Energy Initiative

The support that Team Europe – the collective name for EU institutions and member states – is providing to the CMP now sits within the context of the Africa-EU Green Energy Initiative (AEGEI), which was proposed at the Sixth EU-AU Summit that took place in Brussels in February 2022 under the co-chairpersonship of European Council President Charles Michel, and AU Chairperson and Senegalese President, Macky Sall.

Supporting Africa’s green transition

A central objective of the AEGEI is “to support Africa’s green transition by increasing RE capacity, increasing the number of African people gaining access to affordable and reliable energy, promoting sustainable energy uses, and supporting market integration and sector reforms”.

It sets out plans under three major headings: (1) Regional electricity interconnections and market integration, (2); Energy transition partnerships in Africa,; and (3) Clean hydrogen production in Africa.

Regional electricity interconnections and market integration

The EU has pledged to support African partners in developing the CMP to connect the five power-pools. The Global Gateway Investment Package, of which this is part, will include funding for ongoing interconnection and transmission line projects, as well as technical assistance for establishing the AfSEM. It cited three ongoing transmission projects:

- a 200km transmission interconnection project to connect Zambia Electricity Supply Corporation's network to that of the future Congolese National Electricity Company
- the 400 kV Zambia-Tanzania interconnection which is part of the wider Zambia-Tanzania-Kenya (ZTK) scheme intended to link the East African Power Pool (EAPP) and SAPP countries
- and the Angola-Namibia (ANNA) interconnection, which is part of the Central African Interconnection Corridor.

Energy transition partnerships in Africa

The AEGEI proposed an 'iterative process' to design energy transition partnerships with African partners to meet each country's needs and take account of its national circumstances. This has advanced. At the G7 meeting in Germany in June 2022, Senegal opened discussions on an energy transition partnership following that requested by South Africa at COP26 in November 2021.

The objectives of the partnerships are to:

- provide a tailored support package to partner countries who endorse enhanced climate objectives;
- and decarbonise the energy mix, including by phasing-out coal, optimising the share of transitional sources of energy, and investing in renewables and efficiency projects.

Clean hydrogen production in Africa

Team Europe proposed active promotion of new collaboration opportunities on clean hydrogen on the following topics:

- research and innovation;
- regulatory policy;
- direct investments;
- and undistorted and fair trade in hydrogen, its derivatives and associated technologies and services.

The AEGEI is part of a wider approach to Europe's partnership with African countries and institutions called the Global Gateway Investment Package. It lays out EUR 150 billion in investments across a wide variety of sectors and priorities with the objective of accelerating green and digital transitions, achieving sustainable growth, strengthening health systems, and improving education and training.

5. Building an Interconnected Continent to Achieve SDG7

The EU has set-up new grants, loans and green bond initiatives to fund these objectives and – in a major innovation – has initiated a substantial rechanneling of part of its Special Drawing Rights through a pair of IMF trust funds.

The strategic energy corridors sit alongside transport and digital corridors in a much wider and more ambitious vision for future European-African collaboration and partnership.

Source: European Union Global Gateway Package

Map 2: Transmission interconnections under development



Southern Africa: the Mozambique-Malawi Interconnector (MOMA)

The Mozambique-Malawi (MOMA) Power-Transmission Interconnection Project is one of the key transmission interconnection projects in Southern Africa which is now moving ahead with multilateral financial support, including from Germany's KfW Bankengruppe and the EU. It will make a material contribution to improving energy access in the region.

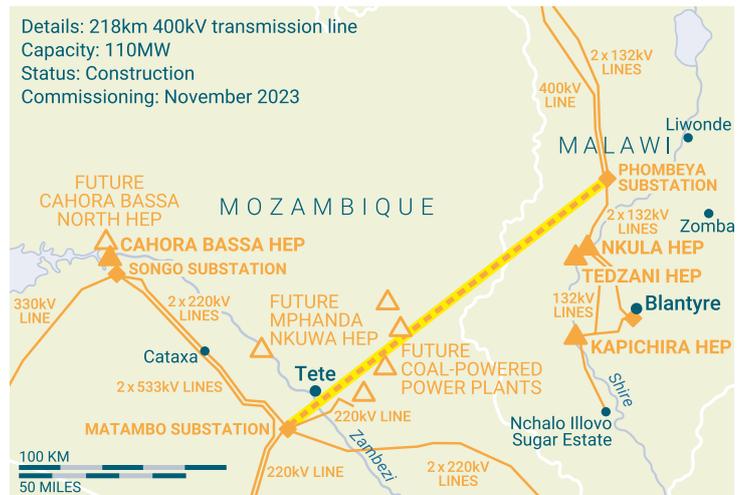
It launched in November 2021, after a lengthy planning and preparation period. The governments of Mozambique and Malawi signed the original power interconnection agreement in 2013, which foresaw construction of the interconnector in two phases.

A foundation stone, signalling the start of the project, was laid on the 21st of April 2022 by Malawian President Lazarus Chakwera, and Mozambique President Filipe Nyusi. Commissioning of the project is scheduled for November 2023.

The project entails the construction of an approximately 218 km 400 kV transmission line from a new substation to be built in Matambo in Mozambique's Tete province to Phombeya substation in Balaka district in Malawi. The existing Phombeya substation will also be extended to accommodate the incoming interconnector. The interconnector will link the two countries' grids allowing Mozambique to export electricity to Malawi, and giving Malawi access to SAPP, a trading pool of electricity companies in Southern Africa, which was formed in 1995.

Alex Kaitane, senior projects manager at the Electricity Supply Corporation of Malawi Limited (ESCOM), said tower-spotting and other construction work had started by the end of July 2022. This followed the completion of technical and economic feasibility studies in December 2017, an environmental and social

Map 3: MOMA interconnector



impact assessment and resettlement framework in February 2019, a line survey, and the conclusion of financing agreements, among other preliminary works.

Claudio Dambe, director of projects at Electricidade de Moçambique (EDM), further explained that, in Mozambique, the project was divided into two parts; the first being the construction of a 400 kV 142 km transmission line from Matambo substation up to the border with Malawi. The second involved construction of a new 400 MVA, 220 and 400 kV capacity substation in Matambo, and a 76 km line inside Malawi.

"We are in the preliminary stages of the project. We have had the code of contact approved; the health and safety plan approved; and the environmental and social management have also been approved. At the moment, the surveying is going on, including the design of the bow floats of the project," he said.

India's Larsen & Toubro Power-Transmission & Distribution was mobilised during the last quarter of 2021 to design, supply, install and commission the line for the Mozambican and Malawian sections. Gopa Intec and Asian Consulting Engineers also number among the project's contractors.

Kaitane said that the interconnection would allow Malawi to import up to 110 MW, which will improve the supply side of the network. In the long-run, the interconnection will allow Malawi to access available power in SAPP – and eventually improve the availability, stability and reliability of power in its network. The project is also expected to indirectly improve the livelihood and economic status of the eight communities through which the transmission line is passing.



In 2019 Malawi had an electricity access rate of **11.2%**, among the lowest in the world.

Presently, Malawi is not connected to any power-pool. The country does not generate sufficient electricity to meet the current demand levels, and its power system is unstable and unreliable. According to ESCOM, Malawi's projected electricity demand in 2022 was estimated at 618MW, but the country has an installed capacity of 528 MW, both hydro plus solar, against an available capacity of 355 MW and operating capacity of 285 MW.

Malawi has among the lowest electricity access rates in the world, just 11.2% in 2019. About 75% of the country's existing generation capacity is

Villagers in ESCOM district meet ESCOM



Source: ESCOM

dependent on hydropower, which makes the country vulnerable to the impacts of climate change and leads to frequent and lengthy blackouts. The power shortages lead to regular power-cuts, which severely curtail the country's economic development. Furthermore, Malawi relies on costly and climate-damaging diesel power plants for its emergency power supply. The future import of climate-friendly electricity from RE sources in Mozambique by means of the new interconnector will, therefore, make an important contribution to a more reliable and environmentally-friendly electricity supply for Malawi. The government of Malawi proposes to increase electrification levels to 30% by 2030, seeking to increase electricity supply by new independent power producers (IPPs) and connecting new customers to the grid.

The MOMA will therefore not only help Malawi to address its power deficit, which was, in turn, worsened by the damage of the generation plants at Kapichira – Cyclone Ana was responsible for this in January 2022, and it resulted in the loss of 129 MW. The Moma is also expected to contribute to the integration of the regional electricity market into SAPP, so that the electricity deficits and surpluses in the SAPP countries can be balanced through electricity trade on the network. Cross-border, reliable electricity transmission, and cross-border electricity trade are in the interests of all SAPP the member countries, as it will promote the economic development of the entire Southern African region.

SAPP Co-ordination Centre Manager, Stephen Dihwa, said that when Malawi is connected to the SAPP grid, it will not only be able to purchase power from Mozambique under a bilateral agreement, but also from any other SAPP member. "So, the addition of Malawi to that grid will increase participants on the auction market and will also help, should they later have excess power, to sell the power to others and earn additional revenue," he said.

The project is equally important to Mozambique as it contributes to the further diversification of electricity trade. Dambe said the project will improve revenue collection and assist Mozambique in expanding its rural electrification as the country strives to reach universal access to electricity by 2030. Employment and business opportunities will also be created for communities along the line's corridor.

The MOMA is being financed by the World Bank Group, Germany's KfW Bankengruppe, and the EU at a total cost of EUR 110 million. KfW press officer, Charis Pöthig, said the World Bank was providing a EUR 63.9 million grant to Mozambique for the project, including

EUR 23.6 million from Norway, and a EUR 12.7 million loan for the Malawian side. "About EUR 1.3 million has so far been disbursed from KfW for the Mozambican side and another EUR 1.3 million for the Malawian side," he said in July 2022. Pöthig said KfW was additionally channelling EUR 20 million provided by the EU for the Malawian side of the interconnector.

Box 6: How the Mozambique-Malawi interconnection will boost electricity supply in Neno District

Neno is a district in the southern region of Malawi that shares the border with Mozambique. The district is among 28 communities through which the Mozambique-Malawi (MOMA) power-transmission interconnection line will pass from Mozambique to Malawi.

According to the state-owned electricity utility, the ESCOM, 10 of the 28 communities are not connected to the electricity grid. Once completed, the project is expected to not only increase access to electricity and business opportunities, but also to improve the livelihood and economic status of the communities through which the transmission line will be passing. A 2019 ESCOM survey indicated that about 90.1% of households in Neno, and other communities affected by the project, use firewood (biomass) as a source of energy for cooking, while charcoal, much less popular as a cooking medium, is used by only 8.7% of households.

About 82.2% of householders in Neno, and the neighbouring Mwanza and Balaka districts, use hand-held battery-powered torches for lighting. Only a small proportion of the responding households – about 12.5% of them – used electricity. ESCOM surveys have shown that only 7.9% of households in the districts are connected to the electricity grid.

In July 2022, ESCOM met with members of the community of Mbemba Village, Traditional Authority Symon (an area or jurisdiction governed by a traditional chief) in Neno district to introduce the contractors, Larsen & Toubro, so that the community could welcome, and permit, them to carry-out their duties effectively.

The total width of the corridor being occupied by the MOMA line is 55 metres and all the people affected who have given up their land to the project are being compensated. The project is also constructing modern housing units for about 50 dwelling units affected by the project.

Western Africa: Interconnection projects across the region

High electricity tariffs, poor on-grid infrastructure, an inadequate electricity distribution infrastructure and rising insecurity have limited energy access and affordability in West Africa. Electricity access rates are correspondingly poor. Among the consequences of this state-of-affairs is the suppression of competitiveness and profitability in intra-regional trade due to the high cost of production for man-

ufacturers in the region. With little to no economic development, rampant insecurity is impacting upon every aspect of the livelihoods, especially in rural areas.

The ECOWAS chair and President of Ghana Nana Addo Dankwa Akufo-Addo and President of Niger Mohamed Bazoum inaugurate start of construction at the North Core Interconnection in Niamey in February 2022



Source: Transmission Company of Nigeria

One of the strategies being deployed by the West African regional body, the Economic Community of West African States (ECOWAS), to address these problems and to further the achievement of SDG7 is to boost energy access through regional electricity trade between the member states. It intends to establish a regional electricity market and integrate regional electricity generation and transmission infrastructure through interconnected grid networks. Ultimately, this plan will fit into the wider concept of the CMP and the goal of creating the AfSEM.

The EU and its Member States, in collaboration with other DFIs, have provided essential funding for several transmission interconnection projects across the region.

Thanks to this, a number of key projects in the region are already underway, all supported by a blend of African national government and multilateral funding, including important contributions from Team Europe. It is important to note, however, that CMP planning is still underway and expected to identify a set of priority transmission and interconnection projects based on rigorous and detailed modelling.

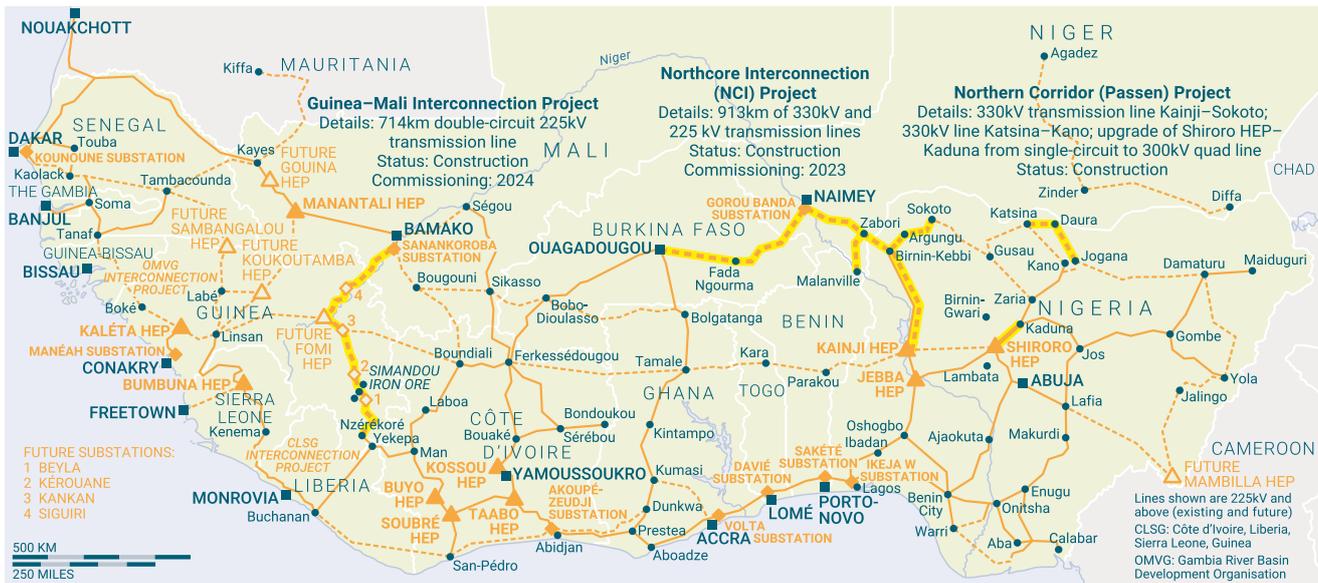
North Core Interconnection (NCI)

By 2024, the North Core Interconnection (NCI) project is expected to have linked four West African countries, namely Benin, Burkina Faso, Niger and Nigeria, with a 330 kV transmission line. There are plans to subsequently extend the line to Togo.

ECOWAS is implementing the project through WAPP. In addition to the lines themselves, the project will build five transmission substations, and will deploy fibre-optic systems and SCADA technology. The latter – short for Supervisory Control and Data Acquisition – is a control system which collects, analyses, and visualises data to help automate management of the system.

The line starts at a new substation at Birnin Kebbi in north-west Nigeria, which is also one of the nodes in Abuja's super-grid plan for 2030 and part of the Passen project. From there, it will connect to the Gorou Banda substation located immediately south of the Nigerian capital, Niamey, where it will tie-in with other interconnections, including the Burkinabe capital, Ouagadougou. A spur from the Zabori substation in south-west Niger will link to Malanville across the border in Benin, opening the possibility of future connections through to Togo. In total, an estimated 913

Map 4: Ecowas transmission projects



km of 330 kV and 225 kV¹⁸ transmission lines will be installed.

To help improve energy access, local communities within a 5 km radius of the transmission line will be electrified as part of the project. A resettlement action plan will be implemented to relocate and compensate residents directly affected by the project works.

The NCI has a funding requirement of EUR 680 million. It is financed through the NEPAD Infrastructure Project Preparation Facility, a multi-donor facility funded by the World Bank, the EU and its Member States, Agence Française de Développement (AFD), AfDB, and the Federal Government of Nigeria.

Additional funding may be required for extension of the project to Togo. Several factors delayed the start of construction at the project locations, including the global Covid-19 pandemic; however, the official ground-breaking ceremony took place in March 2022 in Niger Republic. The expected date of commissioning is 2024.

Northern Corridor (PASSEN)

The Northern Corridor (Passen) project was developed as part of the Transmission Rehabilitation and Expansion Programme (TREP) of the Nigerian grid operator, Transmission Company of Nigeria (TCN). It will strengthen the grid in the northern Nigerian states of Kaduna and Kano and is, therefore, part of the foundation upon which the NCI is based, linking Nigeria's grid to those of Benin, Burkina Faso, and Niger.

The project involves the construction, rehabilitation, and expansion of the existing transmission grid to ensure network stability, improve grid capacity and increase power evacuation capacity to 20,000 MW.

Currently, peak transmission grid capacity for the whole country stands at approximately 5,500 MW. Inadequate infrastructure, funding and lack of maintenance, have left the country grappling with a failing power sector, and over 90 million of its citizens without access to energy. In the first half of 2022, the national



The Northern Corridor project will improve grid capacity and increase power evacuation capacity to **20,000 MW**.

18 <https://www.ecowapp.org/en/news/launch-north-core-330-kv-nigeria-niger-benintogo-burkina-faso-power-inter-connection-project>

grid collapsed at least six times. In addition, insecurity in northern Nigeria has impacted upon grid operations, with transmission infrastructure destroyed in recent attacks.

Passen is part of the solution to these grave problems. When completed, it will strengthen grid capacity and provide electricity access to at least one million people through grid expansion and connections. It will also contribute to the economic development in Nigeria's embattled Northern region.

Against the substantial challenges that it faces, the project has been strongly supported by multilateral finance and Team Europe. In 2018, AFD approved a EUR 242.7 million (USD 247 million) facility for the project, and the EU made a EUR 25.2 million (USD 25.7 million) funding contribution.¹⁹

Central elements of the project include the rehabilitation of existing switch-yards to facilitate power evacuation from operating HPPs at Jebba and Kainji in the west of the country. A new 330 kV line will be built running north from Kainji to the Birnin-Kebbi node, and on to Sokoto. Another 330 kV line will provide an additional connection between Katsina and Kano in the northern-central area. The single-circuit line from the Shiroro HPP north of Abuja up to Kaduna city will be upgraded to a 330 kV quad line. At least six smaller substations will be constructed to strengthen lower voltage areas of the grid.



In 2017, the EIB approved funding of **EUR 300 million** for the Guinea-Mali interconnection.

The Guinea-Mali interconnection

Guinea's generation capacity has increased to about 1,200 MW, but the technical constraints of its transmission sector, and its still isolated eastern region, means it is incapable of evacuating available capacity. There is an urgent need to resolve this problem and facilitate electricity trade between Guinea and Mali. Energy access in Guinea is about 44% on average but, in rural areas, access is less than 20%.

The 225 kV Guinea-Mali interconnection aims to improve electricity access by enabling increased electricity generation from HPPs, connecting transmission grid networks in eastern and western Guinea, and facilitating electricity trade between Guinea and Mali. It also has a wider strategic purpose in the West African region. When completed, it will link-up with both the Gambia River Basin Development Organisation (OMVG – Senegal, The Gambia, Guinea, Guinea Bissau), and the CLSG (Cote d'Ivoire, Liberia, Sierra Leone, and Guinea) contributing to the ECOWAS North Backbone.

European support has been essential in progressing the project which is advancing under difficult geopolitical conditions. Construction began in 2019, but slowed down following the recent sanctions against Mali.

In 2017, the EIB approved funding of EUR 300 million, and the EU approved a EUR 30 million grant. Other donors include the BOAD, World Bank, EBID, and the Republic of Guinea. The Interconnection has a total of EUR 612 million funding requirement.

The two national electricity utilities, Électricité de Guinée and Électricité du Mali, are building the project, which has two components: (1) construction and rehabilitation of the transmission infrastructure, and (2) capacity development support.

The main elements of the project are a 714 km double-circuit 225 kV transmission line running northwards from the Nzérékoré transmission substation close to Guinea's borders with Côte d'Ivoire and Liberia and to the giant Simandou iron ore deposits, to the Sanankoroba transmission substation immediately south of Bamako in Mali. Five transmission substations will be constructed along the route at Beyla, Kérouané, Kankan, Fomi and Siguiré – all in Guinea.

Eastern Africa: the Zambia-Tanzania-Kenya (ZTK) Interconnector

The Zambia-Tanzania-Kenya (ZTK) Interconnector is a joint East African Community (EAC) and Southern African Development Community (SADC) initiative to interconnect the grids of the three countries in order to facilitate electricity trade between the two regional trading blocs.

The implementation of the ZTK Interconnector's development began in 2014 when Zambia, Kenya and Tanzania signed an agreement, and received EUR 4.4 million seed money

from the EU to fund preliminary project work. It was the latest phase in a long process; the project was initially conceived nearly two decades earlier with a proposal in 1995 to link the Zambian and Tanzanian power grids. Kenya became part of the scheme in 2001.

The scope of the project has been solidified to include the construction of a new 400 kV backbone for the Tanzanian grid – the longest section of the project – plus another major transmission line and substations in Zambia, and a much shorter section in Kenya. Both the Tanzania and Kenya sections are nearing completion with expected commissioning of the Kenya section in 2023.

As well as connecting the regional trading blocs, the ZTK Interconnector will connect SAPP with EAPP, enabling the connection of Tanzania to the SAPP grid for the first time.

The grid will be the backbone used to transport electricity from countries in surplus, or lower cost, to those in deficit

The ZTK Interconnector will connect SAPP with EAPP, enabling the connection of Tanzania to the **SAPP grid** for the first time.



New Kenyan transmission line



Source: Ketraco

or higher costs, reducing costs for importing countries by mitigating against the need to import costly liquid fuels, whilst providing export revenue to exporting countries and, at the same time, providing greater system stability through the sharing of reserves.

Interconnection of the EAPP and SAPP grids will create the largest power-pool on the continent and form a critical part of the Cape to Cairo power-transmission corridor. The energy security, diversified power generation mix and competition that will be created by the connection of the two regions is expected to reduce power tariffs, increase energy access and promote industrial development.

SAPP Co-ordination Centre manager, Stephen Dihwa, said in July 2022 that the ZTK Interconnector was progressing well, both inside Kenya and Tanzania, and was nearing completion. “On the Zambia-Tanzania interconnection, work has started on the Tanzanian part and on the Zambian part, too. There is one line that is completed close to the border, but there is need for a second line. There were delays in the continuation of work, but I understand they should be resuming work very soon,” Dihwa said.

Dihwa noted that Tanzania was both a member of SAPP and EAPP, although not yet connected to the former. From the wider SAPP perspective, the project is of great importance, he said, because of the need to make sure all its members are connected to the power pool.

Map 5: ZTK transmission map



The Zambia-Tanzania interconnection is the first of two phases to join Tanzania to SAPP allowing it to benefit from regional electricity trade. It is the final segment of the Ethiopia-Kenya-Tanzania-Zambia regional transmission corridor that is being developed in phases. The line is due by 2025.

Dihwa added: “Because Tanzania is also a member of EAPP, they made a decision to be connected to Kenya. Kenya itself is being connected to Ethiopia. The connection of Kenya to Ethiopia is right now at the commissioning stage. So, the implication is that as soon as Zambia and Tanzania are interconnected, Tanzania and Kenya are interconnected. We then have an interconnection between the EAPP and SAPP pools.”

Lead financier AFD, and the World Bank – through its International Development Association (IDA) – have provided most of the EUR 456 million needed for the Zambia-Tanzania part of the Interconnector.

The EU has contributed EUR 30 million with a grant that will finance the construction of the Tunduma substation, including the installation

of a power distributor; the construction of a 4 km transmission line from Tunduma to the Zambian border.

Further financing is planned. In April 2022, a World Bank mission visited EAPP to discuss an IDA grant to support the interconnector and other regional power market developments.

The AfDB and government of Kenya are the main financiers of the Interconnector's Tanzania-Kenya section and substation projects in Kenya. The AfDB, Japan International Co-operation Agency (JICA) and the Government of Tanzania are co-financing the transmission and substation projects in Tanzania.

The main cross-border interconnections which the project will achieve are joining Kasama in northern Zambia to Mbeya city in southwest Tanzania and, joining Singida in central Tanzania to Isinya in Kenya:

Zambia section: Kabwe to Tunduma

The project in Zambia involves the construction of a 905 km single-circuit bi-directional 330 kV transmission interconnector from Kabwe-Pensulo-Nakonde-Kasama in Zambia, to Tunduma in Tanzania. It is divided into two phases beginning with the Kabwe-Pensulo-Mpika-Kasama section, followed by the section that crosses the border. The line will have a capacity of 500 MW, which can be increased to 2,000 MW, subject to demand for the electricity.

Tanzania section: Tunduma to Iringa

The Tunduma to Iringa section starts with a short 4 km stretch of 400 kV line from the Zambia border to Tunduma, a further 100 km line from Tunduma to Mbeya and, finally, a 292 km-long line from Mbeya through Kisada to Iringa



Source: Ketraco

New Kenyan transmission line

Tanzania section: Singida to Namanga

Due to its length, the Tanzania section is divided into two lots. The second part will take power from Iringa to Arusha, terminating at Namanga on the border with Kenya. The 670 km 400 kV line from Iringa to Shinyanga, via Dodoma and Singida, is the longest section of the project. A further 414 km 400 kV line will join Singida to Namanga. The line will have a 2,000 MW capacity.

Kenya section: Namanga to Isinya

The 98 km 400 kV AC Kenyan section, from Namanga to Isinya, is the shortest part of the Interconnector. It is 98 km long and is expected to start operation in 2023; this section's maximum transmission capacity of 2,000 MW will make it one of the major links between EAPP and SAPP. It is also expected to enable Tanzania to synchronously operate with the rest of the EAPP system.

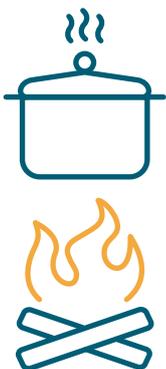
Box 7: Bringing power to communities in Mbeya, Songwe & Rukwa

The 400 kV power-transmission line construction project runs north-east from Tunduma on the Zambian border through Mbeya, an important agricultural centre and exporter of cash crops, to the Iringa industrial and transport hub. It is one of several lines that will not only improve the electricity supply in Tanzania, but also in Zambia and Kenya, as well as the SAPP and EAPP areas.

As part of the Cairo to Cape Town corridor, the project can be understood in terms of its broad continental significance. However, it will also make a difference to the communities it traverses. This section of the line will cross 85 villages in six district councils in the three project regions of Mbeya, Songwe and Rukwa. At least 44,000 people will physically and economically be affected by the transmission line in these districts.

A household socio-economic survey conducted by the Tanzania Electric Supply Company Limited (Tanesco) showed that about 89.3% of the people in the three regions used firewood as their major source of cooking, 8.7% reported using charcoal, while 1.4% used electricity for cooking.

Even though some people will be displaced, and will be duly compensated, an estimated 43.2% of the people believed that the project would bring development, while 29.9% thought the project would provide employment. About 11.8% stated that the proposed project would bring industrialisation, with 9.4% concluding it would provide reliable electricity.



89.3% of the people in the regions of Mbeya, Songwe and Rukwa used firewood as their major source of cooking.

Electrification of the affected villages is envisaged to increase productivity in agro-processing, and to stimulate small businesses with the establishment of workshops, kiosks, salons, among other related entrepreneurial work, thus enhancing income generation in the villages. Tanesco has worked on systems to ensure that casual jobs and unskilled labour were drawn primarily from locally affected communities.

Affected persons in the project will further be assisted with the provision of skills in entrepreneurship, and training in financial management, particularly those directly affected by the project. Contractors will also be required to act in a socially responsible way in the communities traversed by the transmission line.

Central Africa: Scaling-up transmission

The Central African Power-Pool (CAPP) has made progress on some priority projects in recent years and is approaching the point of being able to scale-up. The region is starting from a lower base than other African regions, with much less generation, transmission and distribution capacity. This adds to geographic challenges and also makes launching large-scale interconnection projects challenging.

As a result, it is not surprising that regional priority generation projects have progressed faster than new interconnections. The first unit of the 220 MW Memve'le HPP in Cameroon began operating in 2019, and the plant is expected to be fully operational in 2023. Construction of the 420 MW Nachtigal HPP, also in Cameroon, is advancing well and may produce its first power as early as this year. Another priority project, the 120 MW Zongo II HPP in the Democratic Republic of Congo (DRC), began operating in June 2018.

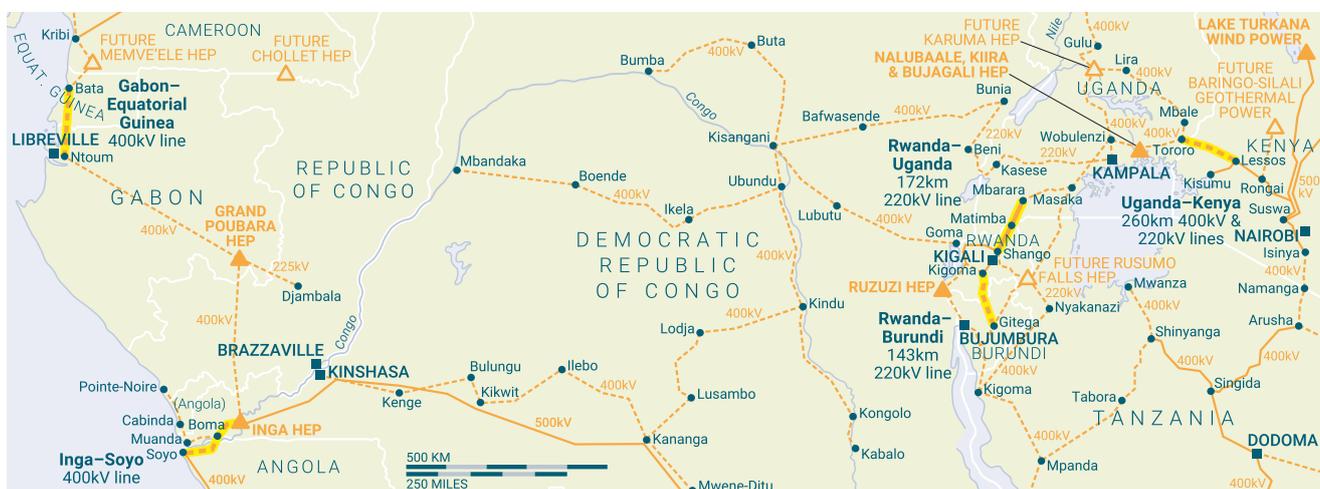
There has also been good progress made on the 147 MW Ruzizi III HPP project, where a strong group of private investors have been brought in and are engaging with international financiers. Studies continue on the 287

MW Ruzizi IV HPP, with project development backed by the EU's Africa Investment Platform, which is supporting project preparation, as well as a grant from the AfDB.

Progress on new generation projects puts the region in a better position to move forward with interconnection projects. Two international interconnection projects are being prioritised, alongside a major internal interconnection project in DRC: a line connecting Soyo in Angola to Inga in DRC is a particular focus, as is the interconnection of Gabon and Equatorial Guinea.

There have been some significant developments over the year. In May, CAPP said 2022 that an intensive three-day period of negotiation over a Power Purchase Agreement (PPA) between Société d'Énergie et d'Eau du Gabon and Sociedad de Electricidad de Guinea Ecuatorial had been held, attended by representatives of the relevant ministries and CAPP. The talks resulted in a provisional contract being agreed. Late in 2021, DRC President Félix Antoine Tshisekedi Tshilombo, and Republic of Congo President Denis Sassou N'Guesso, signed an agreement stating their intention to deepen energy sector co-operation. Development work has also progressed on a Cameroon-Chad interconnection.

Map 6: Central African transmission projects



Most progress has been made on interconnections in the Great Lakes region, where Rwanda and Burundi are engaged with projects which will tie the countries into the Eastern Africa network via Uganda. Development work is ongoing on a 172 km 220 kV interconnection between Rwanda and Uganda, and a 143 km 220 kV interconnection between Rwanda and Burundi, as well as a 260 km 400 kV and 220 kV interconnection between Uganda and Kenya. Important milestones have been reached in agreeing a PPA between Rwanda and Kenya. Consultants have also been selected for a feasibility study looking at an interconnection between western Uganda and eastern DRC.

CAPP itself is making progress towards establishing a regional electricity regulatory commission, to be called Commission Régionale de Régulation de l'Électricité de l'Afrique Centrale (CORREAC). The EU is supporting the CAPP Secretariat by means of a technical assistance mission. Representatives of the mission attended talks in July 2022 to finalise the draft texts which will establish and operationalise CORREAC.

Northern Africa: Egypt emerges as an African and international electricity hub

Egypt is developing power interconnections with its neighbours in Africa and the Gulf re-

gion, and also across the Mediterranean to Europe. It is also rapidly implementing a strategy to become an energy hub in the eastern Mediterranean.

At the northern extremity of the North-South Power-Transmission Corridor – a project that will eventually create an electrical link between Cape

Town and Cairo – Egypt is also a vital node in the development of the CMP-Plan.

Among the key electricity transmission projects – most of them at an advanced stage of development or in construction – are the 2 GW EuroAfrica HVDC interconnector, which will transfer power between Egypt, Cyprus and, eventually, Greece. Construction work has started on a 500 kV HVDC link with Saudi Arabia, which will allow the transmission of 3 GW of power. In January 2020, the Egyptian Ministry of Electricity and Renewable Energy (MOEE) announced plans to increase the capacity of the 400 kV line to Aqaba in Jordan from 450 MW to 2 GW.

Thanks to its location and the development of these projects, Egypt will become a vital energy link between Africa, Europe and the Middle East.

There are also plans to increase the capacity of both of Egypt's main African interconnectors. MOEE has announced plans to increase the capacity of the 225 kV Sudan interconnector from 80 MW to 300 MW.

Separately, the AU's PIDA has proposed a 1,000 kV HVDC interconnection or a hybrid AC/DC 800 kV link, which it says would be 'the first stage of the continental electrical interconnection using the right-of-way of the Cairo-Cape Town Road'.

There are also plans to upgrade the 200 kV line from the western coastal town of Marsa al-Matrouh to Tobruk in Libya to 500 kV. This will enable Egypt to use part of its generation surplus to alleviate its neighbour's almost constant crisis of an insufficient power supply.

Within its borders, the Egypt Power-Transmission Project is a multi-scheme investment programme, led by the Egyptian Electricity Transmission Company, to reinforce and extend the national grid with 150 km of new dual-circuit 500 kV lines, 350 km of 220 kV lines



Egypt will become a vital energy link between Africa, Europe and the Middle East.

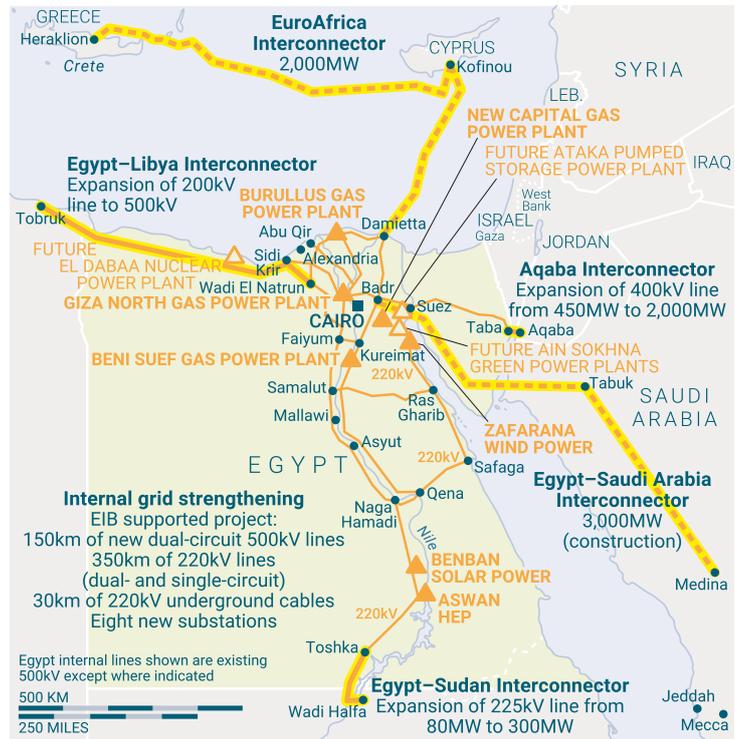
(dual and single-circuit) and 30 km of 220 kV underground cables. It supports the addition of eight new substations to the network.

This project has been supported by the EIB with a commitment of EUR 260 million, out of a total cost of EUR 760 million. In 2020, disbursements were EUR 45 million with a EUR 25.4 million grant equivalent.

The importance of developing Egyptian power sector infrastructure to the attainment of SDG7 is not related to any lack of access to electric power. While continued investments are essential to keep up with growing demand from a rapidly growing population, the IEA's World Energy Outlook reported that Egypt had already reached an access rate of 99% in 2010.

Egypt's potential lies in its ability to export sustainable power into other parts of the African network. It is an EAPP member. Its immediate southern neighbour, Sudan, had an average electricity access rate of 47% in 2020, while the rate in South Sudan is just 7% – the second lowest on the continent after the Central African Republic – pointing to the important role Egyptian green power can play in the region achieving SDG7.

Map 7: Egypt transmission interconnections



6. Private Sector Investment Picture

Latent potential for more private sector investment

Private sector finance is critical if Africa is to achieve SDG7 by 2030. Under the right circumstances, equity and debt capital from both international and domestic private investors

could do more than any other source of finance to achieve the goal; **private finance alone has the capacity to deliver exponential growth towards SDG7.**

The figures analysed for this report show that, while this has not yet happened, private finance for SDG7 is on the increase. Major changes in policy, and deep economic and regulatory reforms to create the necessary investment environment, will accelerate this trend.

The public sector is already playing a key role in leveraging private finance by creating the necessary enabling environments, lowering rates of borrowing, and facilitating fund-raising. ODA and multilateral support is contributing to this effort. For instance, Team Europe has leveraged significant private sector capital for SDG7 projects in Africa.

Partly as a result of this support, private financing of SDG7 projects increased from EUR 258 million in 2014, to EUR 2.2 billion in 2020 (peaking at EUR 3.5 billion in 2018, but also falling to a low of EUR 798 million in 2019). Averages over several years show that the sums are stepping-up over time. The 2014-2017 average was EUR 1.1 billion, increasing to EUR 2.2 billion in 2018-2020.

There are two key conclusions to be drawn from these numbers. The first is that commit-



Private financing of SDG7 projects increased to **EUR 2.2 billion** in 2020.

Figure 24: Private financial flows into SDG-compliant and non-SDG7 projects, 2014-2020 (EUR billions)



ments are growing thanks to an enormous latent funding potential. Unlike ODA and government expenditure, there is almost no practical upper limit to the amounts that could be committed under ideal circumstances. The second is that the extreme variations in yearly totals indicate that private investment decisions are still vulnerable to uncertainty and lack of direction. They are highly sensitive to both internal conditions and external influences, such as the start of the Covid pandemic.

Two further points should also be made about this data. The first is that **private investment is the category least susceptible to statistical analysis and forecasting**. A complete picture of all the private sector finance in African SDG7 projects is not available. Therefore, this data does not show the full effort, and the actual numbers are likely to be higher.

The second point is that this category of finance is the least likely to follow a predictable trend-line. Under the possible scenario in which national government energy spending is being partly directed towards non-SDG7-relevant projects, the private sector remains the main candidate to take-up the slack.

If private sector commitments to SDG7 grow at no more than the historic trend, in monetary terms just EUR 0.19 billion would be added each year, bringing the total to EUR 4.02 billion in 2030. This is – or ought to be – a meagre challenge for the huge resources of domestic and international private capital that are potentially available to finance SDG7-compliant projects.

In other words, what is needed to be sure of a clear path towards SDG7 in or soon after 2030 is not just for each category of investing stakeholder to maintain its historic record of gradually increasing commitment, but for the weight taken by each category to change, and for the private sector – currently the least important contributor – to take a much larger role, with national governments opening-up

the space for this to happen by means of a range of policy reforms and incentives, where necessary.

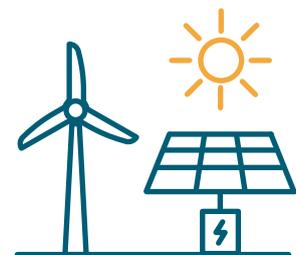
European leverage of private sector finance

Using data from the World Bank's Private Participation in Infrastructure (PPI) database it can be shown that European SDG7 private finance is weighted heavily towards RE generation projects. 53% of all funding has supported solar energy projects, while 28% of funding has supported wind energy projects.

Solar is a clear focus for RE private sector engagement, particularly apparent in 2020, where OECD data shows solar projects supplying centralised grids totalled EUR 1.6 billion out of the total EUR 2.2 billion for RE. This reflects the growing investment viability of solar power, which is the cheapest source of power in many parts of Africa and has been tipped to outperform all other sources across the continent by 2030.²⁰

Based on analysis of the World Bank's PPI database, total European-leveraged private investment into RE varies widely depending on the year under examination. The average from 2014-2020 was EUR 1.3 billion, but ranged from EUR 100 million in 2016 to EUR 2.3 billion in 2015.

It is worth noting, however, that total investment is not the only useful metric for each year. The falling capital costs of installing RE technologies has also had a major impact. The euro per megawatt (EUR/MW) of investment has decreased steadily and noticeably over time, falling from EUR 1.9 million/MW to EUR 1 million/MW in 2020 (see Table 4).



53% of all funding has supported solar energy projects, while **28%** of funding has supported wind energy projects.

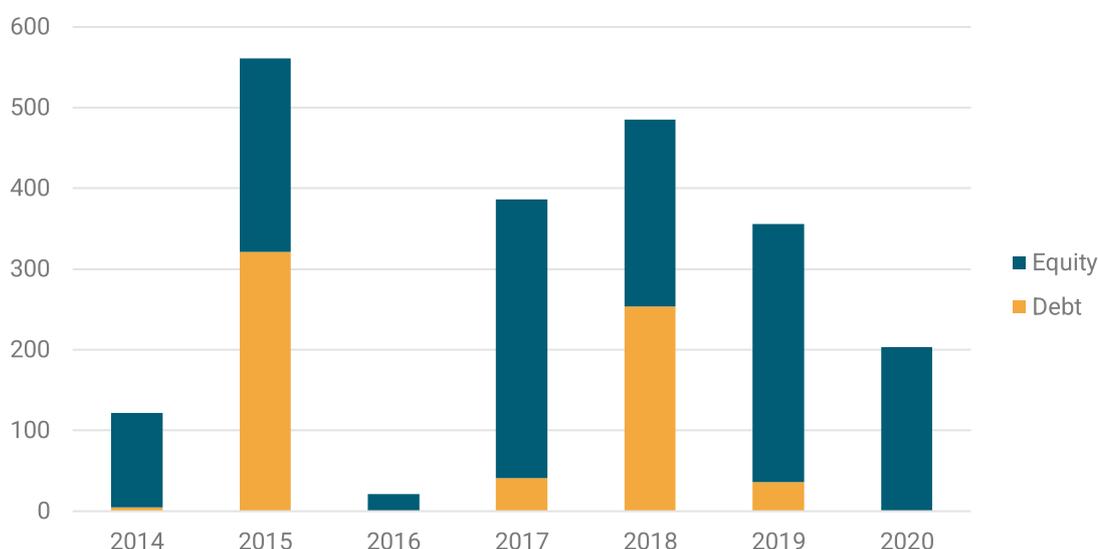
Table 4: Total investment amounts and installed capacity of solar PV and wind IPPs in Africa, 2014-2020

Year	Total investment (EUR million)	Capacity (MW)	Cost (EUR) per MW
2014	592	319	1.9
2015	2.271	681	3.3
2016	72	50	1.4
2017	1.581	1.342	1.2
2018	826	460	1.8
2019	1.152	333	3.5
2020	924	939	1.0

Source: AEEP, World Bank Private Participation in Infrastructure

Team Europe helped co-finance energy-related projects worth EUR 12.9 billion between 2014 and 2020, according to the World Bank's PPI database. Team Europe supported projects presented EUR 6.1 billion of debt and EUR 363 million in equity for SDG7 projects (see Figure 25).

The proportion of Team Europe leveraged private finance has varied considerably over the study period and, given the lack of a complete picture, trends are difficult to identify. It is clear, however, that Europe is committed to supporting private finance. **In 2019 and 2020, Team Europe co-financed over 44% of all the private finance extended to SDG7 projects in Africa (see Figure 26).**

Figure 25: Private capital for SDG7 leveraged by Team Europe, 2014-2020 (EUR millions)

The types of private finance for SDG7 that Team Europe has been able to co-invest (equity) and / or finance (debt), have varied year-on-year, but some significant trends can be discerned. In general, private equity has a significantly higher proportion of the overall amount, totalling EUR 1.7 billion compared to EUR 749 million private debt. In 2020, private equity equalled EUR 231 million, whereas private debt did not feature. However, this trend is not consistent either: in both 2015 and 2018, debt was responsible for the majority Team Europe-leveraged private finance (see Figure 25).

Team Europe co-investments and/or leveraging of private (debt) funding also appears to be

increasing and now accounts for the majority. The proportion of European-supported finance was above 60% in both 2019 and 2020. This contrasts with an average of well below 50% over the 2014-2018 period. This trend underlines the important role that European Institutions and Member States play in facilitating investment into key projects for expanding energy access in Africa (see Figure 26).

Solar and wind generation projects received significant amounts of private capital between 2014-2020, with EUR 7.7 billion from European and non-European donors. Of this, Team Europe co-financed EUR 1.7 billion worth of wind and solar projects.

Figure 26: Proportion of private finance co-invested and / or financed by Team Europe for SDG7 projects in Africa, 2014-2020 (%)

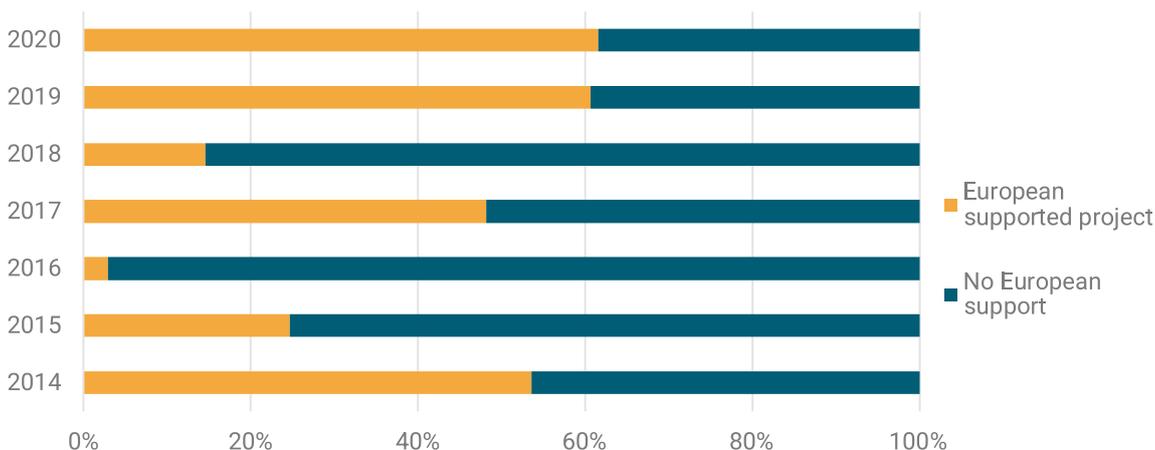
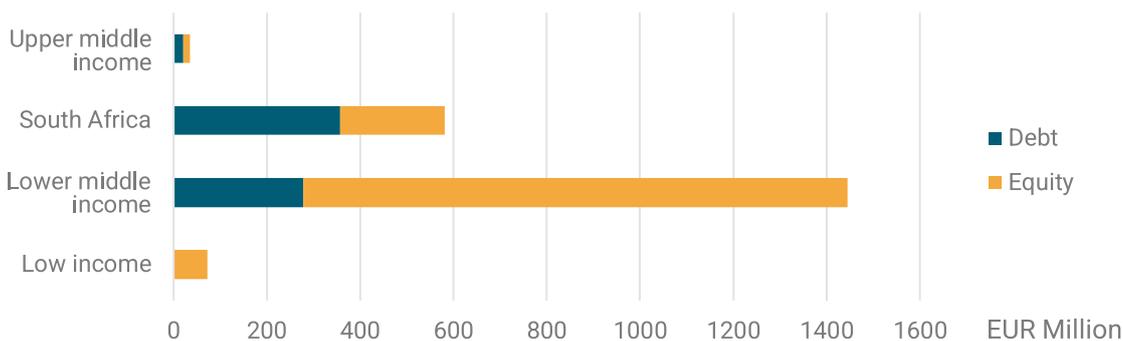


Figure 27: Team Europe leveraged, or co-financed, private capital, by country income group, 2014-2020 (EUR millions)

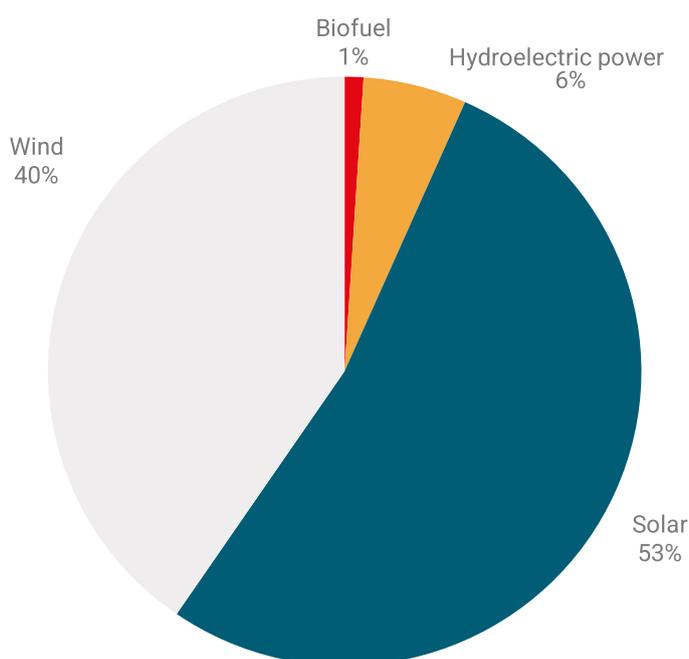


Private investment flows into energy in Africa

Identified private sector flows into Africa were concentrated on a relatively small number of countries. The region which received the largest sum of total energy-related commitments over the 2014-2020 period was Southern Africa, with a robust EUR 6.8 billion. However, this figure was significantly skewed by the large proportion of investments in South Africa – particularly into solar projects – thanks to numerous and substantial renewable power procurement rounds. SDG7 projects in South Africa were the target for EUR 582 million of private capital that included European DFI involvement during the period under examination.

LMICs have consistently been the major target of private capital investment for SDG7-compliant projects with Team Europe involvement. Figure 29 shows they benefited from 68% of the 2014-2020 total with EUR 278 million of debt and EUR 1.1 billion of equity.

Figure 28: Private SDG7 investment by fuel (%)



LICs or LDCs received EUR 73 million worth of private equity over the study period, or 3.4% of the total. No debt was identified to LDCs or LICs, reflecting the lack of enabling investment environments and low credit ratings in these countries. Despite these low levels of private capital, there was a rising trend over the study period, from EUR 300,000 in 2014, to EUR 29 million in 2019. The disparity underlines the need for a proactive approach from European stakeholders to attract private capital to African energy sectors which are in the most need of interventions to accelerate sustainable development.

Historically, the largest private sector investments in renewables were directed towards concentrated solar power (CSP) projects, although huge solar PV and wind projects will dominate the future. For instance, a trio of 100 MW parabolic trough plants in South Africa, which started operations in 2017-2018 were backed by a broad lending consortia of banks and funds. Kathu CSP attracted funding of EUR 489.2 million; Xina solar CSP funding of EUR 331.4 million, and Karoshoek CSP funding of EUR 264.6 million.

Investment flows from the European private sector offer a largely positive picture – or at least a positive trajectory – in relation to achieving SDG7 goals by 2030. The role of the private sector is widely viewed as critical to the ambitions of the SDGs, and RE generation remains the key area of focus for European investors.

The data indicates that non-SDG7 finance from European and non-European supported private sources saw a steady decline in 2014-2019, falling from EUR 1.9 billion in 2014, to EUR 1.1 billion in 2015, to EUR 703.4 million in 2016. From 2017 onwards, non-SDG7 commitments were substantially reduced, registering EUR 134 million in 2017, followed by EUR 27 million in 2018, and just EUR 70 million in 2019.

According to data in the World Bank's PPI database, there is a clear private investment preference towards solar and wind power projects in Africa, accounting for 93% of all technologies. This is boosted by South Africa's private investment drive into renewables, which has made notable additions to solar and wind projects in the country.

While HPPs comprises a significant portion of Africa's total RE, investments have become less common in recent years due to the significant scale of funding required, plus environmental, social and governance (ESG) concerns. Smaller-scale wind and solar projects are benefitting from increasing investment viability. Meanwhile, large-scale HPP is more typically the focus of national government budgets, international donors and often of Chinese export finance.

Helping to enable further private sector investment

SSA remains the world's least electrified region, despite being a major focus of development efforts which have, too often, been frustrated by lethargic progress. There is a well-documented and substantial energy infrastructure gap across critical sectors, such as power generation, electricity access and energy efficiency.

Estimates for the African energy infrastructure financing gap vary, but the scale of the challenge is outlined by the European Investment Bank (EIB), which cites a required annual investment of around USD 100 billion.²¹

While accelerating private sector finance has transformative potential for the ambitions of SDG7, investor sentiment is frequently dampened by perceptions of difficult business environments, regulatory uncertainties and political risk. For investments into African power sectors, typical project risk can centre on the risk of non-payment within a power purchase agreement, general currency or foreign exchange risks, or political concerns, such as an expropriation risk.

Improving finance mechanisms in Africa's energy space and removing hurdles to private sector investment is one critical step in unlocking progress towards key development goals – particularly electrification and energy security. This can help generate a number of positive developmental outcomes associated with an improved electricity supply amongst African populations, and creating conditions to improve overall macro-economic growth.

21 <https://www.eib.org/en/press/all/2018-068-first-long-tenor-political-risk-insurance-to-unlock-usd-1-4-billion-clean-energy-investment-across-africa>

Box 8: African Energy Guarantee Facility

The African Energy Guarantee Facility (AEGF) is one of the leading financial mechanisms supporting private investment in SDG7-compliant projects. Its financial instruments make a key contribution to the SEforAll Initiative.

Under a major guarantee agreement signed with Germany's KfW in 2020, the facility's de-risking capacity for SEforALL-approved energy projects in SSA was increased to USD 1 billion, effectively doubling its re-insurance capacity. It has also benefited from technical assistance provided by the EU-Africa Infrastructure Trust Fund – a precursor of the Africa Investment Platform and EU Global Gateway schemes.

AEGF provides the African Trade Insurance Agency (ATI) with insurance capacity to help meet and enhance its objectives of facilitating private sector investment. It is backed by key European institutions: Munich Re is the re-insurer, and both the EIB and KfW provide a second-loss guarantee to increase the re-insurance capacity.

As well as being the underwriter of AEGF cover, Nairobi-based ATI is the primary underwriter of political risk insurance in Africa. It was created in 2001 to drive foreign direct investment to help facilitate a much-needed increase in foreign direct investment. Since then, it has supported more than USD 70 billion worth of investments and trade in Africa. In 2021, its gross exposure increased by 6.6% to USD 6.6 billion.

AEGF provides political risk insurance in 20 African countries – all ATI members – with cover in other countries considered on request. Its cover can also be tailored for specific risks. Its market segments include IPPs, commercial and industrial (C&I) customers and mini-grids. Energy access, efficiency, T&D projects are also eligible for its support.

The facility is intended to boost private investments in sustainable energy projects in SSA by expanding access to clean energy and contributing to economic growth. Its remit is to help cut the region's carbon emissions, increase energy efficiency and enable many more people to access energy.

7. Progress on electrification in Africa

Case studies for bringing about SDG7

The task of bringing electric power to the approximately 600 million people in Africa, who do not yet have access to it, is an enormous one. Extending, strengthening and interlinking the continent's transmission grids is an essential part of this task. A great number of projects are also underway at a regional and community level with the development of rural electrification, mini-grids and other distribution schemes. Each one of these brings the goal a little closer.

Many of the projects currently being implemented are also useful in that they represent efforts which, when successful, could be scaled and replicated to bring their benefits to other currently deprived communities and regions.

Team Europe is collaborating with partners across Africa to support and assist projects of these kinds. In this section, we profile and report on what is going on in locations across the continent.

Eastern Africa: Tanzania Turnkey III rural electrification project

Tanzania is targeting 75% electricity access by 2025, with a view to attaining 100% access by 2030. According to the PIDA, the country's electricity access rate was estimated at only 12% in 2017. However, electricity consumption, averaging 4.8% between 2010 and 2021, has increased rapidly owing to industrialisation and population growth of about 2.7% per annum.

To meet the growing demand for electricity, and to achieve electrification targets, the Eastern African country is implementing a number of rural electrification programmes with the objective of increasing access to reliable power in rural areas through the extension of the public power distribution grid. This will enhance livelihoods and promote social and economic development.

One of these projects – Turnkey III – was approved in 2016 and is expected to run until 2023. In October 2017, the European Commission (EU) signed a financing agreement with the Tanzanian government's Rural Energy Agency to support it.

Map 8: Tanzania's Rukwa Region



Describing progress to date, programme manager for energy at the Delegation of the European Union to the United Republic of Tanzania and the East African Community, Francis Songela, said that about 3,981 villages had been electrified by June 2022. This surpasses the project's target of approximately 3,559 villages in rural regions of Tanzania gaining access to electricity.

According to the EU data, about 227,561 new connections had been made by June 2022. This number is expected to increase as connections will continue until the project's completion in December 2022. The types of connections that have been made include households, businesses and public buildings. Collectively, they are expected to benefit a total population of more than one million people.

The scheme has an additional capacity-building element. When the finance agreement ends in 2023, the technical capacities of Tanesco and the Rural Energy Agency (REA) will have been significantly strengthened, so

that these bodies will not be able to prepare, design, monitor and supervise rural electrification projects independently, but also to ensure an appropriate level of performance in operations and maintenance of the lines once they enter into operation.

There will also be improved health services, water supply and awareness-raising campaigns for the rural population, leading to the prevention of infectious diseases, including Covid-19 pandemic.

The project has been supported by a pool of funds from the Tanzania government, World Bank, EU, Sweden and Norway. "The maximum EU contribution to the action is EUR 65 million, and the total amount with the EU contribution is EUR 424 million. Other contributions are from the government of Tanzania and other development partners – the World Bank, Sweden and Norway", said Songela. EUR 44 million of the EU's commitment has been disbursed.

Box 9: 184 villages connected electricity in Rukwa

At least 184 villages in the Rukwa region, one of the project implementation areas of the Tanzanian government's Turnkey III Programme for Rural Electrification, have been connected to electricity since July 2022. In all, Rukwa, located in the south-western part of Tanzania has 339 villages. The region consists of three districts: Kalambo, Nkasi and Sumbawanga.

The electrification programme in Rukwa kicked-off in July 2021 and the Tanesco has stated that the remaining 155 villages will be connected to the grid by December 2022.

The major sources of energy used domestically in Rukwa are gas, firewood, charcoal and fossil fuels, such as kerosene for lighting. Electrification is therefore promoting healthy living through the provision of sustainable, reliable and affordable clean energy to the population. Economic opportunities are also being enhanced in agriculture which sustains 80% of the region's population, as well as small businesses.

Tanzania has an ambitious plan to make about 1.3 million electricity connections in the rural areas and to increase the access rate to electricity in both urban and rural areas to 75% by the end of 2025.

In addition to enabling Tanzania to attain universal access to electricity and achieving SDG7, the project is anticipated to create jobs and improve livelihoods through the productive use of electricity and the development of rural small to medium-scale enterprises, both of which enhance sustainable and inclusive economic growth. Other benefits include the creation of new rural businesses resulting in an increase in the local populations' income and job opportunities, as well as the provision of sustainable, reliable and affordable electricity to the rural population.

Central Africa: GET.invest Burundi shows European funding in action

Team Europe is responsible for establishing what may be the most consistent and successful scheme for supporting private sector sustainable energy projects in Africa. In early 2022 and as part of the AEGEI, it mandated the European programme GET.invest with the

Team Europe One Stop Shop for Green Energy Investments, a single access point for information about European support and financing instruments for energy projects and facilitated access to this support.

Since 2016, GET.invest, with support from the European Union, Germany, Sweden, the Netherlands and Austria, has been mobilising investments in renewable energy, supporting more than 250+ projects and companies in accessing financing on the continent and beyond.

Most recently, it has been making an impact in Burundi, the poorest African country with the lowest rate of energy access. Despite the challenging environment for private



GET.invest is the Team Europe One Stop Shop for Green Energy Investments – a single access point for information about European support and financing instruments for energy projects.

KLK's Santillana and GET.invest's advisors working on the company's access to finance strategy.



Source: GIZ, Bregje Drion



Source: BUREA

Villagers in Kirundo province gain access to energy at a community meeting organised by GET.invest’s partner, the Burundi Renewable Energy Association (BUREA).

sector developers in the country, the initial scoping identified four renewable energy companies that could benefit from advice and funding. “We know these are companies that we can really support. They are good, strong companies, three of which are led by Burundians,” said Alexandra Niez, co-ordinator of GET.invest activities in the country.

They include mini-grid IPP developer and local EPC contractor, KLK, which had been working with the local electricity company, Régie de Production et de Distribution d’Eau et d’Electricité (Regideso) for 10 years as an authorised supplier for providing connections to the national grid. “If someone needs an extension to where the grid does not reach, they can get authorisation from the national utility and we build distribution lines, or very rarely transmission lines,” founder and chief operating officer, Santillana Kamikazi, explained. Kamikazi and

her partner have since turned the company into a developer of solar PV mini-grids.

GET.invest’s support was a timely opportunity for the next step. “GET.invest’s advisors helped us work out financial models and a pitch deck and provided us with counselling,” said Kamikazi. “When talking to them, we realised there is a huge gap in terms of providing energy to C&I customers.”

This has enabled KLK to design a commercial offering which fits the conditions in one of the poorest countries in Africa. “Here in Burundi, there is not much purchasing power. We need some kind of leasing so that customers can afford the solution,” she added. As KLK was unable to finance its plan from internal resources, GET.invest also assisted Kamikazi in identifying potential international backers.

What is GET.invest?

GET.invest emerged from the same stable as the AEEP, the publisher of this report. It started in 2016 as the Africa-EU Renewable Energy Cooperation Programme (RECP) and took its present name in 2018. Since 2016, it has become a central element in achieving SDG7 through private-sector mobilisation. To date, it has linked more than 110 projects and companies with financiers with a projected total investment of EUR 1.5 billion, the majority of them in sub-Saharan Africa.

GET.invest's objective is to increase the volume and pace of private investment in RE in developing countries. As a result, it has a strong focus both on Africa and on African efforts to achieve SDG7. At its core, it provides specialised advisory support to project and business developers to make themselves and their projects bankable, and then links them with financiers. The result is a pipeline of investment-ready projects.

"We have a feeling that a good percentage of active transactions in the African market are supported by us," said team-leader Michael Franz. Since inception, GET.invest has supported 288 clients of whom more than 110 are in its current portfolio (see table).

The 110 projects (more than 90% of them in Africa) that have successfully been linked with

financiers with GET.invest's support translate into a projected investment volume of 1.4 billion Euros. These projects can provide an expected 15 million people with access to energy and save almost 3 million tCO₂/year at the same time.

Many of these projects and companies supported by GET.invest are challenging for financiers to engage in due to their initially relatively small investment-size, or because they use new types of technologies and business models. Their sponsors may also lack the experience, networks, or time to identify appropriate sources of finance. The result is high transaction costs and few projects reaching financial close.

GET.invest addresses these challenges through its advisory services – the GET.invest Finance Catalyst and the Finance Readiness Support – targeted at project and business developers to assist them in becoming bankable. In most cases, the capital mobilised with support of GET.invest is highly catalytic, i.e. it allows companies to embark on a growth trajectory from small volumes and ticket sizes to scale, and thus also impacts at scale.

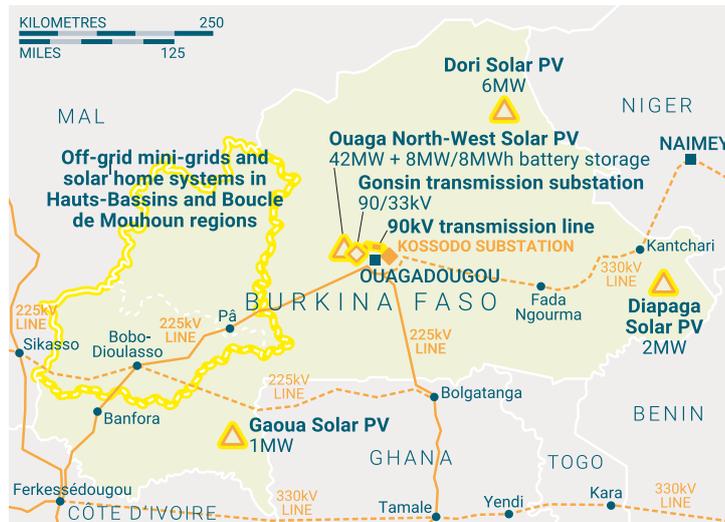
Along the programme's value chain, GET.invest works with many different partners to create a sustainable market for renewable energy in developing countries. In addition to offering advice on access to finance, GET.invest also

Table 5: Number of projects supported by GET.invest (September 2022)

Applications for support	1103
Projects and companies supported	288
Clients in current portfolio	114
Accepted by financier	110
Financial close	56

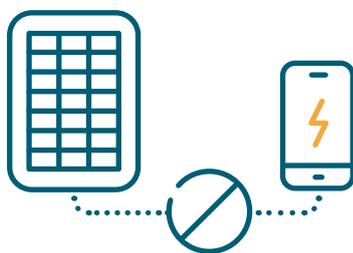
Source: GET.invest

Map 9: Burkina Faso's Yeelen programme



provides information in the form of a funding database and market profiles, mobilises the sector through supporting events and matchmaking activities, and advises African banks on the introduction of renewable energy financing instruments.

The initiative is part of the Global Energy Transformation Programme (GET.pro), a European multi-donor platform implemented by GIZ, which includes the Secretariat of the Africa-EU Energy Partnership (AEEP) and the sister programme GET.transform that is directed at supporting public-sector partners with targeted advice on energy transition.



Burkina Faso has one of the poorest electricity access rates in Western Africa with a national average of **21%**.

Western Africa: Burkina Faso's Yeelen programme

Nearly one million citizens of Burkina Faso will gain access to electricity for the first time thanks to the Yeelen programme – a public-private partnership supported by the AfDB, the Green Climate Fund (GCF), AFD, and the EU, and implemented by the state-owned utility Société Nationale d'Electricité du Burkina (Sonabel).

Yeelen – meaning 'light' in the Bambara language – has three components: (1) the development of grid-connected solar photovoltaic (PV) plants plus the installation of battery storage, (2) expansion of the distribution network, and (3) construction of isolated mini-grids and solar systems to improve rural electrification. It is part of the AfDB's Desert-to-Power (DtP) initiative, whose ultimate aim is to use the abundant solar resources in 11 Sahelian countries to connect 250 million people with electricity.

Burkina Faso has one of the poorest electricity access rates in Western Africa. The national average is 21% but, in rural areas, where 70% of the population lives, the rate is less than 1%, according to the IEA's World Energy Outlook. Yeelen's ultimate aim is to connect 50,000 households to solar-powered mini-grids and to provide a further 100,000 with stand-alone solar kits. This will provide electricity to about 945,000 people in rural areas of the country – about 5% of the total population – who currently do not have access to power.

Whilst this still leaves a substantial amount to do for the full achievement of SDG7, it nevertheless represents a significant step towards that goal.

The project's total finance requirement is estimated at EUR 136.69 million. Part of this has come from the African Renewable Energy Scale-up (ARE Scale-up) facility, which is

co-financed by AFD and the European Commission. It paid for a feasibility study on the construction of four grid-connected solar photovoltaic plants, which are expected to be commissioned in 2024.

The largest of these plants, a 42 MW scheme north-west of the capital, Ouagadougou, includes the installation of an 8 MW/8 MWh lithium-ion battery energy storage system, a first for West Africa and, according to an AFD statement, “the first stage in the construction of a grid capable of accommodating more intermittent solar energy production”.

The Ouaga North-West project also involves the extension of the transmission grid network with a new substation, a 90 kV line to the Kosodo substation in Ouagadougou.

The selection of contractors and start of work on a parallel project to reinforce the distribution grid is expected by the end of 2022. The plan is to construct networks in 66 localities, establishing 15,500 new electricity connections benefitting a population of about 110,000.

The last component of the Yeleen programme targets the construction of off-grid mini-grids in selected rural areas. Rural inhabitants in the Haut-Basins and Boucle de Mouhoun regions will, for the first time, have access to electricity through the deployment of mini-grids and solar home systems (SHSs). Construction work on these projects is underway, with commercial operations expected in 2024.

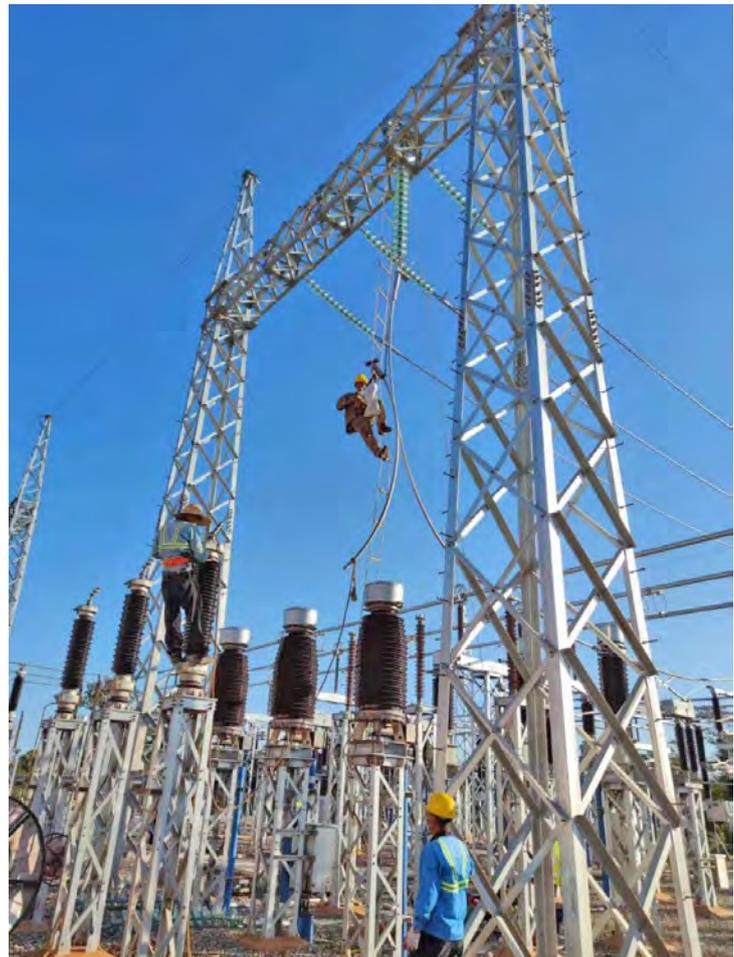
The partnership of Sonabel, AfDB, GCF and Team Europe is making a significant difference both to Burkina Faso’s progress towards SDG7, and also to the promotion of sustainable development in line with the global energy transition. By integrating RE into its national energy mix, Yeleen programme projects will reduce Burkina Faso’s greenhouse gas emissions by 48,000 tCO₂eq annually.

Southern Africa: Rural electrification in Mozambique

The second phase of rural electrification in the small Mozambican coastal district of Vilankulos started in 2019. Its primary aim was to connect the region’s existing mini-grid to the national transmission network, while also providing connections to new clients and expanding and upgrading the existing distribution network.

Located in the subtropical province of Inhambane, the town of Vilankulo has become the main access point for tourists visiting the Bazaruto Archipelago. There are direct flights from Johannesburg to its international airport, which was expanded a decade ago, supporting a

Engineers from EDM erecting gantries at the Temane substation in Inhassoro district, Inhambane province



Source: Electricidade de Moçambique (EDM)

trend of economic growth. Its significance to Mozambican electrification is also as a key node on the proposed 440 kV transmission line planned from the large Cahora Bassa HPP in northern Mozambique, via the town of Chimolo, to Maputo.

The first inception phase of the electrification project was funded by Sweden in 2016-2018 and focused on a feasibility study and preparation of tender documents. Its current phase is targeted at the population in northern Inhambane and the southern Sofala province – a mainly rural area north of the town consisting of villages and smaller communities dependent on small-scale agriculture, fisheries and trade.

The project was delayed by the Covid-19 pandemic and two cyclones that hit the area, but was nearing conclusion by end of July 2022. The state-owned power utility Electricidade de Moçambique (EDM) director of projects Claudio Dambe said that “at the moment [in July], the project is almost concluded. We have finished construction of two substations at Temane and Casa Nova and now we are doing the commissioning of the last one – the Vilankulo substation, and we have done 56% of service connections,” he said.

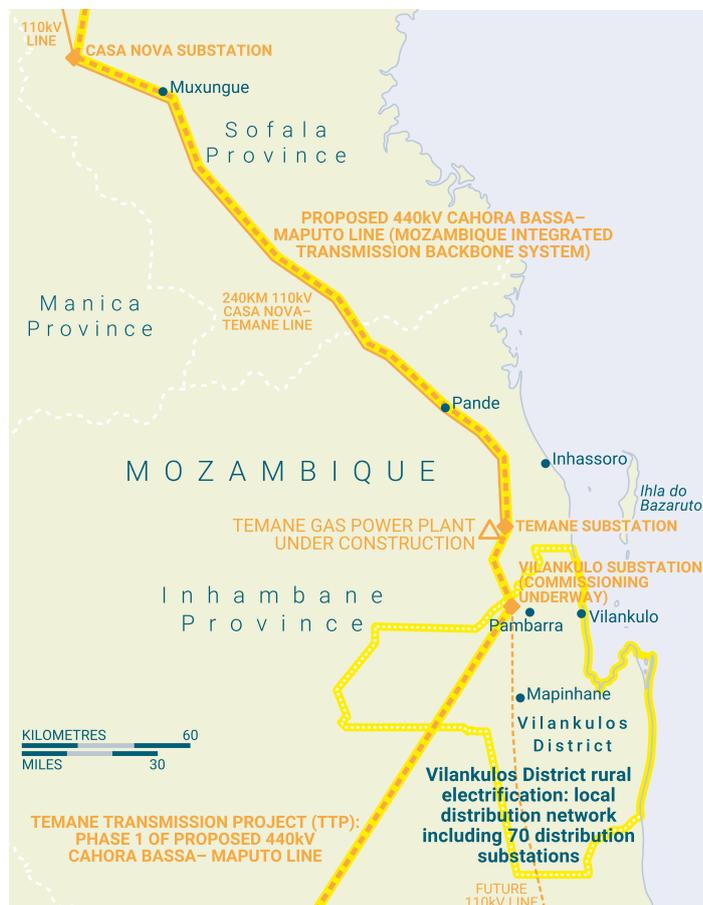
Temane – also the site of an important gas field and development – is located just north of Vilankulo, while Casa Nova lies beyond it in the Sofala province. As part of the project, EDM has built a 240 km 110kV transmission line between the two.

Substations have also been built at Casa Nova, Temane and Vilankulo. A distribution network has been connected to this local transmission backbone. Some 70 distribution substations are linked to 196 km of medium voltage, and 98 km of low-voltage network.

The project is being financed through a EUR 39.4 million (USD 40 million) grant from the Swedish government. Almost 90% of the grant finance has already been disbursed. Dambe said that, by July 2012, 554 families had been connected to the grid and, out of them, 15% were families led by women. About 950 families are expected to have been connected by the end of the project.

“We know that the area of the project from Govuro, Machanga, Inhassoro, Vilanculos and Chibabava, which are the project implementation areas where the distribution network and service connection is being done and will be done, is mostly a fishing community. With the implementation of the project, we expect the fishing industry in the area to grow and business opportunities and education to be enhanced,” he said.

Map 10: Mozambique’s Vilankulos projects



When the project started, access to electricity in Vilanculos district was around 23%, but the rate of electrification has risen to 31% as businesses and households access sufficient electricity services, including the vulnerable groups, such as female-headed households. EDM will also benefit from the project through increased technical and financial viability due to reduced system losses and increased productive uses of electricity in the project area.

EDM engineers assemble a distribution substation in Vilanculos district, Inhambane province



Source: Electricidade de Moçambique (EDM)

Box 10: New Vilanculos Substation brings an end to blackouts

Until recently, electricity power-cuts were a daily occurrence that frustrated business at the Vilanculos Beach Lodge situated in the small coastal town of Vilankulo in Mozambique's Inhambane province. While the area received power from the nearby Temane gas-fired thermal power plant, most of the time, the aged facility broke down, resulting in several power blackouts per day.

Since the inauguration in July 2022 of the 110 kV Chibabava-Temane power-transmission line, and the Temane substation in Inhassoro district in Inhambane province, both life and business in the area have changed for the better, said Samuel Vilanculos (48), a worker at the lodge.

"We used to experience power outages every day for hours on end due to lack of electricity. It was difficult to do business. The hotel spent a lot of money on costly diesel to power the business. However, the situation has now improved following the commissioning of the substation in Temane. We have electricity for 24-hours-a-day. Business has picked-up," he added.

The infrastructure, built as part of the Vilankulos Rural Electrification Project Phase II, linked the region to the central and southern regions of Mozambique. Besides improving the quality and reliability of the power supply in all the districts of the project, the construction of the electricity infrastructure has created about 280 jobs.

8. Growing Multilateral Support for SDG7 in Africa

A consistent and steady increase

Multilateral institutions provided more than EUR 13.4 billion towards development, policy and capacity-building funding for SDG7 projects in 2014-2020.

Their contributions averaged just over EUR 1.9 billion annually. There has, however, been a clear upward trend over this period, and commitments have not fallen below EUR 2 billion since 2016. The share of these contributions, as a percentage of overall funding, has also risen consistently and steadily from 69% in 2014, to 97% in 2019. In 2020, they accounted for 100% of the commitments.

More than half of this finance has been directed towards ten countries – with a clear focus on the Eastern and Western Africa (see Table 6). The top three recipient countries are Nigeria – which accounts for EUR 1.4 billion or 10.7% of the total, then Tanzania and Rwanda, which account for a further combined EUR 1.7 billion.

Projects in the T&D sector have seen the largest allocation of funding over this period, totalling just under EUR 5 billion. In comparison, EUR 3.6 billion was allocated to policy and capacity-building, EUR 2.7 billion to renewable power generation, and EUR 2.1 billion to clean cooking.

Multilaterals have directed their financing of SDG7-compliant projects predominantly to LDCs with EUR 11.9 billion between 2014-2020. Institutions have also made major contributions

Table 6: Top 10 recipient countries of multilateral ODA commitments to SDG7, 2014-2020 (EUR)

Country	Commitments (EUR)	Proportion of total
Nigeria	1.434.024.431	10.7%
Tanzania	904.825.316	6.7%
Rwanda	843.157.999	6.3%
Niger	782.911.454	5.8%
Ethiopia	682.292.645	5.1%
Mozambique	560.467.869	4.2%
Burkina Faso	509.507.651	3.8%
Kenya	473.011.284	3.5%
Mauritania	472.983.600	3.5%
Mali	462.996.907	3.4%

to LMICs, with EUR 2.5 billion in 2020 alone. By contrast, they invested just EUR 30.4 million in the UMIC country income group in 2020.

Multilaterals with EU funding behind them have dominated commitments over the seven years from 2014. In 2020, they accounted for over 45% of all SDG7-compliant commitments.

European commitments to multilaterals represented 56% of the total, representing the most substantial contribution of any region by a large margin. In comparison, Asia (excluding China) accounted for 18%, with North America contributions slightly less at 17%.



European commitments to multilaterals represented **56%**. It is the most substantive contribution by any region.

Figure 29: Multilateral commitments to SDG7 projects by country income group, 2014-2020 (EUR billions)

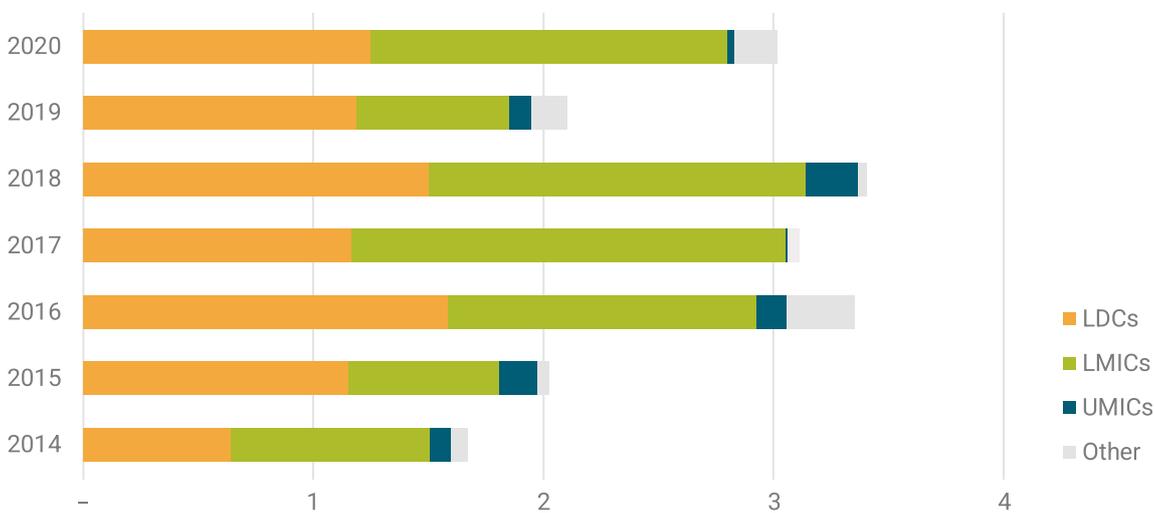
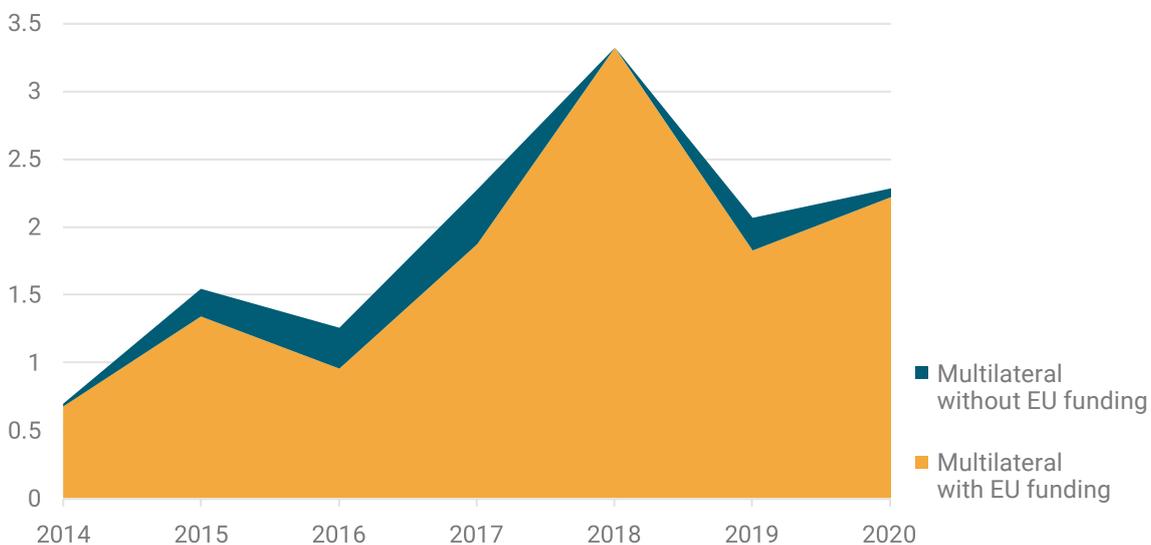


Figure 30: EU participation in multilateral funding for SDG7-compliant projects (EUR billions)



Multilateral funding from North America

In line with a long-standing involvement in Africa’s power sector, total energy-related commitments from North American sources amounted to EUR 372.4 million in 2020, with total identified commitments from 2014-2020 reaching over EUR 3.3 billion. Of this, EUR 2.6 billion was focused on SDG7-compliant projects, meaning that North American commitments have been responsible for around 5% of all identified SDG7-compliant financing in Africa for this period.

The vast majority of North American commitments were sourced from donors in the US, including the Millennium Challenge Corporation, which has historically been the largest source of financing from North America. However, 2020 saw both the Overseas Private Investment Corporation and the US Agency for

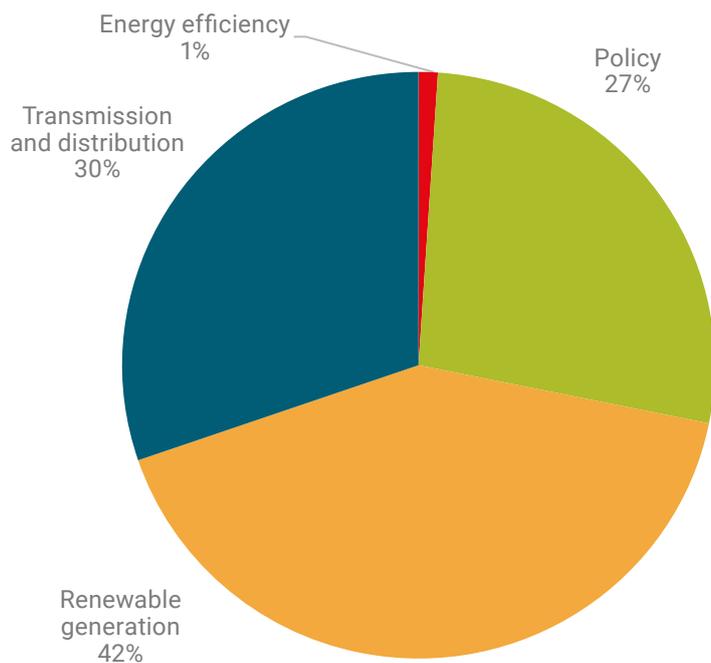
International Development (USAID) commit larger sums. Global Affairs Canada was also active in 2020 and was responsible for approximately EUR 40 million.

Globally, the US has been one of the largest single contributors to identified SDG7 ODA commitments and was only outpaced by a small handful of countries between 2014 and 2020, among them Germany, France and EU institutions²², pointing to an increase in financing activity associated with the ‘Power Africa’ initiative.

This also explains the significant ODA grant component of North American commitments, which outstrip ODA loans by a significant margin over the period under examination. Identified North American total commitments to LDCs were more substantial than funding to other recipient income groups. This accounted for EUR 1.6 billion of total commitments, of which EUR 1.2 billion was SDG-compliant.

SDG7-compliant financing has been targeted towards the renewable generation sector in Africa, which accounts for 42% of North America’s contributions. T&D (30%) and Policy (27%) sectors were also significant sources.

Figure 31: North American ODA funding of SDG7-compliant in Africa, 2014-2020 (%)



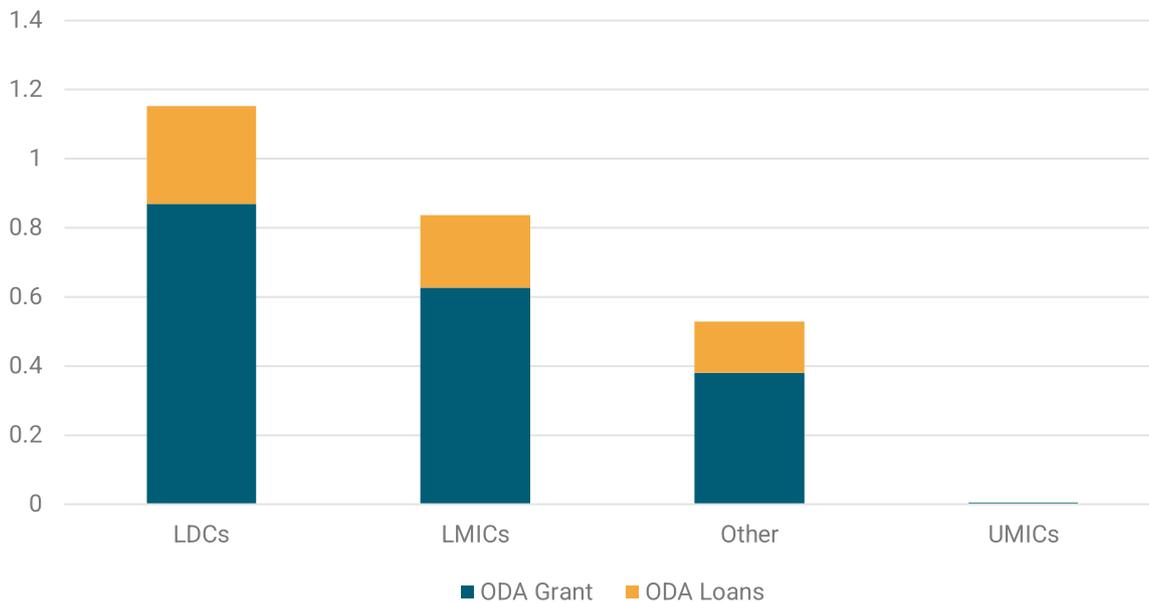
Multilateral funding from Asia (excluding China) and Oceania

Identified SDG7-compliant commitments from Asia and Oceania declined noticeably in 2020 from the data trends of previous years – having registered an annual average of EUR 224 million between 2014 and 2019, just EUR 92 million was committed in 2020, reflecting a drop in commitments from all donors, including Australia, Japan, Korea and New Zealand.

Japan, which is the largest economy among donors from Asia (China’s contributions are excluded due to reporting of Chinese financing being largely opaque and therefore does not allow for in-depth scrutiny), remained the larg-

22 Including the European Investment Bank, European Commission and European Development Fund.

Figure 32: North American SDG7-compliant funding by country income group, 2014-2020 (EUR billions)



est contributor of SDG7-compliant commitments to Africa (among the donors from Asia and Oceania) over the 2014 to 2020 period. Its identified ODA SDG-compliant commitments in this period were EUR 1.1 billion, or 74%.

India’s total energy-related commitments were considerably higher than Japan in both 2019 and 2020, and accounted for 38% of the total financial commitments from 2014-2020, although this was comprised entirely of export credit and non-SDG finance. From 2014-2020, South Korea accounted for EUR 320 million of identified SDG7-compliant commitments.

The majority of identified commitments from Asia and Oceania between 2014-2020 were targeted towards LDCs, accounting for 65%, while LMICs accounted for 34%.

There was a clear focus on T&D, representing 65% of all relevant finance, due entirely to the substantial commitments towards this sector from Japan (EUR 614 million), and South Korea (EUR 278 million) over this period. Renewable generation (18%) and Policy (15%) were also major destination of finance (see Figure 33).

Figure 33: Asia (excluding China) and Oceania funding of SDG7-compliant projects in Africa by sector, 2014-2020 (%)

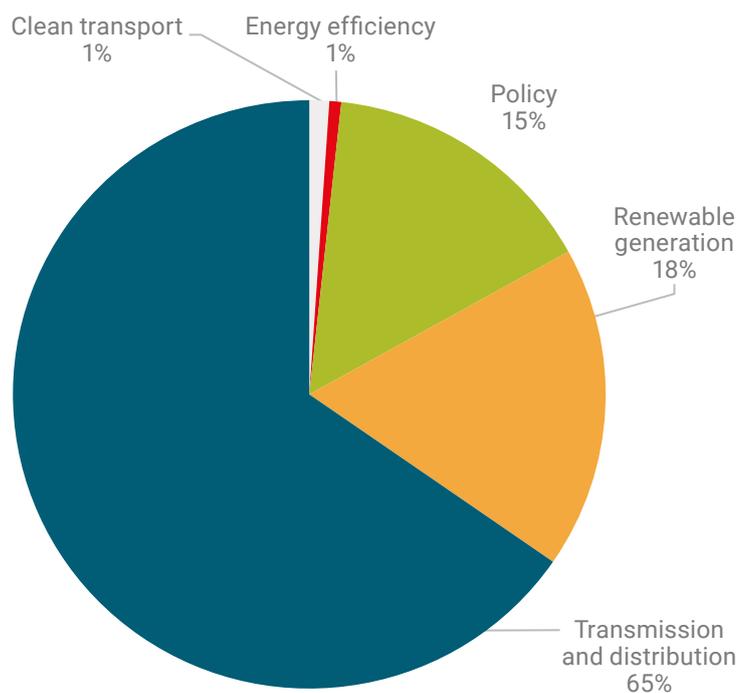


Figure 34: Asia (excluding China) and Oceania funding of SDG7-compliant projects by country income group, 2014-2020 (EUR billions)

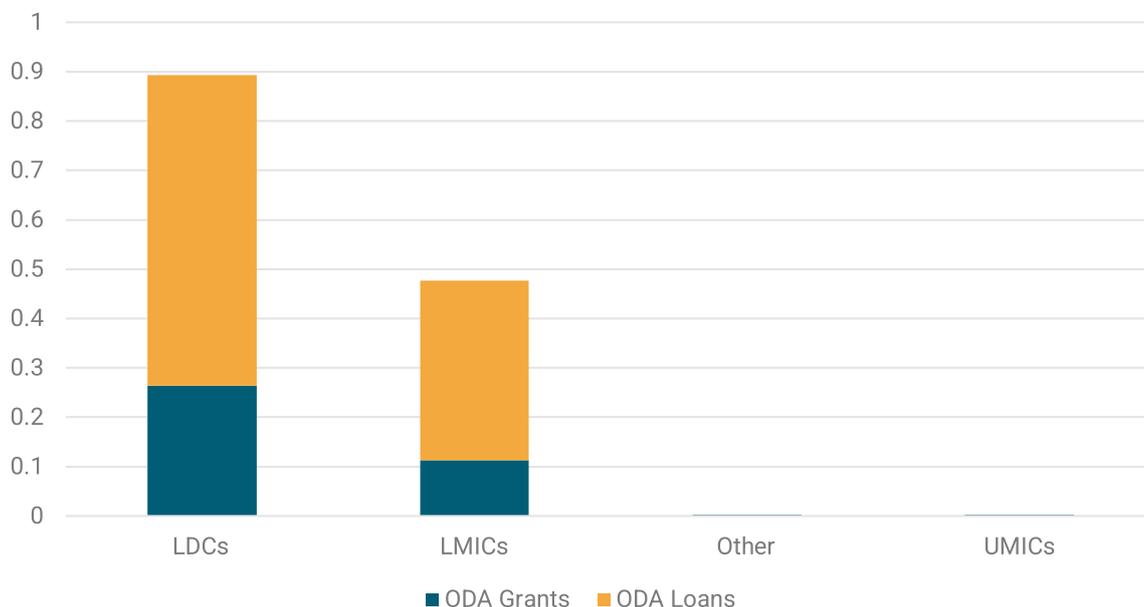
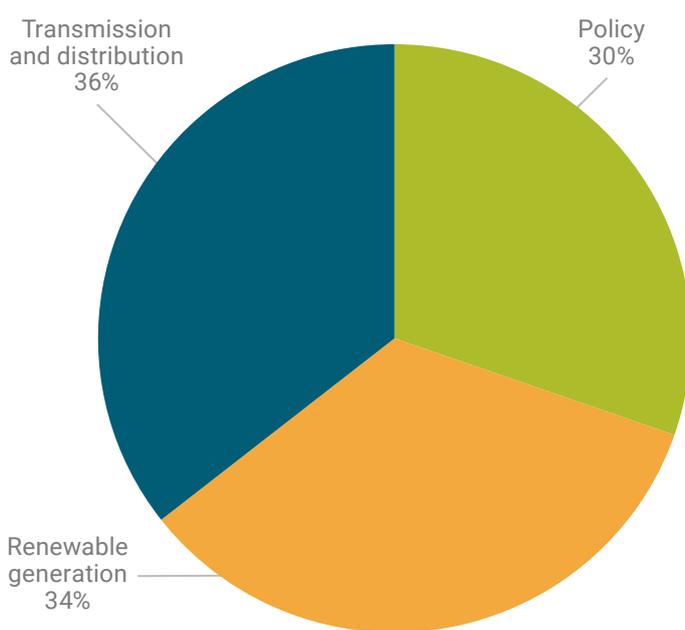


Figure 35: Middle East funding of SDG7-compliant projects in Africa by sector, 2014-2020 (%)



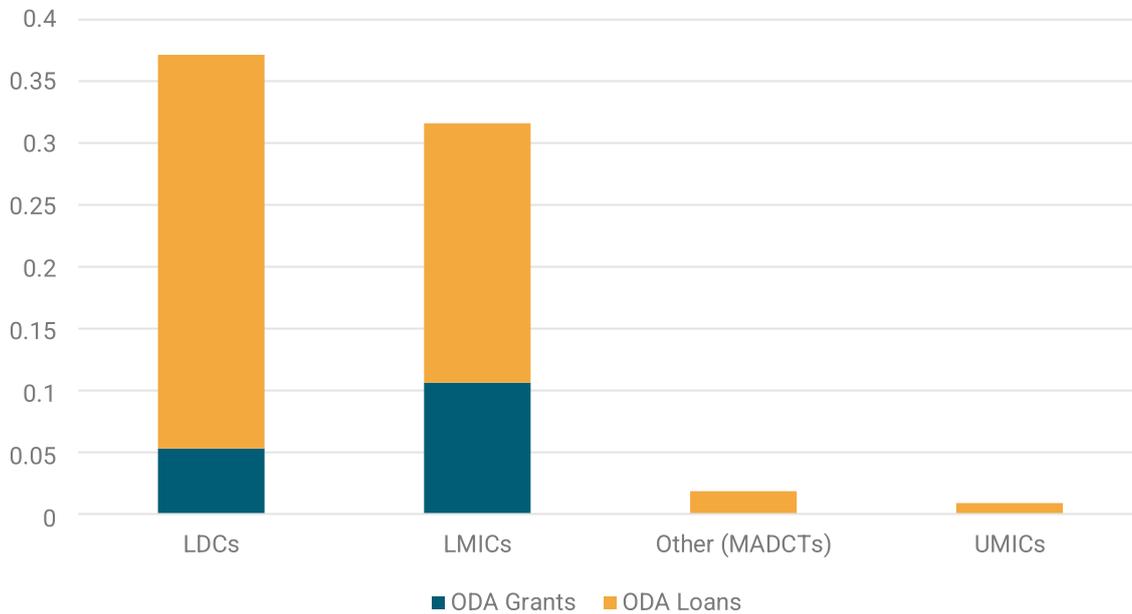
Multilateral funding from the Middle East

The Gulf states have been active in providing finance to Africa, particularly to the MENA region. Total energy-related commitments from the Middle East from 2014 onwards reached EUR 1.1 billion in 2020, of which EUR 716 million were SGD-compliant.

Predictably, due to enduring economic and political links to the region, Northern Africa was the largest recipient region of identified SDG7-compliant commitments from the Middle East, receiving almost 60% of the total sum, or EUR 433 million. Eastern Africa received EUR 145 million, while Western Africa received EUR 88 million between 2014 and 2020.

Among donors in the Middle East, the Kuwait was the largest contributor of identified financing to SDG7-compliant projects, representing 44% of the total, which was delivered by the Kuwait Fund for Arab Economic Development

Figure 36: Middle East funding of SDG7-compliant projects by country income group, 2014-2020 (EUR billions)



(KFAED). United Arab Emirati and Saudi Arabian DFIs, the Saudi Development Fund, and the Abu Dhabi Fund for Development also made significant contributions, with EUR 152 million and EUR 141 million respectively.

Identified SDG7-compliant commitments from the Middle East were targeted relatively evenly between renewable generation (EUR 244 million) and T&D projects (EUR 255 million), as well as policy (EUR 217 million) between 2014-2020 (see Figure 35). Of this, North Africa has been the recipient of EUR 214 million in T&D, and EUR 129 million in RE generation.

The majority of SDG7-complaint finance from the Middle East comprised ODA loans and was targeted towards the LDC and LMIC country income brackets. ODA grants also represented a robust component.

Other donors (non-European states)

Non-EU European states include Iceland, Norway, Switzerland, Turkey, and the UK, which is considered in this section due to its formal exit from the EU in 2020, but was not included in previous editions of this report. These countries accounted for a total of EUR 502 million of total energy-related finance from 2014-2020, of which EUR 376 million was SDG7-compliant. Norway has been by far the most active of these states and accounts for EUR 310 million, or 82% of the total during this period. Since joining this bracket, the UK's contribution to non-EU European states is EUR 33 million for 2020.

A host of other donors hitherto not included in the scope of this section have emerged with increasingly notable financial contributions across Africa's power sector in recent years, including countries such as Brazil, China, and emerging institutions, such as the BRICS' New Development Bank. There are significant

challenges in both collecting and compiling the data on many of these emerging countries – which are not members of the OECD and therefore do not report, or in many cases reveal, their commitments, let alone disclose the terms and conditions of their funding. Pending a major change in their reporting procedures to meet internationally-agreed norms, this makes it impossible to determine whether a commitment or disbursement meets the criteria for being classified as ODA.

The case of Chinese finance remains particularly hard to track, despite an equally impressive and controversial strengthening of financial muscle across the African infrastructure and extractive industries in the last decade and beyond. It should be noted that Beijing's approach to international infrastructure investment made a major and widely-welcomed shift in 2021 when President Xi Jinping committed to ending the construction of overseas coal-burning power plants. Nevertheless, China's lack of transparency and participation in key institutions – it neither provides information to the OECD, nor is it a member of the Paris Club of creditor governments – means that providing a clear data-led picture of its activity is impossible. China has also opted out of the International Aid Transparency Initiative²³.

9. Trends in Types of SDG7 Finance in Africa

SDG7 finance

SDG7 finance is essential to the provision of affordable, reliable, sustainable and modern energy for all the African people. Yet it remains the case that commitments to Africa's energy sector are making only slow progress towards that end. In 2020, total SDG7 commitments was still below 50%, and in only three of the years between 2014 and 2020 have SDG7 financial commitments accounted for more than half of the total (see Figure 37).

There is, however, evidence that SDG7 commitments are gradually pushing non-SDG7 finance out of the picture – a clear reflection of the high priority now accorded to the goal.

Between 2014-20, the spread between SDG7 and non-SDG7 funding narrowed sharply. The trajectory of these trends suggests that, in future years, SDG7 finance will overtake, and eventually dominate, non-SDG7 commitments.

Some funders have proven to be much more closely aligned with SDG7 than others. EU Institutions and Member States accounted for EUR 12.5 billion of SDG7 commitments in 2014-2020, fully 27% of the worldwide total. The next largest donors were global multilateral institutions, with EUR 12 billion (26%), and the private sector, at EUR 11 billion (24%). (See Figure 39).

Conversely, other providers of finance remain, by far, the largest sources of non-SDG7 commitments. For instance, China has provided the vast majority of non-SDG7 commitments, alone accounting for EUR 38 billion of the EUR 59 billion total. This expenditure likely reflects continued investment into hydrocarbon-fired generation assets during this period. Middle Eastern finance providers are in second place with EUR 7 billion, reflecting the relative importance of hydrocarbon-related investment.

Figure 37: SDG7 adherence in finance commitments to Africa, 2014-2020 (%)

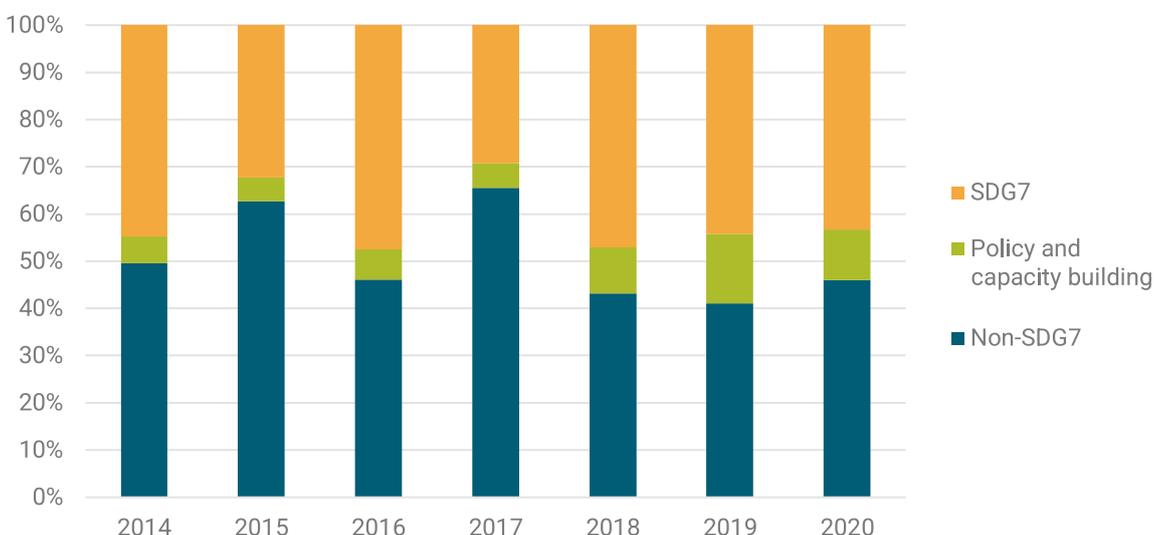


Figure 38: SDG7 commitment trends in Africa, 2014-2020 (EUR billions)

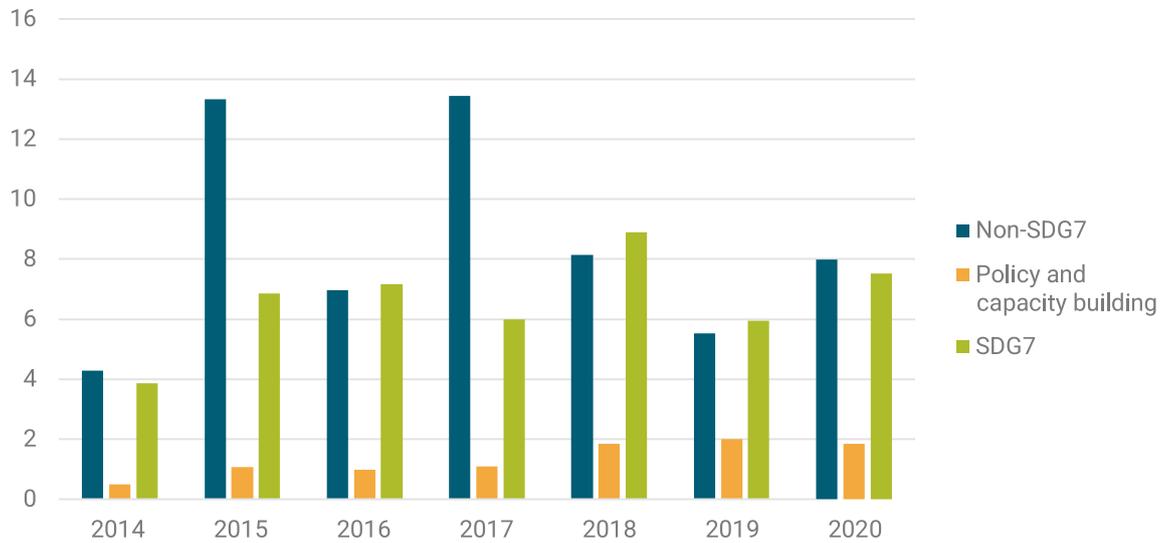


Figure 39: SDG7-compliant finance commitments in Africa, 2014-2020 (EUR billions)

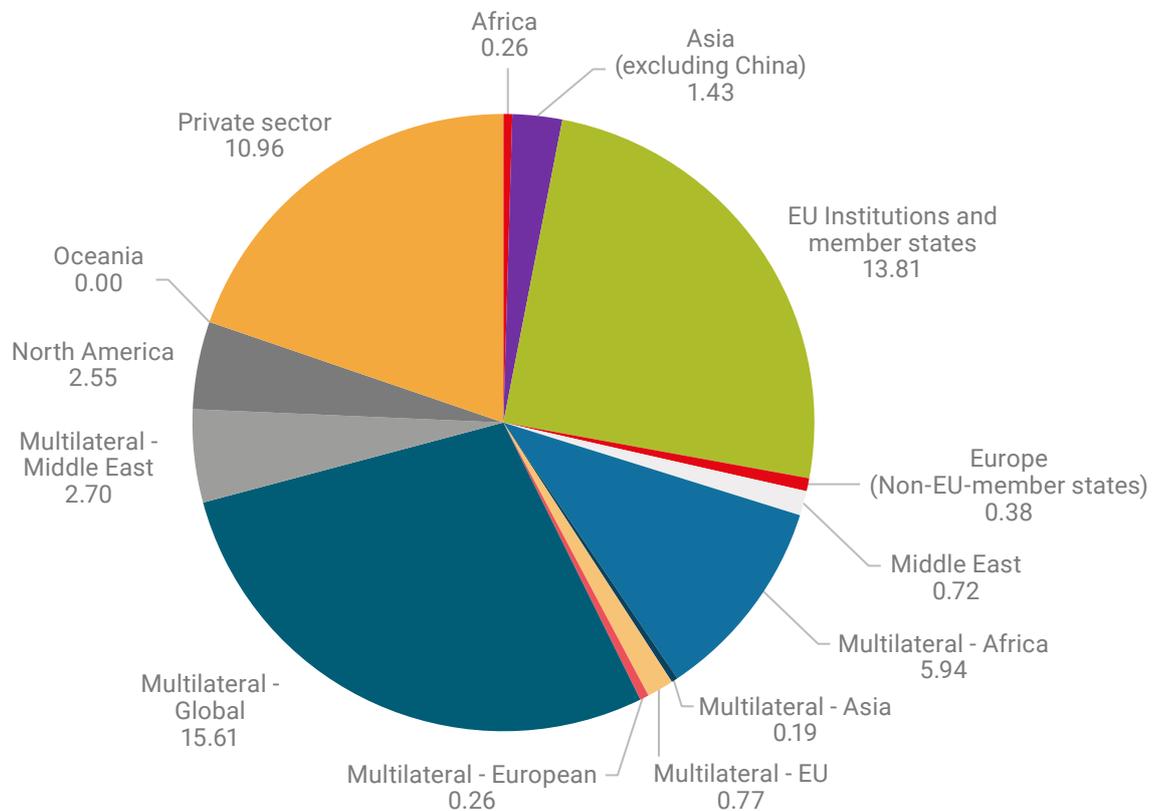
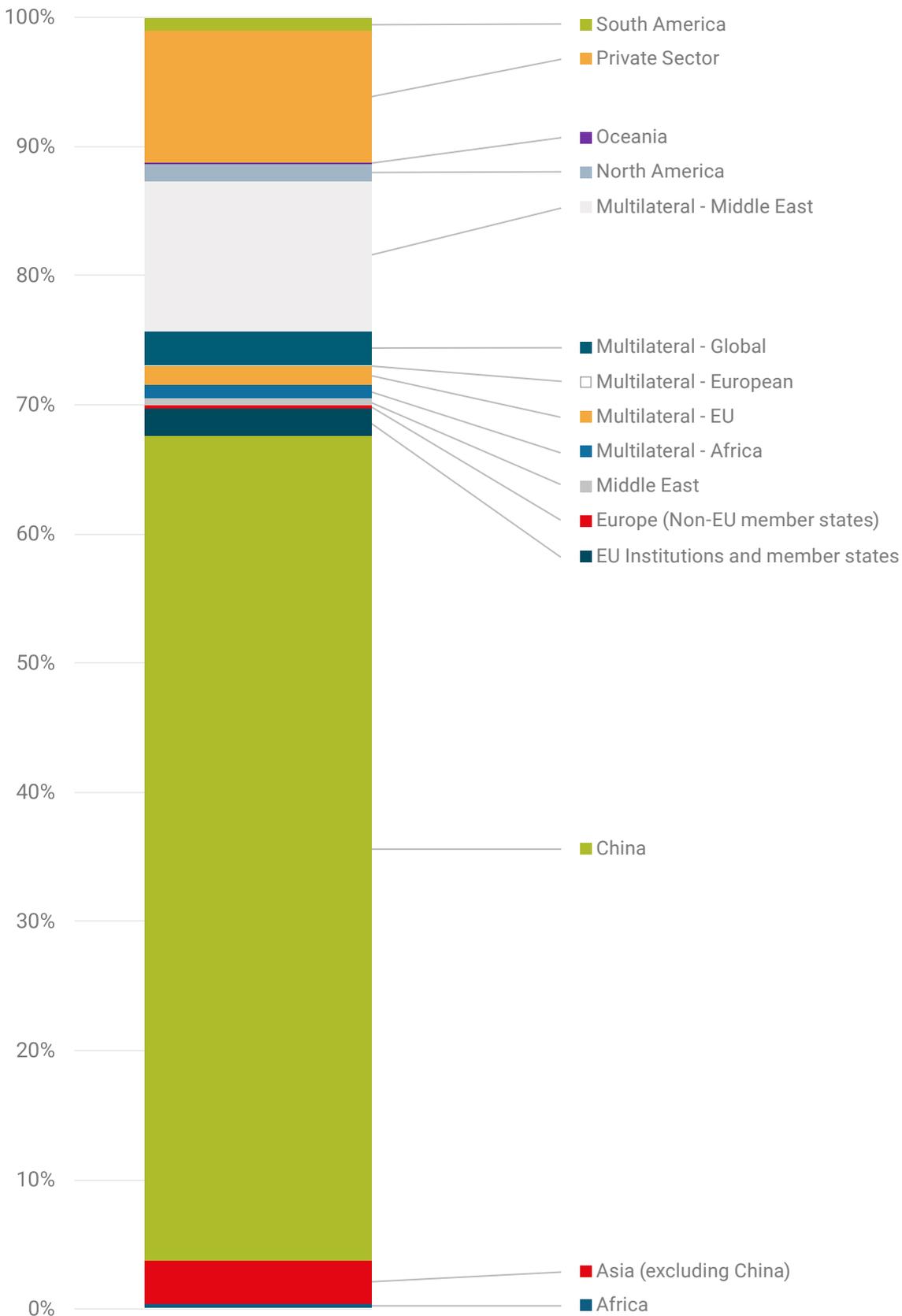


Figure 40: Non-SDG7 finance commitments, 2014-2020 (%)



Disbursement trends and SDG7

SDG7 adherence is at a far higher level when it comes to the actual disbursement of funds. By 2020, over 80% of total disbursements were SDG7-compliant, an impressive marker of progress. As would be expected given the high level of SDG7 adherence in disbursements, the spread between SDG7 and non-SDG7 sharply widened in 2014-2020 (see Figure 42).

It should be recognised that this high figure is potentially skewed by the lack of data on Chinese disbursements, which cannot be measured by international finance databases. Most Chinese development financing is from statal, or parastatal, sources and China treats all relevant data as classified; Chinese institutions do not provide data to the International

Aid Transparency Initiative, the OECD, or the Paris Club.

Disbursements for non-SDG7 finance are difficult to track, as authoritative figures for China and the private sector – the two largest sources – are not available for the reasons discussed above. This caveat aside, the largest funders of non-SDG7 disbursements are the global multilateral institutions with EUR 2.3 billion between 2014 and 2020 (29%), followed by multilateral institutions from the Middle East and Africa with EUR 1.4 billion and EUR 1.3 billion respectively. As noted above, in the case of Middle Eastern multilateral institutions, this is likely on account of the high level of investment in hydrocarbon projects. African multilateral institutions have also continued to support hydrocarbon investments, particularly for poorer countries where there is a clear development case.

Figure 41: Finance disbursement SDG7 trend for Africa, 2014-2020 (EUR billions)

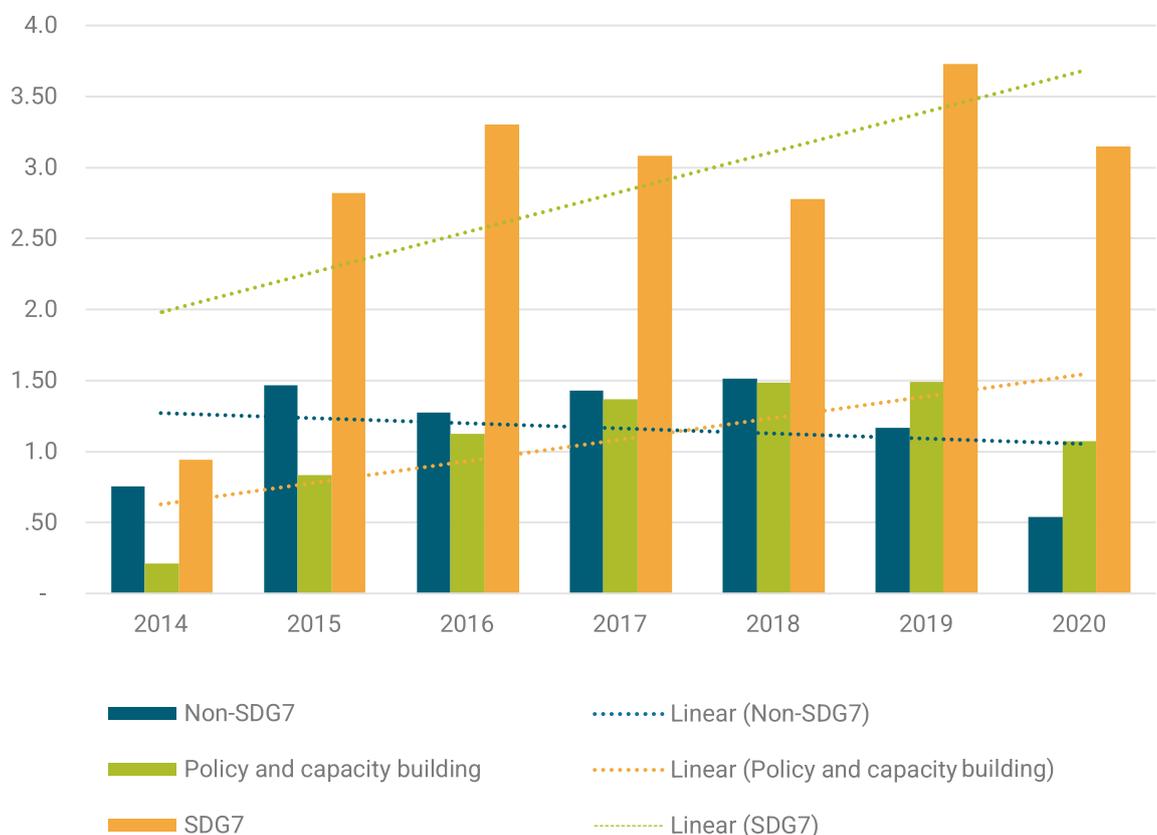


Figure 42: Finance disbursement SDG7 trend for Africa, 2014-2020 (%)

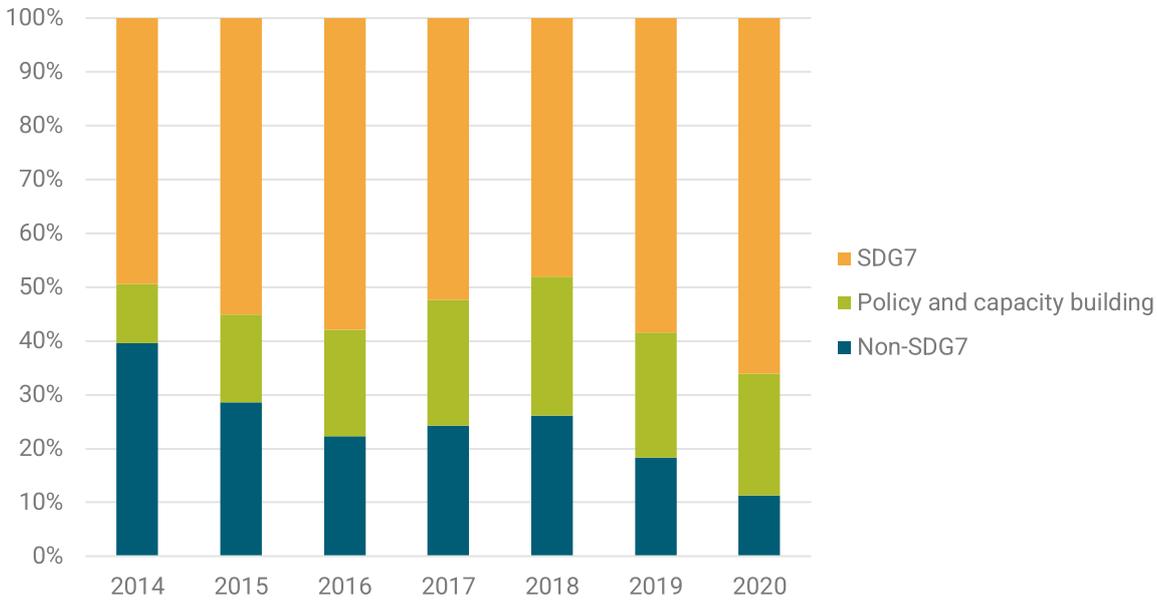


Figure 43: Non-SDG7 finance disbursements, 2014-2020 (EUR millions)

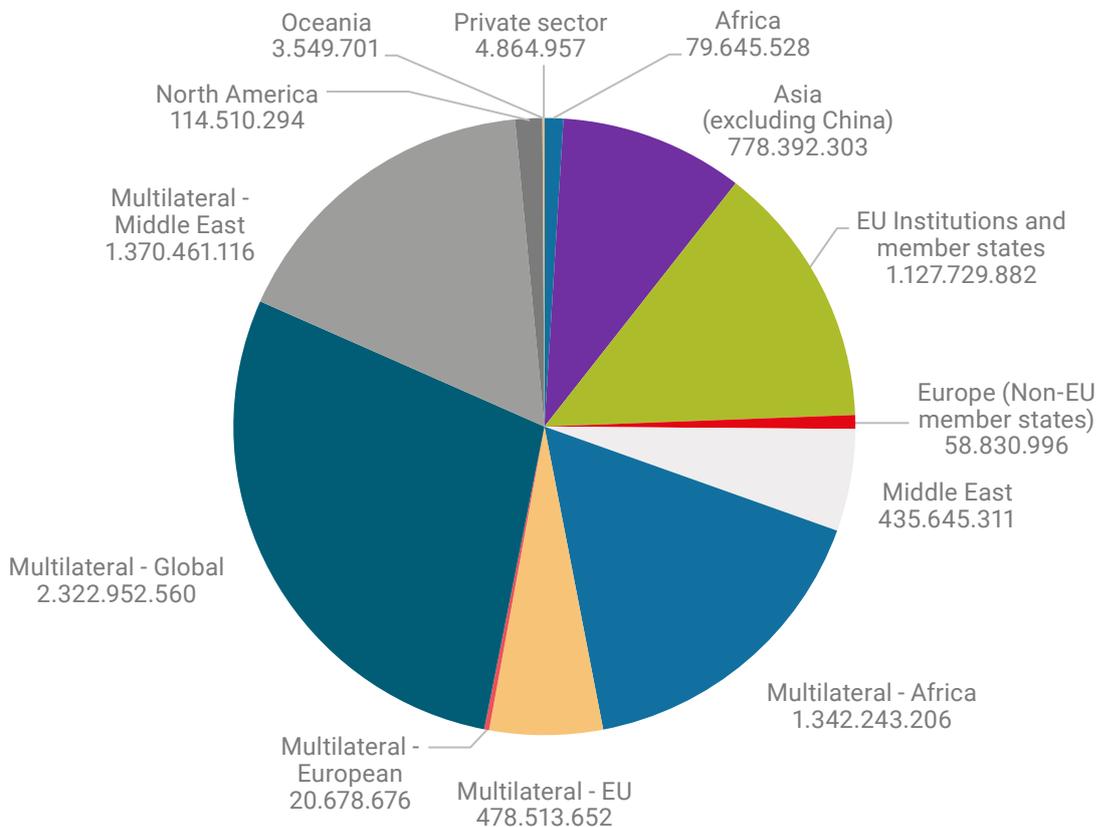
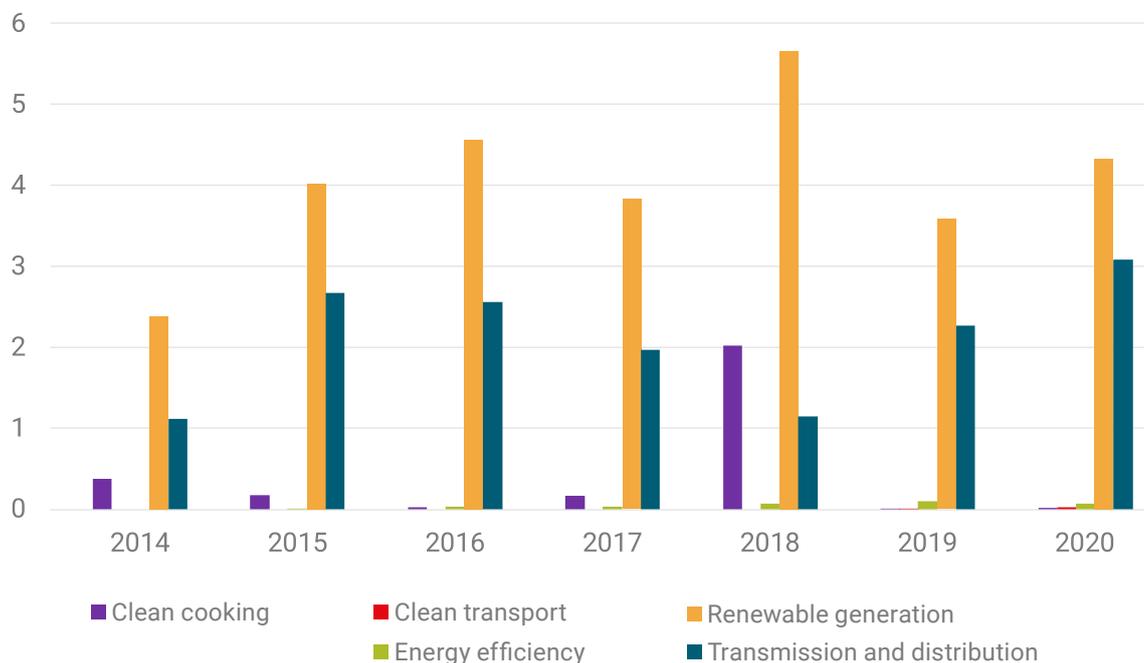


Figure 44: SDG7 finance commitments by sector, 2014-2020 (EUR billions)



SDG7 Finance breakdown

RE and T&D investments dominate the sectoral breakdown of SDG7 finance commitments (see Figure 44). Although 2018 saw a spike in clean cooking investment commitments, this was short-lived. Energy efficiency and clean transport solutions remain underfunded.

SDG7 disbursements reflect the same sectoral imbalances. RE and T&D also dominate, with clean cooking, once again, in a poor third place (see Figure 45).

The role of Team Europe

Team Europe's SDG7 finance commitments have consistently accounted for a high proportion of the worldwide total, dwarfing those of non-EU states (see Figure 46).

The role of EU Institutions and Member States in backing SDG7 advancement is even more important when it comes to the disbursement of funds. They accounted for a large share

of SDG7 disbursements and, in 2020, disbursed over EUR 1.4 billion of SDG7-compliant funding. This was almost half of the total worldwide disbursements of EUR 3 billion. By contrast, just EUR 0.5 billion was disbursed by all non-EU states (see Figure 47).

Team Europe also disburses the largest amount of grant finance to Africa. It disbursed EUR 8.3 billion from 2014 to 2020. In addition to its primary function of supporting projects, this funding also demonstrates the market viability of new SDG7-compliant technologies and market approaches that can then be adopted by the private sector (see Figure 48).

European donors are, likewise, at the forefront of disbursing grant finance to countries in the LDC and LMIC income groups. Many analysts note that these countries are those with the most need for concessional financing. These donors are, by far, the largest providers of grants to LMICs (EUR 3.67 billion), and the second-largest provider of grants to LDCs (EUR 2.3 billion), behind only the global multilaterals (see Figure 49).

Figure 45: G7 disbursements by sector, 2014-2020 (EUR billions)

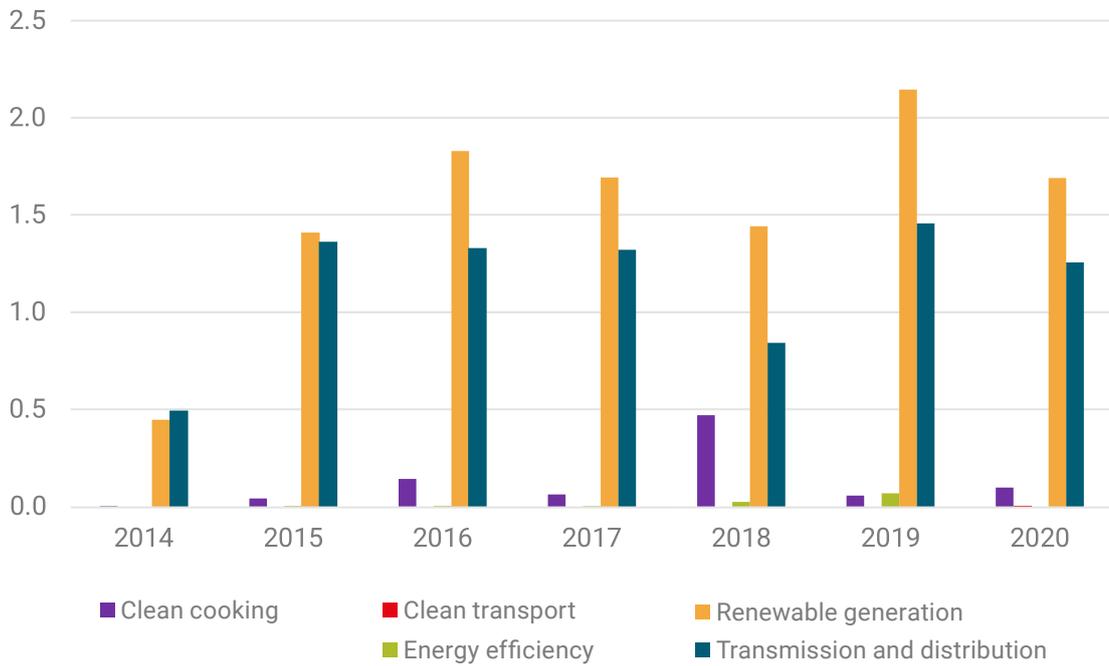


Figure 46: SDG7 commitments, 2014-2020 (EUR billions)

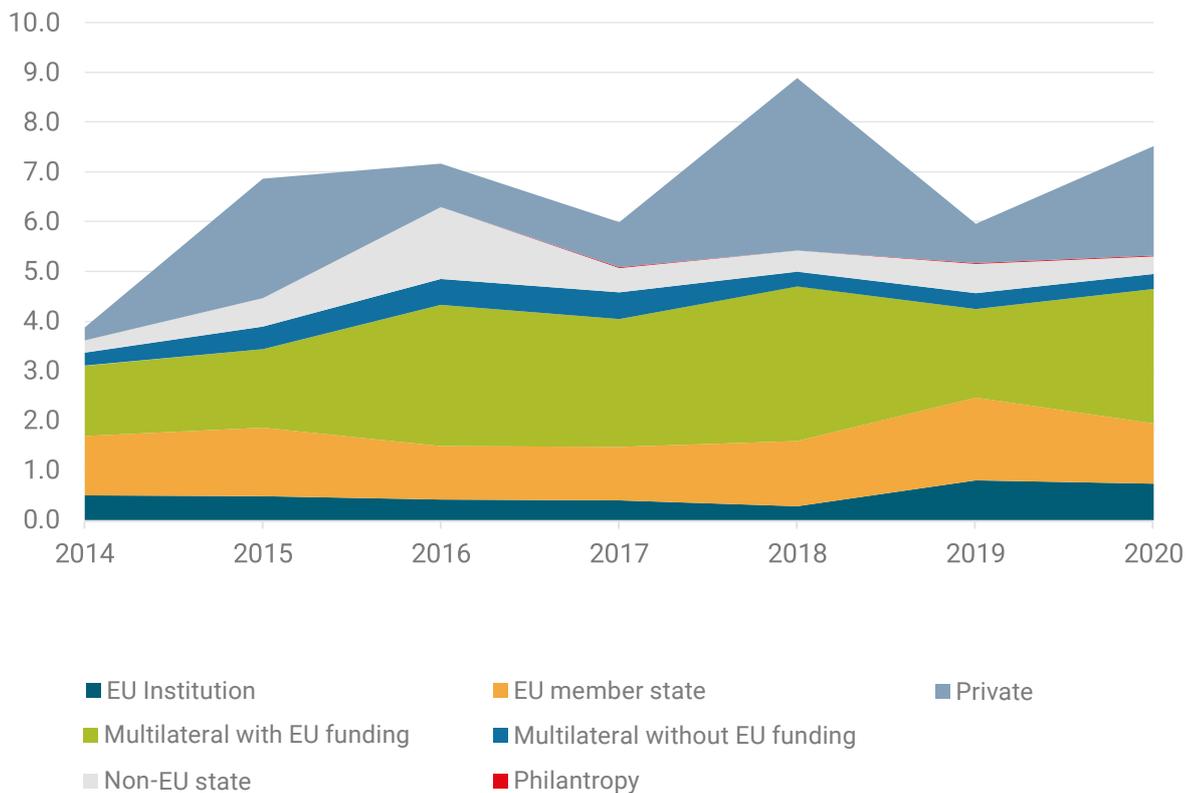


Figure 47: SDG7 disbursements, 2014-2020 (EUR billions)

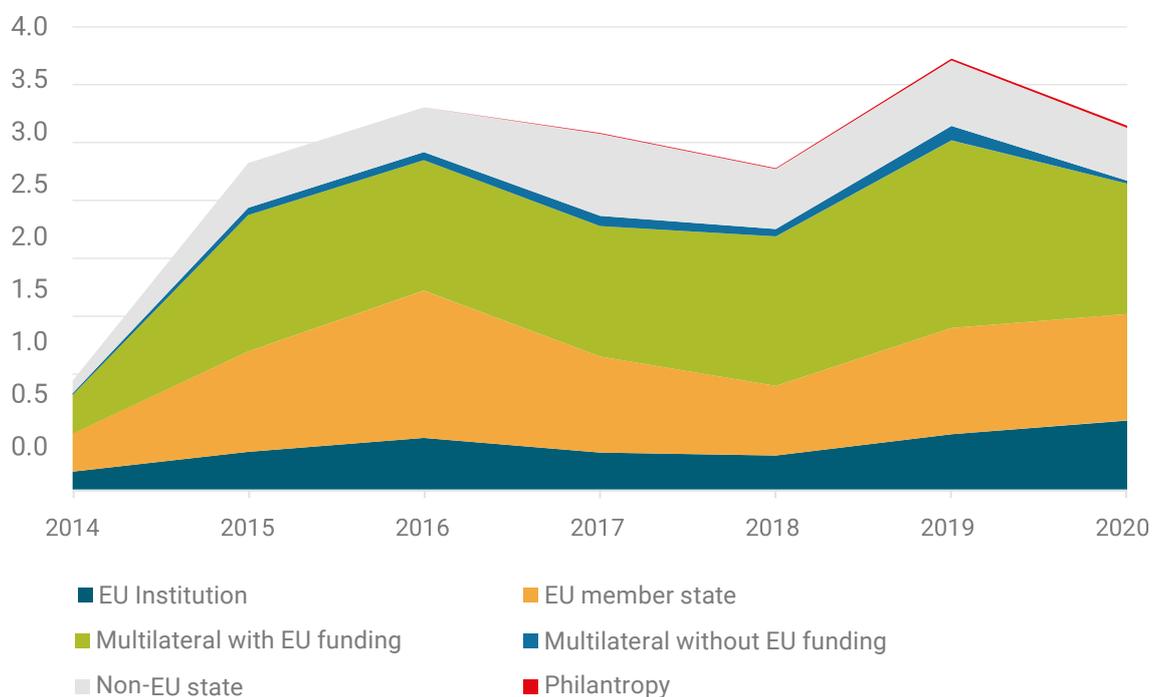


Figure 48: Disbursement of SDG7 grant finance, 2014-2020 (EUR millions)

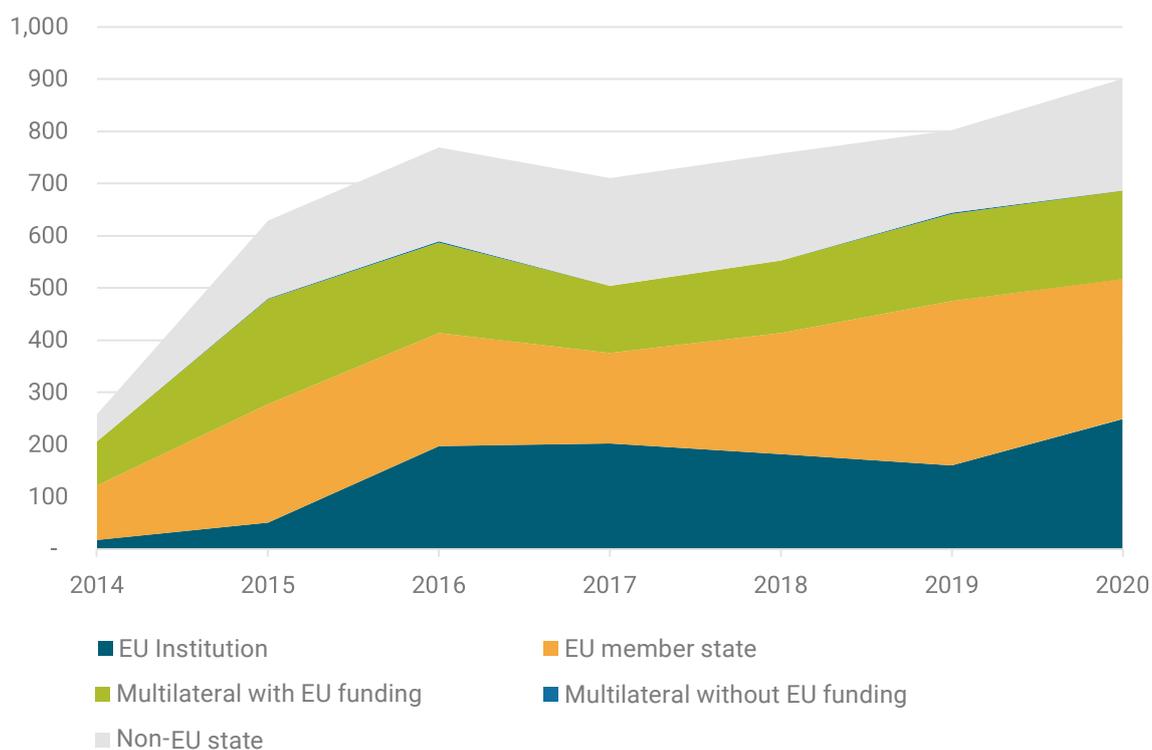
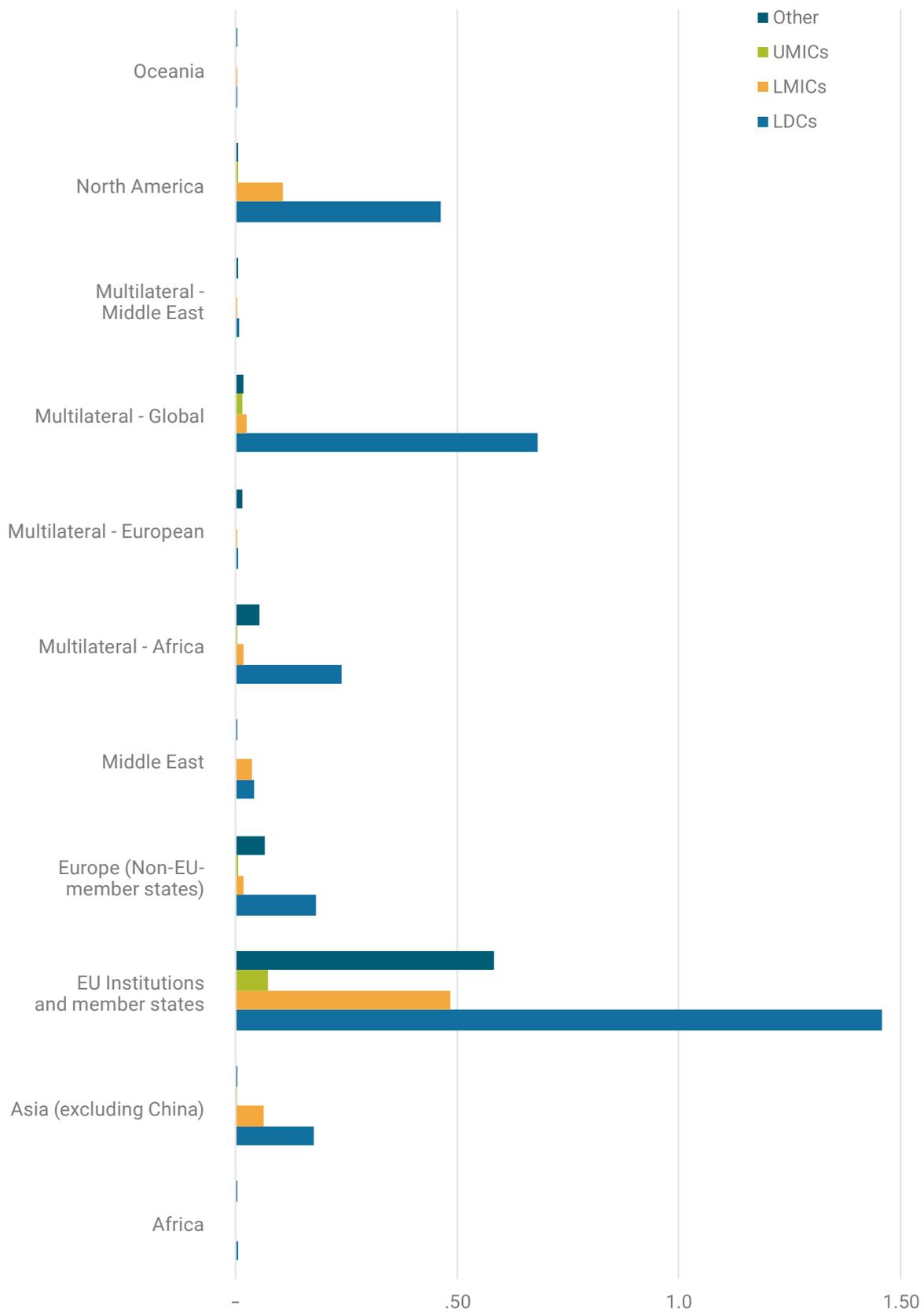


Figure 49: SDG7 grant by recipient country income, 2014-2020 (EUR billions)



10. Supporting Emerging Technologies to Further SDG7

Where SDG7 and climate finance meet

Advances in technology provide some of the most optimistic possibilities for rapidly advancing the cause of SDG7 and getting the most out of the increasing financing which – as this report sets out – is being deployed to achieve the goal of universal access. Team Europe has been an important supporter of promising innovations. Indeed, financial support for new technology is one of the most effective uses of development finance and concessional lending as the private sector is inevitably risk-averse when it comes to supporting untested concepts, irrespective of the potential social or commercial benefit.

New technologies are also the zone where the ambition to achieve universal access to energy overlaps with the equally vital need to protect African nations, and indeed the world, from the effects of climate change and to preserve the environment in other ways, for instance, by finding better ways of dealing with household waste. Many of the technologies being supported by African national governments, multilaterals and Team Europe will contribute to either the adaptation, or mitigation, of the effects of climate change.

Only **17%** of people in SSA have access to clean cooking technology.



Clean cooking: Models still emerging, but scale needed

Lack of clean cooking is a critical aspect of energy poverty in Africa. Charcoal use in inefficient cooking appliances, in particular, is responsible for significant health impacts and deforestation. Cooking on the continent can be expensive. In some regions, it is one of the primary daily household expenditures.

Improved access to clean cooking has lagged behind other aspects of energy poverty alleviation. The Sustainable Development Goal 7 Energy Progress Report 2022 estimated that only 17% of people in SSA have access to clean cooking technology. In its 2022 industry snapshot, the Clean Cooking Alliance (CCA) estimated that 2.6 billion people worldwide still lack access to clean cooking.

CCA found that investment in clean cooking companies remains in the tens of millions of dollars, far short of what is needed, despite an annualised growth rate of 20% between 2014 and 2020. CCA said that, at the current growth rate, annual investment will not surpass EUR 0.98 billion (USD 1 billion) until 2036. However, investment is being raised, primarily from the private sector – CCA estimates that 88% of capital invested in clean cooking companies was private in 2019-20 – although public investment by development finance institutions is also growing.

The Spark+ Africa Fund is an important financing milestone as the world's first impact fund dedicated to clean cooking. The fund is investing debt and mezzanine capital in companies active across the clean cooking spectrum, whether using biomass, biogas, ethanol, electricity, or liquefied petroleum gas



Source: BURN Manufacturing

A woman in Kenya with one of BURN's Jikokoa Xtra appliances, which it says is the biggest, most durable and powerful household stove in Africa

(LPG), taking the view that different solutions are required for different environments. The fund is a joint venture between its manager, Switzerland-based Enabling Capital, and TA partner Netherlands-based Stichting Modern Cooking, and its development was backed by the CCA. The fund achieved a first close of USD 41 million in March 2022, and a second close at USD 54 million in July.

Among the investors in the fund, AfDB is the lead finance institution with a USD 10 million commitment to the junior equity tranche via its Sustainable Energy Fund for Africa (SEFA) multi-donor trust fund. The European Union has also contributed EUR 10 million to the junior equity tranche via the Danish DFI IFU, which it says will absorb potential losses and is critical to crowd-in other development finance institutions and private investors including four pension funds to date.

Several business models are emerging. Bioethanol is showing promise in regions with strong sugar industries, with companies like Koko Networks making progress in Kenya and Rwanda. The model uses carbon credits to reduce the upfront cost of the appliance, with a margin then made on fuel supply. The approach is carbon-neutral and more affordable than LPG, the main competing model.

"We're a fuel retailer of liquid ethanol cooking fuel, which we sell through a dense network of high-tech fuel ATMs located in small shops in Kenyan cities," Koko Networks chief executive and co-founder, Greg Murray, said. "We have 1,200 shops in Kenya which serve about 400,000 households daily."

LPG is being pioneered by a range of industry players, from traditional fuel distributors to start-ups and SHS companies. SHS companies can utilise much of the pay-as-you-go

technology to support LPG business lines, as well as leveraging their growing sales networks and financing mechanisms. “The starting point is lower but clean cooking is the fastest growing segment in Bboxx today,” SHS company, Bboxx’s chief executive Mansoor Hamayun said. Bboxx has been deploying clean cooking systems in Goma in the Democratic Republic of Congo, and is now applying that experience to other countries.

Box 11: Kenya – getting electrification right

Within metres of distribution lines in Machakos country, a family farmstead sits resolutely unconnected. Steep connection fees, standing charges, and frequent outages on the local distribution network mean that the family of two generations who live on the farm currently opt for SHSs.

The family has three systems. The grandparents first purchased a simple charging and lighting system from international SHS supplier, Azuri Technologies, to complement a cheap local system used to power a stereo system during the day. Once the smaller Azuri system had been paid off, it was passed to the couple’s son and his wife and children, while the grandparents upgraded to a larger system including a television.

On the approach to the farmstead from the road is a small kiosk using a solar system to cool soft drinks and juices.

The family’s experience shows some of the benefits and pitfalls of electrification policy. Asked what appliance they would like for a future upgrade, they said a water tower. The farm lacked irrigation, with the family having to top-up water troughs for animals daily from a nearby river. Electric irrigation pumps, both grid and solar-powered, are increasingly common, but have received less attention than household electrification.

The family was delighted to have the lighting, particularly outside the front door to light the farm at night, and also to have the television and radio for entertainment in the evening. These were served by their various solar systems, but beyond these light uses, they needed power for productive uses which would be communal between farms and would require much more capital investment.

The case also illustrates the challenges of electrification for utilities. Without proactively financing for productive use, African utilities are building and servicing connections to consumers with a very limited household demand. This can result in service levels that make the utility susceptible to competition from SHS companies, as well as hitting the utility’s bottom line.

Support for waste-to-energy pilot projects

What counts as waste-to-energy (WTE) power generation?

WTE power generation plants are a proven and relatively inexpensive way to generate power, taking waste otherwise destined for landfill and using it as feedstock. Many WTE plants use municipal solid waste (MSW) – often referred to as rubbish, garbage, or trash – as feedstock. MSW typically comprises organic waste, paper, plastics, and wood. Although few WTE plants have been developed in Africa, EU Institutions and Member States are at the forefront of supporting pilot projects and feasibility studies across the continent.

Other WTE plants use organic waste feedstock. Such plants are increasingly common worldwide, although they remain rare in Africa, where the commercial use of thermolysis or pyrolysis to convert organic waste into biofuels, syngas or pure hydrogen is still nascent.

Biomass and biogas-fuelled plants have long been commissioned across Africa and typically use by-products from agro-industrial processes to generate on-site power for C&I customers (oftakers.) off-takers. These are frequently combined heat and power (CHP) developments which also provide heat for industrial processes or refrigeration. Such plants are generally not considered WTE as their feedstock is not otherwise destined for landfill. However, some contend that their feedstock, which would otherwise be discarded, should be considered waste. Typical feedstocks for C&I biomass and biogas plants include palm oil kernels, bagasse (sugar cane waste), non-commercial wood from forestry plantations, rubber tree residues and seeds, cashew shells and apples, cocoa pods and shells, and wastewater from brewing.

Other biomass power plants in Africa use feedstock cultivated specifically for power generation. Although not WTE projects, they demonstrate the commercial viability of technology that can also be used in WTE developments. Examples include bioethanol producer Sunbird Bioenergy's Makeni project in Sierra Leone, which sources feedstock from 10,000 ha of sugar cane and features a 30 MW power plant, and the continent's first utility-scale pyrolysis plant at the Ford Silverton Assembly plant near Pretoria in South Africa (due to be commissioned by year-end 2022), which will outsource the farming of fermentable, quick-growing plants, such as cacti, locally to provide feedstock.

WTE projects in Africa have benefitted from Team Europe funding

Few WTE pilot projects exist in Africa, but those which are under development, or have been commissioned, have been well-supported by EU Institutions and Member States.

In Ghana, a 400 kW hybrid WTE plant in Kumasi is expected to go online in 2023. Funding of EUR 6.2 million was committed by Germany's Ministry of Education and Research in 2019 for the German-Ghanaian Waste2Energy partnership which is developing the project. The plant will generate 200 kW of capacity from solar PV, 100 kW from biogas, and 100 kW from plastic waste; MSW feedstock will be used for the biogas and plastic units.

The Energy and Environment Partnership Trust Fund (EEP Africa) is a clean energy financing facility hosted and managed by the Nordic Development Fund (NDF). EEP Africa is funded by the NDF (members are the governments of Denmark, Finland, Iceland, Norway and Sweden) along with the governments of Austria, Finland, and Switzerland.

EEP Africa is providing funding for six WTE power plant projects:

- EUR 500,000 for a feasibility study for a 0.3 MW CHP plant in rural Uganda that will use agricultural and fish waste as feedstock.
- EUR 200,000 for a 0.31MW WTE pilot plant development at a vegetable market in Malawi that will use organic waste feedstock.
- EUR 500,000 for a biogas digester and mini-grid pilot development at a farm produce aggregator and processor site in Uganda which will use organic waste feedstock.
- EUR 240,000 for a feasibility study of two off-grid wastewater-to-energy plants (using anaerobic digestion, membrane bioreactor and reverse osmosis) with a combined 3.3 MW capacity in South Africa.
- EUR 500,000 provided in 2021 for a 7 MW WTE plant and solid fuel briquette project pilot in Kenya that will use faecal sludge as feedstock.
- EUR 200,000 for a feasibility study for a 2.7 MW MSW power plant in Cape Town, South Africa.

EEP Africa also provided finance for WTE projects in previous funding rounds:

- EUR 225,000 in 2016 for the Kitwe municipal landfill WTE pilot scheme in Zambia. This included gas wells and lines, landfill surface shaping and covering solutions, as well as a combined gas pumping station with combined heat and power equipment.
- EUR 125,000 for a feasibility study for a biowaste briquettes project in Burundi in 2015.

In Burkina Faso, the Netherlands' development bank FMO and Enterprise Agency (RVO) provided concessional funding for the FasoBiogaz biogas plant in Ouagadougou. First commissioned in 2015 with 275 kW of capacity and an output of 3,640 MWh per year, the capacity is due to be increased to 1.4 MW. FMO approved a further EUR 200,000 repayable grant in 2020. The Faso-Biogaz plant uses two bio-digesters which receive organic waste feedstock from the Société de Gestion de l'Abattoir de Ouagadougou's slaughterhouse, brewer Brasseries du Burkina, farmers, and waste collectors.

In Ghana, the Netherlands' Ministry of Foreign Affairs, in partnership with the AfDB, provided finance for the development of the 100 kW capacity Ashaiman WTE plant, commissioned in 2014. It uses waste from the Ashaiman marketplace and Accra abattoir to fuel a CHP plant and to produce fertilizer. The plant can treat 45 t/d of faecal and organic waste and generates approximately 580 MWh per year.

Commercial WTE projects

Large-scale WTE projects in African markets remain emergent, but a handful have been developed with support from C&I firms as customers (offtakers) off-takers, or as feedstock suppliers. As may be expected, these plants are concentrated in Egypt and South Africa, two of the continent's wealthiest and most industrialised economies.

South African firm Bio2Watt developed the country's first commercially viable WTE plant, the 4.6 MW Bronkhorstspuit Biogas project in Tshwana, Gauteng, in 2014. Bronkhorstspuit was developed on the basis of a ten-year PPA with off-taker BMW South Africa for the motor manufacturer's Rosslyn production facility near Pretoria. 120,000 t per year of waste is sourced from Beefcor's giant Bayview feedlot. The Bronkhorstspuit plant supplies some 25% of Rosslyn's power

requirements and despatched its first power to the grid in October 2015.

- In 2011, EUR 54,000 of financing for Bronkhorstspuit's feasibility study was provided by EEP Africa.

In March 2022, Bio2Watt signed another PPA with Ab InBev subsidiary South African Breweries for its 4.8MW Cape Dairy biogas plant. The facility under-construction is situated on one of South Africa's biggest dairy farms, the Vyvlei Dairy farm in Malmesbury, western Cape. The Cape Dairy plant will use slurry manure produced by Vyvlei's 7,000 dairy cattle, in combination with other waste products, as its feedstock.

In February 2022, Dublin-registered Kibo Energy signed a ten-year take-or-pay conditional power purchase agreement (PPA) with an unnamed industrial business park developer in Gauteng for a 2.7 MW plastic-to-syngas plant.

In September 2021, Bahrain-based Oak Group Holdings and its development partners began construction of the 40 MW Abu Rawash power plant using biogas derived from household waste on the outskirts of Cairo. The development will process 1,000 t/d of municipal solid waste, which will be burnt in a high-temperature pyrolysis process to produce biogas. Commissioning is expected in Q3 23, and agreements for two further WTE plants have been signed with local authorities.

Green hydrogen partnerships to support African infrastructure

The European Commission presented its REPowerEU plan in response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine in May 2022. Part of a wider External Energy Strategy (EES), the plan sets out objectives in the areas of energy-saving, diversification of supply and the accelerated roll-out of RE.

The wider strategy is not only focused on the need to restructure the European energy supply. The EU is also 'committed to leading and speeding-up the global green transition and supporting its international partners in the processes'. REPowerEU references the Global Gateway strategy to support the EU's neighbours, which includes the Africa-EU Investment Package of up to EUR 150 billion of investment in 2021-2027 (see [EU-Africa: the Green Energy Initiative](#)).

African partners, particularly those in the north of the continent, are especially relevant to the energy diversification plans. While an important part of this strategy is to establish alternative sources of 'transition fuels', such as pipeline natural gas and liquefied natural gas (LNG), green hydrogen (GH₂) and other fuels of the future also play a central role.

The first of the EES's key actions is 'to conclude hydrogen partnerships, notably in the EU's neighbourhood and Africa, to facilitate the import of 10 million tonnes of hydrogen by 2030, and the development of local hydrogen markets.



The EU is committed to leading and speeding-up the global green transition and supporting its international partners in the process.



Through key actions of the External Energy Strategy EU aims to import **10 million tonnes** of hydrogen by 2030.

Three major hydrogen import corridors are envisaged, one of which is in the southern Mediterranean. With this in mind, the European Commission is working on a Mediterranean Green Hydrogen Partnership (MGHP), within which it expects that the EU-Egypt Hydrogen Partnership will be “the first stepping stone for broader renewable hydrogen co-operation between Europe, Africa and the Gulf”.

The European Commission has also started work on an EU-Morocco Green Partnership and the strategy also noted that the renewable hydrogen sectors of both South Africa and Namibia had attracted the interest of EU industry.

According to a statement issued following European Commission President Ursula von der Leyen’s meeting with Egyptian President Abdel Fattah El Sisi in Cairo in June 2022, the EU/Egypt MGHP partnership will ‘promote investments in renewable electricity generation, strengthening and extension of electricity grids, including trans-Mediterranean interconnectors, the production of renewables and low-carbon hydrogen, and the construction of storage, transport and distribution infrastructure.’

11. European Support for Climate Finance in the Context of SDG7 in Africa

Addressing the climate finance gap

A comparison of estimated investment requirements and financial flows over the study period towards SDG7 in Africa reveals the link between SDG7 and the achievement of climate finance goals in Africa.

The IEA's 2022 Africa Energy Outlook outlines a SAS that would see Africa achieve all its energy-related development goals, including universal energy access by 2030, and the full implementation of African climate pledges. This would mean connecting 90 million people a year to electricity and shifting 130 million people a year away from dirty cooking fuels.²⁴ It also foresees the achievement of net-zero strategies outlined so far by 12 African countries.

According to the SAS, achieving universal energy access in Africa would require EUR 216 billion or EUR 25 billion (USD 25 billion) a year between 2022 and 2030. To implement African government climate pledges, EUR 1.3 trillion (USD 1.2 trillion), is required by 2030 or EUR 159 billion (USD 150 billion).

Climate finance targets under the United Nations Framework Convention on Climate Change (UNFCCC)'s 2015 Paris Agreement called for a collective goal of at least EUR 102 billion (USD 100 billion) a year to be set by 2025, delivered by developed countries to developing countries. This baseline would consider the varying needs and requirements of developing nation recipients as additional finance to the baseline.

This target would not solely be for Africa. Using data from the OECD, the **IEA estimated that Africa received 26% of OECD member climate-related commitments between 2016 and 2020, amounting to an annual average of EUR 21.1 billion (USD 19.9 billion).**²⁵

So, global annual financing to achieve both SDG7 and African climate pledges remains below that which is required, and it is likely that the resolution of each of these problems will also be achieved together.

European support of African climate finance targets

African climate finance targets

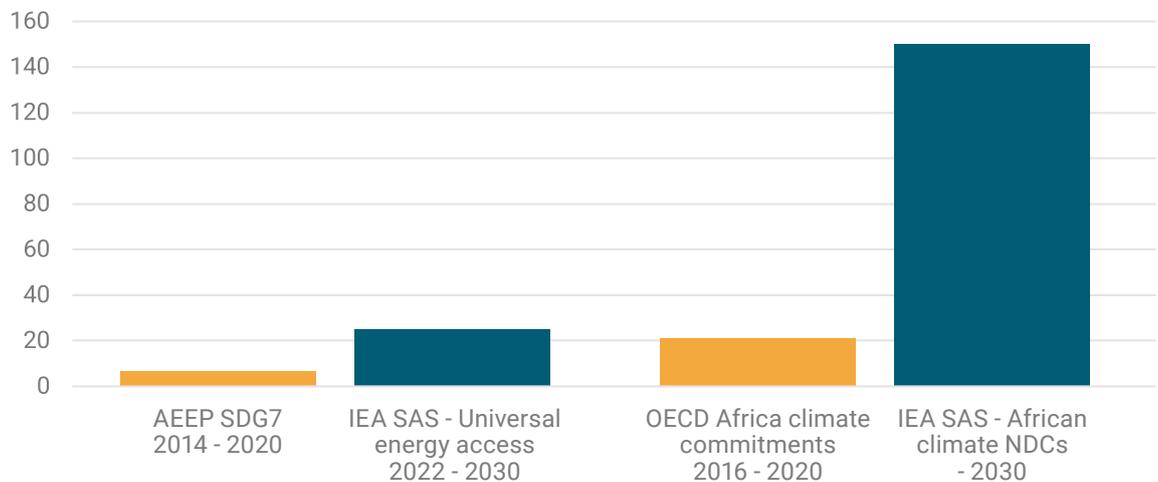
Global efforts to reduce emissions through mitigation measures, and to protect those most vulnerable against the effects of climate change through adaptation activities, form the basis for collective climate finance targets.

For Africa, finance targets are found in the 53 African Nationally-Determined Contributions (NDC) submitted to the UNFCCC, which outlines emission reductions both with and without international support. According to the IEA, in total, African NDCs requested an estimated USD 1.2 trillion of international finance by 2030 for implementation. Mitigation activities account for 60% of this amount, adaptation 30%, and 10% is left unspecified. This equates to EUR 95.4 billion (USD 90 billion) a year for mitigation, and EUR 47.7 billion (USD 45 billion) a year for adaptation between 2022 and 2030.

²⁴ IEA (2022), Africa Energy Outlook 2022, <https://www.iea.org/reports/africa-energy-outlook-2022>

²⁵ Statement by the OECD Secretary-General on climate finance trends to 2020, (July 2022), <https://www.oecd.org/newsroom/statement-by-the-oecd-secretary-general-on-climate-finance-trends-to-2020.htm>

Figure 50: Financing requirements for SDG7 and climate pledges in Africa (EUR billions)



Linking SDG7 and SDG13

The achievement of SDG7 feeds directly into SDG13 (Climate Action), as the provision of affordable and clean energy ensures electricity access is low-carbon by removing the need for diesel gensets or dirty cooking fuels.²⁶ Financing SDG7 is a crucial part of achieving long-lasting climate action.

Data provided through the OECD DAC enables an analysis of how SDG7 finance has funded mitigation and adaptation activities. RE, energy efficiency and clean cooking activities are considered to be directly related to mitigation measures²⁷. However, adaptation is more complicated to define based on OECD DAC CRS sector codes, as a project level view is required to determine how adaptation is built into the project.

Between 2014 and 2020, Team Europe provided EUR 7.4 billion for African climate mitigation, and EUR 694 million for climate

adaptation. Finance for mitigation follows a similar trend as total European finance, as outlined in section 4, as all RE generation is considered mitigation. Adaptation finance is extremely low over the study period, this may be because SDG7 activities are more aligned with climate mitigation than adaptation.

Despite a clear gap in the amount of finance required each year to achieve the IEA's SAS, defined as universal energy access and the achievement of African NDCs, Team Europe contributes a significant amount of ODA towards Africa's climate targets compared to other donors.

SDG7 and climate adaptation

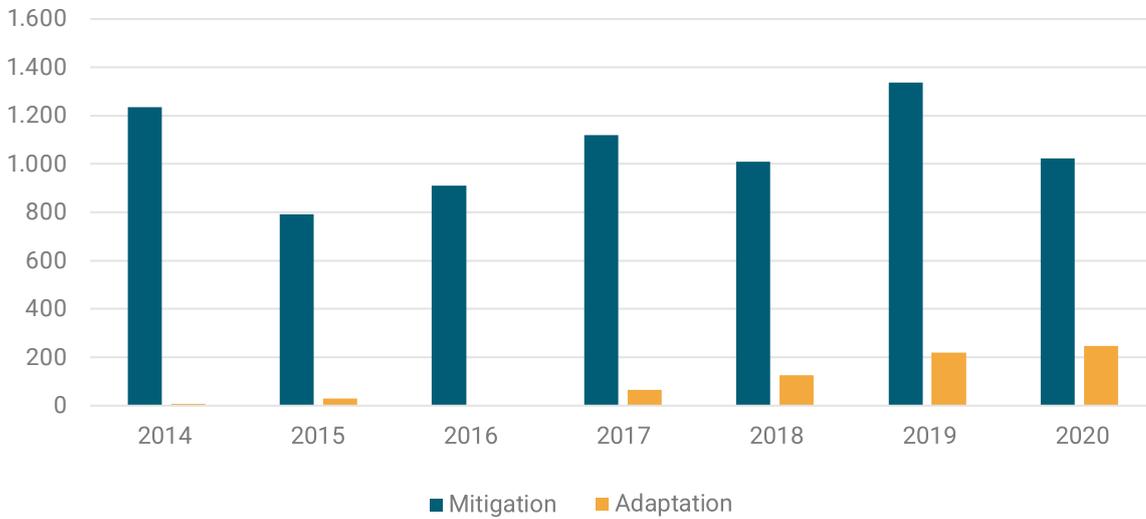
Increased adaptation finance is a critical goal for African climate action, as it will suffer disproportionality from the effects of climate change, given African emissions have contributed just 3% to global emissions.²⁸ A key factor in adaptation financing is the concession-

26 'Unlocking Climate Finance to accelerate energy access in Africa'. Shell Foundation and the Rockefeller Foundation. <https://shellfoundation.org/app/uploads/2021/04/Unlocking-Climate-Finance-for-SDG7-Report-For-RF-web-04-21-2021.pdf>

27 'Indicative table to guide Rio Marking by sector/sub-sector'. OECD DAC. <https://www.oecd.org/dac/environment-development/Indicative%20table%20to%20guide%20Rio%20marking%20by%20sector.pdf>

28 United Nations Fact Sheet on Climate Change. https://unfccc.int/files/press/backgrounders/application/pdf/factsheet_africa.pdf

Figure 51: Team Europe contributions to climate mitigation and adaptation (EUR millions)

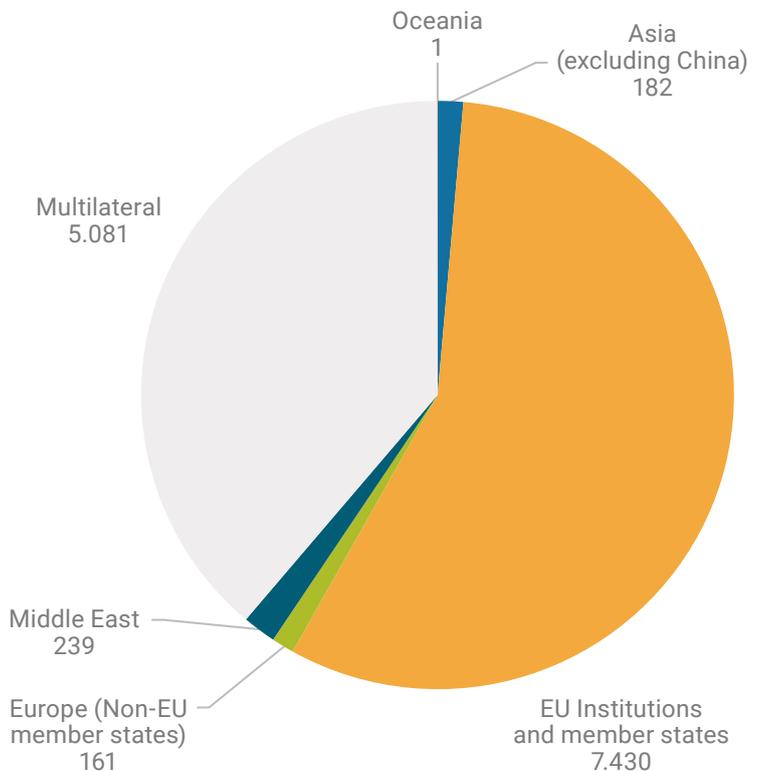


ality of funding, given climate equity principles which imply developing countries should not be burdened with adaptation costs given their low contributions to global emissions.

Team Europe provided EUR 540 million in ODA grant finance for SDG7 projects which contributed to adaptation activities. The least-developed countries also received the largest amount of SDG7 commitments for adaptation, with EUR 484 million between 2014 and 2020.

The IEA estimate Africa’s adaptation costs to be between EUR 12.7- 27.5 billion (USD 12-26 billion) in 2025 under a 1.5C scenario, and between EUR 19 – 62.5 billion (USD 18-59 billion) under a 2C scenario. There is a clear need to accelerate global financing of adaptation activities in Africa.

Figure 52: Global SDG7 ODA finance contributing to climate mitigation, 2014-2020 (EUR millions)



12. Measuring Global Progress towards SDG7 in Africa

Addressing the SDG7 financing gap

A comparison of estimated investment requirements and financial flows over the study period towards SDG7 in Africa shows a significant funding gap. The seven-year average between 2014 and 2020 of financial flows²⁹ into Africa for SDG7 was EUR 16.7 billion from all donors, including national government spending.

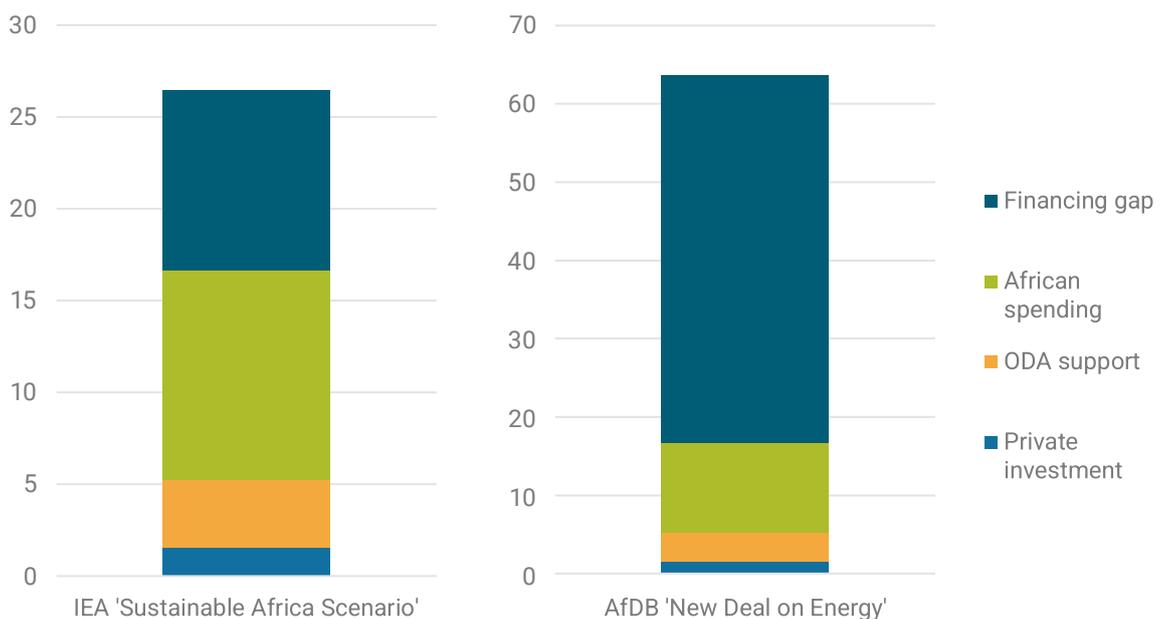
Compared to the IEA’s SAS, which targets universal electricity access by 2030, an estimated total of USD 200 billion or USD 25 billion (EUR 26.5 billion) a year between 2022 and 2030 is required to achieve this goal – this leaves a funding gap of EUR 9.8 billion each year.

The AfDB’s New Deal on Energy estimates that its universal access strategy (by 2025) will cost between USD 60-90 billion (EUR 63.6-95.4 billion) a year, leaving a substantial gap of EUR 46.9-78.7 billion per year.

This results in a wide financing gap of between EUR 8.5 billion and EUR 78.7 billion per year.

Figure 53 shows the composition of SDG7 finance and the funding gap that exists for both the IEA’s SAS and AfDB’s New Deal on Energy strategy. African government spending accounts for 69% of average annual spending, however, African national spending comprises all energy-related commitments and therefore cannot be directly attributed to SDG7. Global ODA finance and private investment account for 22% and 9% respectively.

Figure 53: Annual financing requirements to meet SDG7 in Africa, seven-year (2014-2020) average (EUR billions)



²⁹ Only comprises ODA and identified private investments.

The gap is not insurmountable, particularly given the lower end of the gap at EUR 8.5 billion which is very much achievable. However, global ODA support has been falling since 2018, and private sector investments have not increased year-on-year as many had expected. Much of the international support, whether in the form of ODA or private investment, will come off the back of concerted action on behalf of African national governments.

Each year the USD 25 billion target is not reached, the cumulative total will increase towards 2030. The 2014-2020 period saw EUR 117 billion worth of ODA finance, private investment and African national governments spending for SDG7 projects in Africa.

2022 to 2030, amounting to a total of EUR 200 billion over the whole period.

Africa is getting closer to that benchmark every year. Data compiled from multiple sources – and analysed in detail in this report – shows that the combination of ODA and private investment into SDG7 and African national government spending on energy increased by 37% from EUR 15.2 billion in 2014, to EUR 21 billion in 2020.

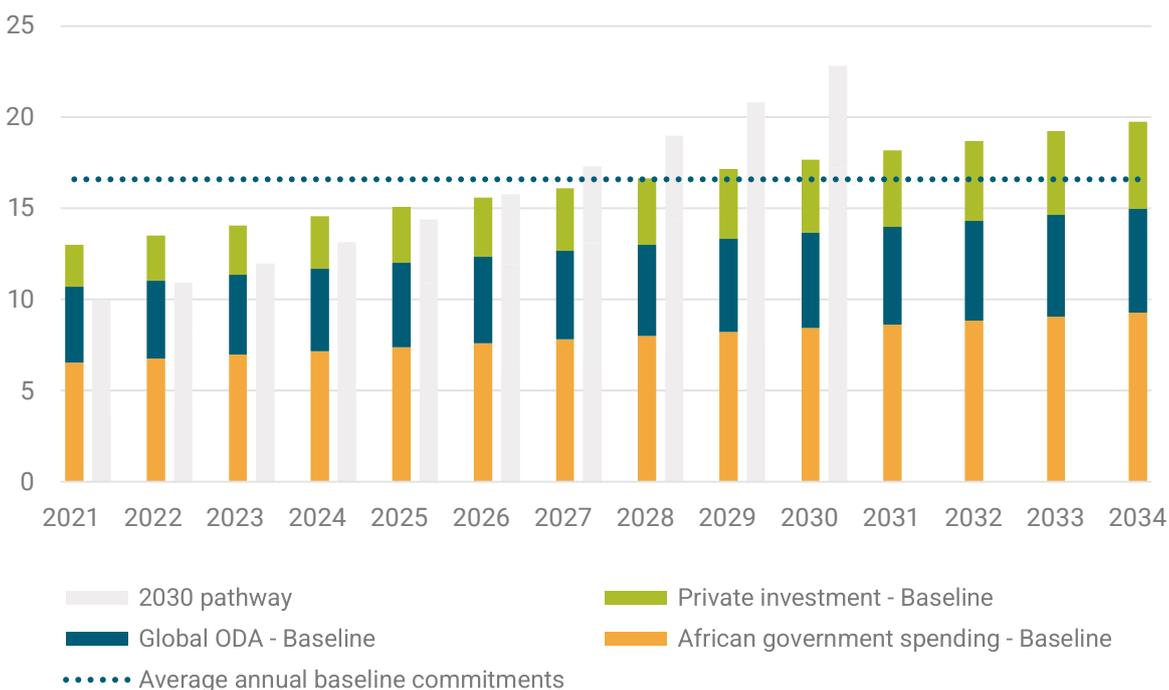
However, if the current rate of commitments for each category of finance continues between 2022 and 2030, calculated to be 3.3% year-on-year, we can expect the IEA’s EUR 200 billion benchmark to be passed in 2034, and for total annual investments to average EUR 15.6 billion. This is some way short of the required financing.

Pathway to SDG7 by 2030

The following observations are based on what is necessary to reach the IEA’s SAS for SDG7 financing set-out by the IEA in its 2022 Africa Energy Outlook. It has estimated that investments of EUR 25 billion/year are needed from

A pathway to achieving total SDG7 investment of EUR 200 billion by 2030 also exists, requiring a year-on-year growth rate of 9.7%. This means an additional EUR 60 billion or EUR 6.6 billion a year is required between 2022 and 2030.

Figure 54: Achievable pathways to SDG7, 2021-2034 (EUR billions)



This could be so providing a number of conditions are met by the key stakeholders. In this context, Europe's major commitments of increased financing will play a critical role.

Great progress has already been made across the continent in significantly improving access levels and other key energy targets, as shown in the data. However, it is essential that external lenders and international financiers, along with African national governments and financial sources, commit to mobilising and disbursing increasing levels of finance.

This will leverage a trajectory where finance flows at levels above those recorded over the past seven years, thus enabling Africa to achieve SDG7 shortly after 2030.

To achieve this, several key issues must be addressed, including the following:

- The requirement for multilateral and external public sector financiers, such as Team Europe, to maintain or increase the trajectory of increased commitments that they have already delivered over the past seven years
- African national governments must also increase their commitments. However, it is not realistic to place the burden entirely on increased national public sector spending across the continent.
- African national governments and external state and multilateral lenders must urgently work together to catalyse a substantially increased participation from domestic and international private sector investors and lenders. Thus, efforts to mobilise other sources of finance that have been discussed over several years (such as local markets and pension funds) must be accelerated.

On the face of it, the most significant of the three key stakeholder groups measured by the total size of commitment are the African national governments, whose total energy

expenditure increased by approximately 21% from EUR 11.4 billion in 2014, to EUR 13.7 billion in 2020. It is, however, not safe to assume that all of this expenditure is directed towards SDG7 projects; this is because of the preponderance of spending by South Africa and Egypt, which together account for 55% of the total. Egypt achieved full energy access in 2016, and South Africa's rate of access is approximately 85%. So, while some of their energy spending will contribute towards SDG7, much of it will be directed towards other equally valid national priorities.

It is reasonable to assume that the majority of other national government energy spending on the continent is directed towards SDG7, although no data exists to break this down into an exact figure. We have, therefore, opted to base our projections on an assumption that 50% of national government spending will contribute to the target.

On this basis, our projection of the past seven years' trend out to 2030 shows adjusted national government energy trending towards EUR 8.43 billion by 2030. In monetary terms, this would mean governments collectively committing an additional EUR 0.2 billion/year to SDG7 each and every year this decade.

International ODA support for SDG7 rose by 35% from EUR 2.48 billion in 2014, to EUR 3.35 billion in 2020. Projected to 2030 at the same rate, ODA support would rise to EUR 5.22 billion. This implies an incremental increase of approximately EUR 0.19 billion each year.

To achieve the 2030 pathway, global ODA must continue this upward trend and reach EUR 8.4 billion/year. This is an additional EUR 1.26 billion/year between 2022 and 2030.

Private investment is the category least susceptible to statistical analysis and forecasting, but this is also the category that has the most to offer in scaling-up responses to achieve SDG7 in Africa.

Figure 55: African government budget support for SDG7, 2014-2030 (EUR billions)

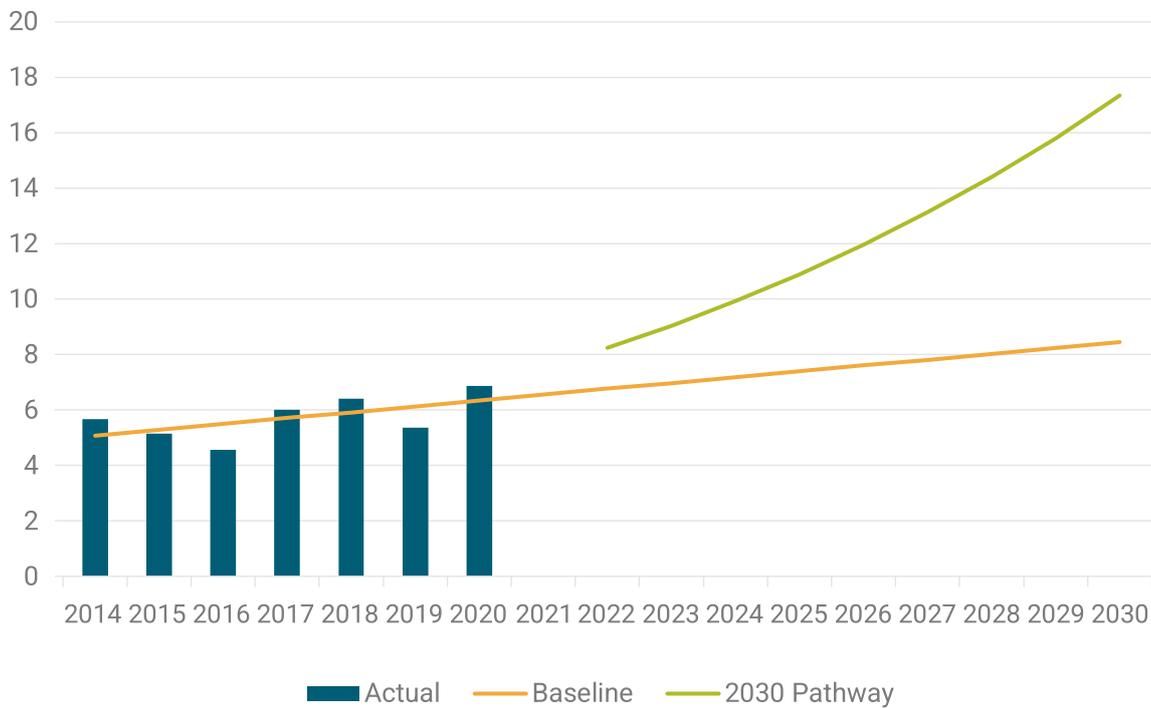


Figure 56: ODA support for SDG7, 2014-2030 (EUR billions)

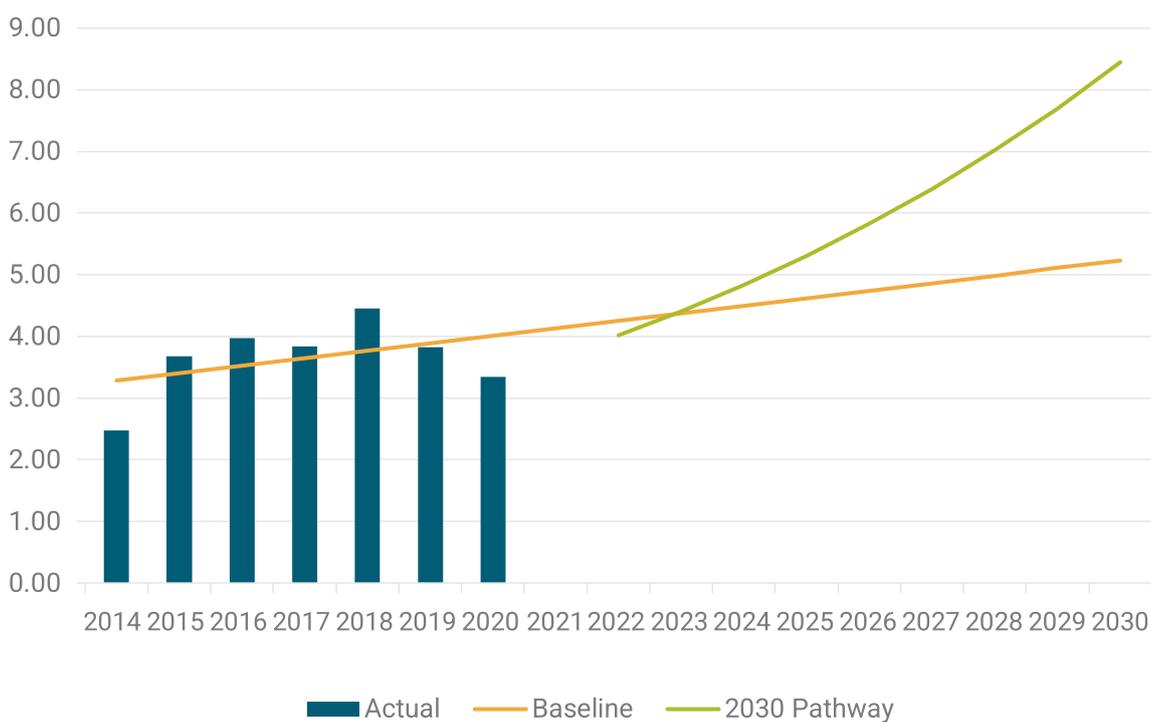
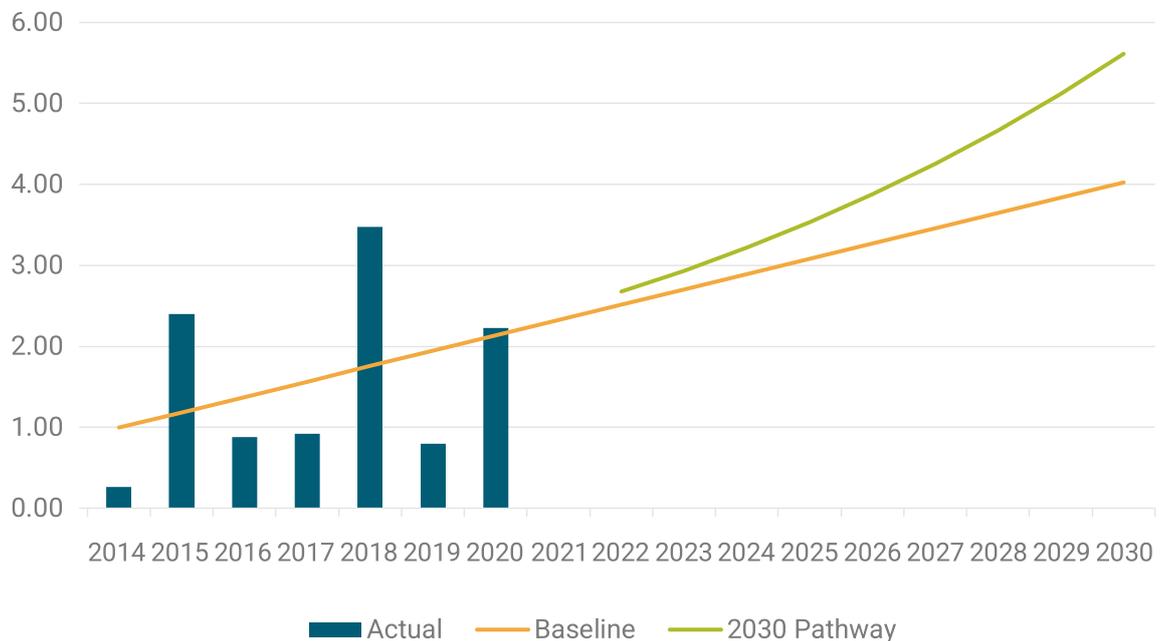


Figure 57: Private finance support for SDG7, 2014-2030 (EUR billions)



As explained in the report, there is no definitive measure of private sector investment into SDG7. It is also the category that has demonstrated the most extreme variations over the past seven years. While an upward trend is evident, the wide fluctuations from year to year are arguably an equally important indicator of an historical trend based on uncertainty and lack of direction.

However, this is not the only story to be told by these figures. While the overall trend is incremental, the leap from just EUR 0.26 billion in 2014, to EUR 2.2 billion in 2020 (not to mention the peak of EUR 3.47 billion in 2018) is a signal of what all those involved in this sector know well: **under the right conditions, the private sector has the capacity to deliver exponential growth for SDG7.** While the figures show that this has not yet happened, the variations in these numbers are evidence both of the latent potential from private investment, and its high degree of sensitivity to external influences, such as perhaps the start of the Covid-19 pandemic.

Under the possible scenario in which African national government energy spending is being partly directed towards non-SDG7 relevant projects, the private sector remains the main candidate to take-up the slack.

If private sector commitments to SDG7 grow at no more than the historic trend, in monetary terms just EUR 0.19 billion would be added each year, bringing the total to EUR 4.02 billion in 2030. This is – or ought to be – a meagre challenge for the huge resources of domestic and international private capital that are potentially available to finance SDG7-compliant projects.

To achieve the 2030 pathway, the private sector will fund an additional EUR 0.72 billion worth of SDG7 projects each year.

In other words, what is needed to be sure of a clear path towards SDG7 in, or soon after, 2030 is not just for each category of investing stakeholder to maintain its historic record of gradually increasing commitment, but for

the weight taken by each category to change, and for the private sector – currently the least important contributor – to play a much larger role, with national governments opening the space for this to happen through a range of policy reforms and incentives, where necessary.

New sources of private capital

Closing the financing gap will require both additional public and private investment. The public sector must continue to support projects through ODA, and African national governments must continue to set a strong precedent and reduce investment risks. However, given the pressures on public funds due to the Covid-19 pandemic and related debt pressures, the role of the private sector will be critical in closing the funding gap.

A key part of closing this gap will be the mobilisation of new sources of private capital.

A reframing of international support towards climate and carbon-friendly finance, particularly among corporate actors and private institutional financiers looking to ‘green’ their portfolios, has led to new avenues of finance.

Green, Social and Sustainable (GSS) bonds

Given the limitations of Africa’s commercial banks to provide sufficient long-term finance, the international bond market has proven to be a vast pool of capital.

Structurally similar to traditional bonds, GSS bonds defining feature is bond proceeds used to finance projects with sustainable and environmental benefits. The World Bank Group estimates global GSS bonds issuances reached USD 1 trillion in 2021, and will surpass USD 1.5 trillion in 2022.³⁰

However, only four African countries have issued sovereign GSS bonds as of 2022, representing just 1% of global green bond issuances. Nigeria was the first government to issue a sovereign green bond in 2017 and 2019 for NGN 10 billion (EUR 23.5 million) and NGN 15 billion (EUR 35 million) respectively. The bond proceeds were used to finance several projects, including the 10 MW Katsina wind farm, the roll-out of mini-grids to provide energy access to 45 rural communities, and a project to develop off-grid solar power solutions for 37 universities and seven teaching hospitals.

Green bonds are also an innovative way for the private sector in Africa to raise finance. In 2019, Nigerian power developer, North South Power Company, issued an NGN 8.5 billion (EUR 20 million) green bond to refinance short-term local and international debt, and fund the overhaul of a 150 MW turbine at its 600 MW Shiroro HPP. It was the first Nigerian on-grid power company to raise local currency from debt capital markets, and its 15-year tenor was unprecedented for a corporate bond issuer of infrastructure. As a certified green bond, it demonstrates the appetite of debt markets for projects with environmental benefits.

Carbon markets

There is a renewed impetus in carbon markets and trading after the United Nations Framework Convention on Climate Change’s 2015 Paris Agreement introduced a new trading mechanism under Article 6, which will allow all countries to trade carbon emissions. The global carbon market is divided into the compliance market, where countries trade carbon to reduce their overall emissions, and the voluntary, which is used primarily by the private sector to voluntarily offset their emissions.

The compliance carbon market most relevant for Africa will be that governed by Article 6 of the 2015 Paris Agreement. Countries are able

30 ‘Green, Social, and Sustainable Bonds to Serve Africa’s Sustainable Investment Needs’. The World Bank Group. <https://www.worldbank.org/en/news/press-release/2022/05/27/afw-green-social-and-sustainable-bonds-to-serve-africa-s-sustainable-investment-needs>

to trade authorised emissions, known as internationally-transferred mitigation outcomes (ITMOs), bilaterally or through a registry. The IEA estimate Africa could generate between USD 225-245 billion by trading ITMOs between 2020 and 2030. This alone would contribute a significant amount towards the funding gap.

The global voluntary carbon market was estimated to be worth almost USD 2 billion in 2021.³¹ Primarily used by the private sector to trade, and ultimately offset, their emissions, demand is driven by the global energy transition, the path to net-zero and the social and environmental agendas of private investors.

Essentially a form of results-based financing, carbon credits are issued by projects that either reduce or avoid greenhouse gas emissions from being emitted. These can be RE projects, afforestation activities or providing clean cooking solutions. These credits are then bought by companies for an agreed price, either bilaterally or through a spot exchange, and form an additional revenue source for projects as credits are continually generated.

As the market has evolved, innovative forms of carbon financing have emerged that look to address some of the underlying challenges in financing the African energy infrastructure. The upfront costs of many RE, energy efficiency or clean cooking projects can be prohibitive for developers which cannot find investors with the required risk appetite. One example of these innovations is the Peace Renewable Energy Credit Aggregation Fund which provides 10% of the upfront construction capital required for projects, in exchange for ownership of the RE credits generated by the project.

13. Data challenges and recommendations

As the longest-running international partnership dedicated to achieving such goals, the Africa-EU Energy Partnership can continue to play an important role, not least in further developing data sources so that an ever-growing number of stakeholders can better understand trends which impact upon energy access and make SDG7 a reality.

Increase private sector participation

How private sector participation is measured is crucial to the successful monitoring of SDG7 support and the size of the financing gap that must be closed in the coming years. Industry associations and industry data providers are working to capture investments made by private companies, yet they still face challenges in overcoming issues of commercial confidentiality. The nature of smaller, off-grid projects – which tend to be funded via corporate, rather than project finance – adds to the complexity of this task. Dialogue and co-operation must continue between the public and private sectors to ensure enhanced reporting, as well as the complementarity and comparability of data.

Disaggregate African government spending

As a group, the African national governments' reporting of their spending has improved dramatically over the past decade, yet there remain challenges to the collection and analysis of this data. It would be helpful if governments, where possible, attempted to disaggregate spending between different subsectors of the energy industry (and in particular between water and energy), as well as pro-

viding greater clarity over which elements of spending are directed towards the attainment of SDG7, including its sub-indicators. Given the size of national government spending, the ability to accurately capture this information is vital for understanding the true extent of SDG7 financing and the size of the gap to be closed.

Increase in reporting of grant equivalent from all OECD reporting members

It is also clear that information surrounding the concessionality of finance should be made more transparent. To this end, the OECD and its members are making inroads in reporting the concessionality of ODA finance. Since 2016, the grant equivalence of ODA disbursements has been reported to the OECD; as of 2019, the equivalence of commitments is also reported. However, not all members report this information. Fuller participation is required, so that more robust and complete data can be produced, which will allow more meaningful analysis.

Increase harmonisation of OECD DAC financial flows with SDG indicators

In order to accurately measure progress towards SDG7, actors involved in the financing of Africa's energy sector, from public lenders to organisations which record such financial flows, should make greater efforts to harmonise the categorisation of financial flows with the Sustainable Development Goals. Organisations, such as the OECD, have introduced SDG indicators to their reporting methodology, yet its use by reporting donors is not widespread.

The European Investment Bank (EIB) and Germany's BMZ are two European examples of where reported financial flows to the OECD are categorised according to their SDG contribution.

The EIB uses a standardised framework to categorise financial flows according to their SDG contribution. For SDG7, the EIB uses outcome indicators which allows the direct reporting of projects to SDG7 (See Table 7).

The AEEP's mandate charges the partnership with promoting knowledge facilitation and political dialogue. This report is intended as a tool to help African, European and other

policy-makers focus their efforts – to deploy financial flows more efficiently into the countries and sectors that most need support, and where this will have the greatest impact in achieving SDG7. It was compiled in the understanding that further improvements are needed in the quality of data reporting, and that data should be collected and monitored on an ongoing basis over the course of the next decade, to record the progress made, and to keep outstanding needs under constant review, informing global policy-making in the attainment of SDG7 in Africa.

Table 7: European Investment Bank SDG7 reporting framework

Project Indicator Name	Indicator Unit Name
Access – percentage change in electrification	Percent
Heat/Refrigeration produced from RE sources	GWh/yr
Heat/Refrigeration production capacity from RE sources	MW
Households which could be supplied with the energy generated by the project	#
Households which could be supplied with the heat generated by the project	#
Electricity generation capacity	MW
Number of women/girls benefiting from the energy generated by the project	#
Power lines/cables constructed or upgraded for integration of RE sources	km
Power lines/cables constructed or upgraded for T&D of electricity	km
Project energy savings (savings from energy efficiency measures)	MWh
Quantity of energy transported	GWh/yr
Relative increase of energy produced by renewable energy sources	Percent
REenergy capacity rehabilitated	MW
Smart energy meters installed	#

14. Methodology

Official development assistance

With the exception of African national government spending and investments made by Africa-based development banks, only public funding classified as ‘Official Development Assistance’, as defined by the OECD, has been included. To ensure consistency and comparability across the study period, the face value of ODA commitments or disbursements has been reported. This is despite a change to the OECD methodology whereby only the ‘grant element’ of an ODA grant, loan or equity investment is considered as ODA from 2019 onwards.

ODA data collection

A robust and verified dataset based on project-level information was compiled for this report. The use of project-level data allows disaggregation and minimises the risk of double-counting.

ODA from bilateral and multilateral international financial institutions for 2014 to 2020 was sourced from the OECD DAC Creditor Reporting System (CRS). This data – which includes both commitments and disbursements – was provided by donors and verified by the OECD DAC. Private development finance from private sector charities, foundations and philanthropic organisations, which was classified as ODA, was also obtained from the OECD DAC CRS.

Data from non-OECD members (such as China, Brazil, Turkey, etc.) was obtained from various open sources, including development agency websites, along with the monitoring of news-flow and official reports. None of the data collected from these sources was proven to be ODA-compliant and was therefore not used in the analysis of SDG7 financing.

Export credit

Export credit issued by China, India and South Korea was obtained, but was excluded as it is not ODA-compliant and therefore not considered SDG7-compliant. Export credit from the Export-Import Bank of the United States was unavailable, while export credit from EU institutions and member states has also not been captured.

Private sector data

Data on private sector operations is limited. Information was obtained from the World Bank’s Private Participation in Infrastructure (PPI) database, which reports on private and public investments into energy projects which reached financial close during the 2014-2020 period. This information was cross-referenced using the OECD DAC CRS, the African Energy Live Data platform, and Bloomberg New Energy Finance’s Climatescope.

Further data on private finance was obtained from industry associations, where possible. However, this often did not include private equity investments, nor was it possible to allocate investments made directly into globally-focused companies which were active in Africa.

In all cases, the financing of private sector projects was disaggregated so that only private sector contributions were counted, thereby avoiding double-counting where public support was already included within the OECD DAC CRS.

African national government spending

Data was obtained from official documents, including official gazettes, budget reports and speeches. Where possible, only capital expenditure for energy was counted. In some cases, it is impossible to disaggregate spending between energy and water where a country has a joint ministry. It is also not possible to identify capital expenditure which is SDG7-compliant. As a result, all capital expenditure for energy is included within this report.

Donor categorisation

African national governments: Sovereign governments of African Union member states.

Africa-based development banks: African Development Bank (AfDB), Banque Ouest Africaine de Développement (BOAD), Development Bank of Southern Africa (DBSA), East African Development Bank (EADB), ECOWAS Bank for International Development (EBID), Trade and Development Bank of eastern and southern Africa (TDB).

EU Institutions and Member States: European Union financial institutions (including European Commission and associated funds and the EIB), and ministries/development agencies/development banks of its member states as of 31st December 2020 (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom (2014-2019)).

Other Europe (non-EU member states): Countries geographically located within Europe, but which are not a member state of the European Union as of 31st December 2020.

Middle East: Countries within the Middle East and the Levant.

Asia: Countries located geographically within Asia.

Oceania: Countries located geographically within the continent of Oceania.

North America: Canada, Mexico and the United States of America.

South America: Countries located geographically within the continent of South America.

Private sector: Any finance from private sector organisations (excluding state-backed commercial banks, or state-owned organisations in China).

Multilaterals: Multilateral development finance institutions, or development banks funded by multiple countries, regardless of geography. This category includes organisations, such as the World Bank, Islamic Development Bank and the Arab Bank for Economic Development in Africa, but excludes multilateral institutions based in Africa.

Sector categorisation

The sectors and subsectors by which financing was aggregated were based on those used by the OECD DAC to ensure comparability and consistency.

SDG7-compliance

The reporting of SDG7-compliance was extremely limited within the OECD DAC CRS. Therefore, only projects in the sectors of RE, T&D, energy efficiency, clean cooking and clean transport were considered SDG7-compliant. Non-renewable generation was excluded from the SDG7 category, unless indicated as SDG7-compliant by the reporting donor.

Commitments and disbursements to policy support and capacity-building are directly related to the achievement of SDG7, albeit the portion attributed to SDG7 is unknown. Despite this, policy support and capacity-building is included as SDG7-compliant unless stated otherwise.

Country classification

Countries are grouped into regions as per the African Union categorisation, and by income group as per the World Bank categorisation.

Currency and exchange rate

All amounts contained within this report are expressed in current prices.

All values are converted to euros based on the average annual exchange rate of the year a particular commitment or disbursement was made. Exchange rates for OECD DAC members was sourced from the OECD, while African currencies were obtained from the AfDB.

Annual exchange rates were calculated based on the average exchange rate for the first day of each month of that year.

Grant equivalent

Data on grant equivalents (the monetary value of a grant or loan which is 'granted' via the level of concessionality) was limited and, where available, was obtained from the OECD DAC CRS for 2015 to 2020. The grant element (the percentage of a grant or loan which is 'granted') was calculated on a project-level basis, with an average then taken on all grant elements for a donor category.

A complete methodology is published separately.



