

Evidence supporting a Just Energy Transition

This document contains the scientific support for a Just Energy Transition, from two perspectives: the Global North (the Netherlands and Europe) and the Global South (Africa).

The *Just Energy Transition* programme of the Green Livelihood Alliance (GLA) supports NGOs and community organisations in Nigeria, the Democratic Republic of Congo, Uganda and the Netherlands in strengthening the lobbying, advocacy and campaigning capacity for a Just Energy Transition (JET).

A just climate transition: the need for climate solutions, equality and decent jobs for all.

From 17–19 April 2018, the JET coalition met in Amsterdam. The conference was aimed to unify CSOs around a shared Global North– Global South JET narrative, in which climate polluters pay the true price of pollution and the resulting revenues are used for making climate solutions available to everyone; in which each disappearing ‘fossil’ job is replaced with at least two decent ‘green’ jobs. And where local communities build power to organise locally owned climate solutions. In the coalition’s view, a transition that empowers people is not only just, but also a prerequisite to limit global warming to well below two degrees Celsius, stimulate clean, local economic development and thus halt climate-induced migration.

The GLA programme is supported by the Dutch Ministry of Foreign Affairs, under the government’s ‘Dialogue and Dissent’ programme.



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Climate change will increasingly affect us all

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It is clear, climate change will increasingly affect us all. Three decades ago, we exceeded the safe atmospheric CO₂ concentration level of 350 ppm. The amount of carbon in the atmosphere from burning coal, oil and natural gas has been skyrocketing ever since. Because global carbon emissions continue to increase.

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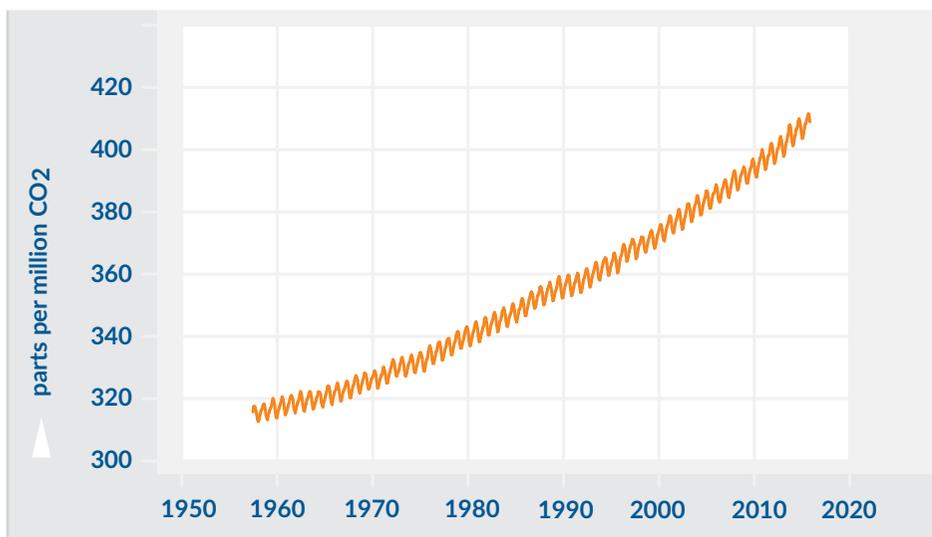
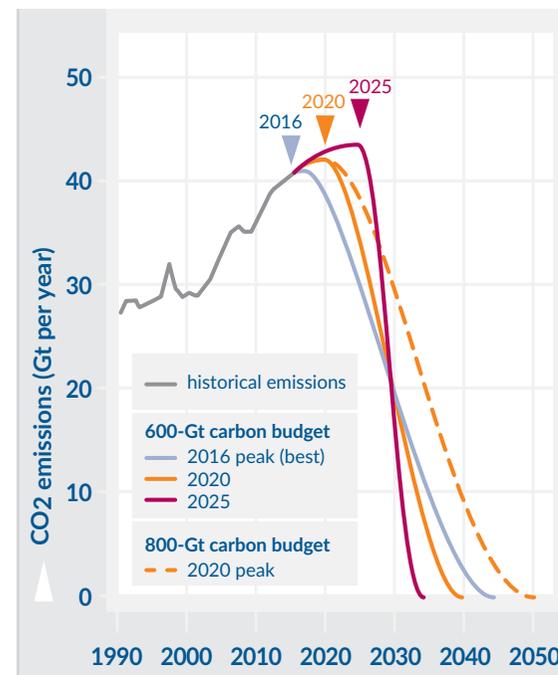


Figure 1 – Atmospheric CO₂ concentrations at Mauna Loa Observatory, Hawaii¹. The strong trend of increasing CO₂ concentrations is due to human activity—the small oscillations are due to natural seasonal variations. The safe concentration threshold of 350 ppm was exceeded in 1988².



“Three years to safeguard our climate [...]. Further, faster, together: If we delay, the conditions for human prosperity will be severely curtailed.”³

Figure 2 – Carbon crunch. To limit global warming to 1.5–2° C, no more than 600 Gt carbon should be emitted to the atmosphere, in the next decades. The later the reduction efforts start, the steeper the required reduction pathway³.

- 1 NOAA / Global Greenhouse Gas reference network
- 2 Hansen J, et al (2013) Assessing “Dangerous Climate Change”: Required Reduction of Carbon Emissions to Protect Young People, Future Generations and Nature. [PLoS ONE 8\(12\)](#)
- 3 Figueres, C. et al (2017). Three years to safeguard our climate. [Nature 29 JUNE 2017 | VOL 546 |](#)

Carbon pollution is hardly priced in, anywhere

previous

No wonder CO₂ emissions continue to increase! Fossil fuels are profitable, because carbon pollution is hardly priced in, anywhere. All economists and environmentalists agree that, by 2020, carbon pricing of at least 40–80 US\$/tCO₂ is indispensable if carbon emissions are to be reduced at the required speed.

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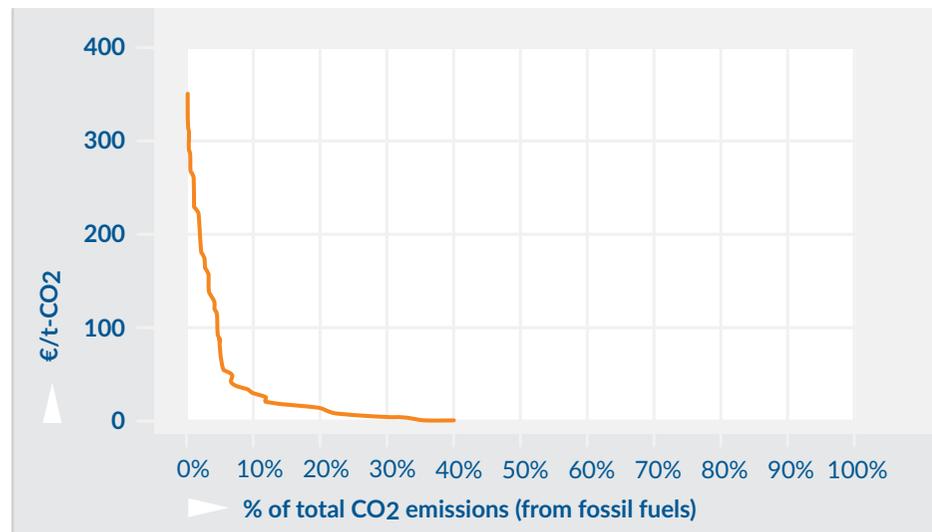


Figure 3 – The effective carbon price (in euros) paid through energy taxes in OECD countries.¹ The graph shows that the main share of economy-wide carbon pollution is not priced at all.

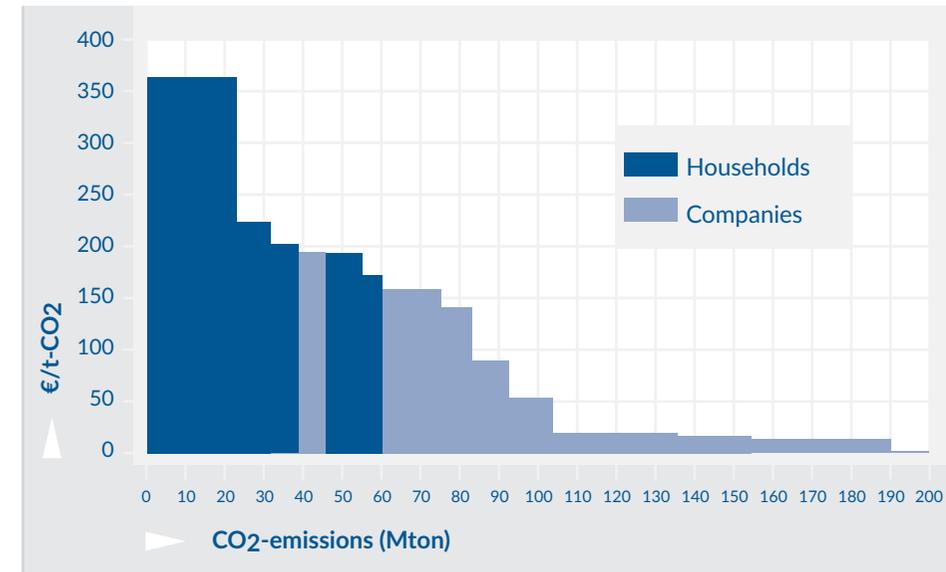


Figure 4 – The effective carbon price paid through energy taxes in the Netherlands.³ The graph shows that over half of the economy-wide carbon pollution is hardly being priced.

“Limiting global warming requires carbon prices of at least 40–80 US\$/tCO₂ in 2020 to 500 US\$/tCO₂ in 2050, for all CO₂ emissions.”
Joseph E. Stiglitz, Nicholas Stern et al.²

- ¹ [OECD \(2016\). Effective Carbon Rates. Pricing CO₂ through taxes and emission trading systems. \(Figure 6.1, reversed\)](#)
- ² [Carbon pricing leadership coalition \(2017\). Report of the high-level commission on carbon pricing](#)
- ³ [CE Delft \(2018\). Klimaatbelastingencurve \[climate tax curve \(in Dutch\)\].](#)

Investments should shift from fossil to renewable energy

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Meanwhile, energy investments in the Netherlands and the European Union are increasingly focused on renewable energy, whereas those on the African continent are still strongly dominated by fossil energy, often driven by rich countries.

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“Rich countries push ‘dirty energy’ in Africa.”⁴

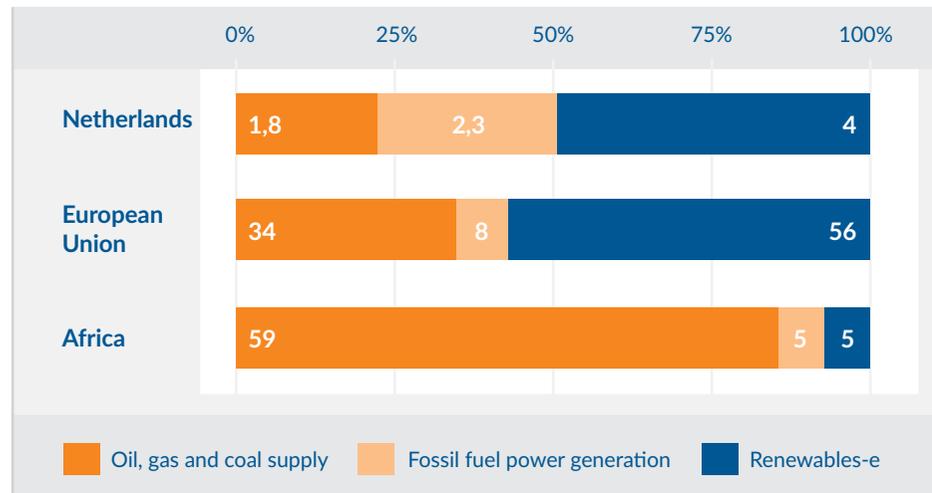


Figure 5 – The shares of fossil and renewable energy investments in the Netherlands, the European Union (EU) and Africa (in 2015 US dollars). The balance of energy investments in the Netherlands and EU has shifted to renewable energy, but in Africa this share is still very small. ^{1,2}

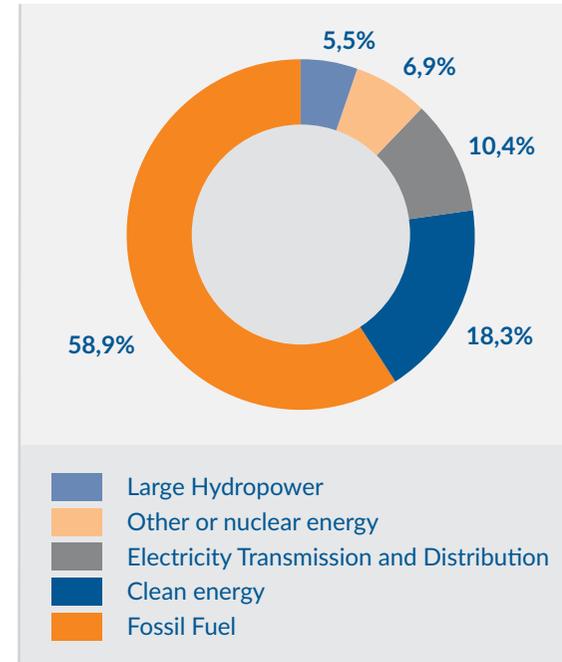


Figure 6 – flows of public energy financing to Africa are currently skewed towards the fossil-fuel-driven expansion of large economies. Governments that are moving away from the use of fossil fuels at home continue to fund such projects in Africa. ³

- 1 IEA (2016), World energy investments 2016
- 2 K. Schoots, M. Hekkenberg en P. Hammingh (2017), Nationale Energieverkenning 2017. [national energy outlook 2017 (in Dutch)] ECN-O--17-018. Petten: Energieonderzoek Centrum Nederland (ECN, part of TNO).
- 3 Oil change international (2018). Assessing International Public Finance for Energy in Africa: Where Do Development and Climate Priorities Stand?
- 4 The Guardian (2018)

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Dutch energy investments abroad are fossil-fuel-oriented

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Energy investments in the Netherlands are shifting towards renewable energy, whereas Dutch energy investments abroad are still strongly fossil-fuel-oriented. The climate footprint of these investments is much bigger than the national territorial emissions of the Netherlands.

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Figure 7 - Shell's investments over the 2018-2020 period are still strongly focused on fossil energy.¹



Figure 8 - Investments in the form of loans and shares owned by Dutch financial institutions (pension funds, banks, insurance companies) largely concern fossil energy projects.²

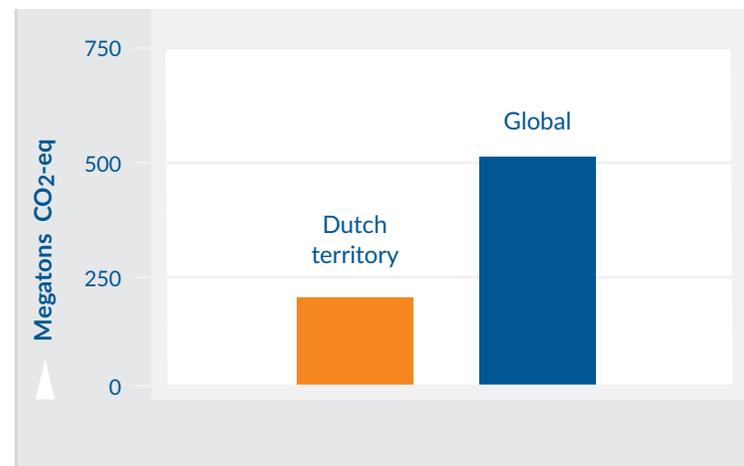


Figure 9 - The greenhouse gas footprint of Shell's global activities (scopes 1 and 3) is much bigger than the amount of greenhouse gases emitted within the Netherlands.^{3,4}

- ¹ Milieudefensie (2018). Friends of the Earth Netherlands. Website.
- ² De Nederlandsche Bank (2017). De Nederlandse financiële sector veilig achter de dijken? Een nadere verkenning naar klimaatgerelateerde financiële risico's [exploration of climate-related financial risks in the Netherlands (in Dutch)].
- ³ K. Schoots, M. Hekkenberg en P. Hammingh (2017), Nationale Energieverkenning 2017. [national energy outlook 2017 (in Dutch)] ECN-O--17-018. Petten: Energieonderzoek Centrum Nederland (ECN, part of TNO).
- ⁴ CDP (2017). The Carbon Majors Database: 2017 Dataset. CDP, London

Investing in oil and natural gas is becoming an economic risk

previous

Experts are increasingly warning financial institutions and shareholders about the growing economic risk of investing in oil and natural gas under a 2 °C 'Paris' scenario. Because of the accelerating global growth in electric vehicles, the demand for oil could peak within the next 10 years.

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Investments outside 2° C budget	
Exxon	40-50%
Eni	30-40%
Shell	30-40%
Total	30-40%
BP	20-30%
Chevron	30-40%
CNOOC	20-30%
Sinopec	10-20%

Table 1 – A significant share of the planned investments in oil and natural gas exploration by the oil companies active in Africa will create carbon emissions beyond the carbon budget that will limit global warming to below 2 °C.¹

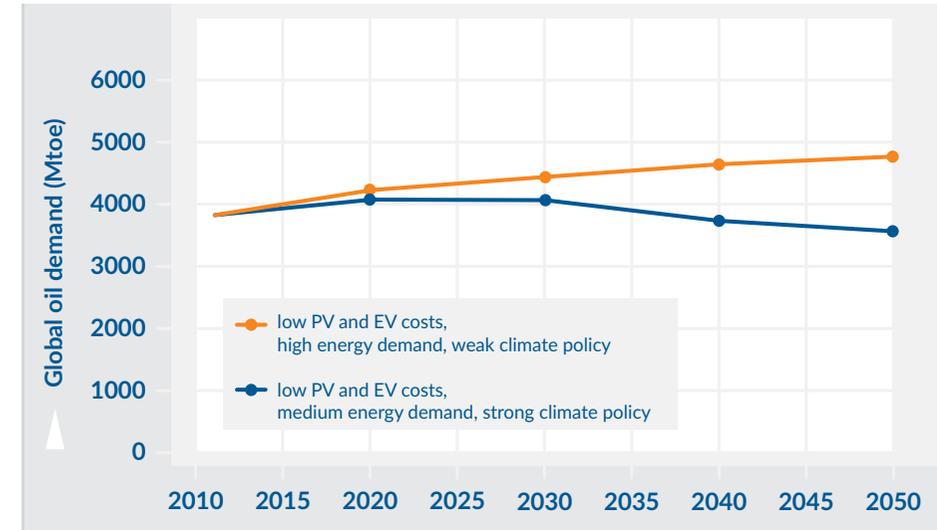


Figure 10 – Strong climate policies and accelerated market penetration of electric vehicles may soon result in peaking oil demand (lower line).²

The Risk of Stranding

What proportion of future fossil-fuel investments is at risk of stranding? Carbon Tracker, a financial think tank, has published a series of estimates. Its latest study suggests fossil fuel groups risk wasting a minimum of US\$1.6 trillion (in capital expenditure), between 2018 and 2025, if the Paris Agreement is implemented³.

- ¹ Carbon Tracker (2017). Transition risk for oil and gas in a low carbon world
- ² Carbon Tracker & Grantham Institute Climate Change and the environment (2017) Expecting the unexpected. The disruptive power of low carbon technology.
- ³ Carbon Tracker (2018). Mind the GAP: the \$1.6 trillion energy transition risk.

Responsible mining of raw materials is required

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Rechargeable batteries, for example in electric vehicles, are regarded as a vital technology for a renewable energy future. The most critical bottlenecks to make these batteries are the raw materials of lithium and cobalt.

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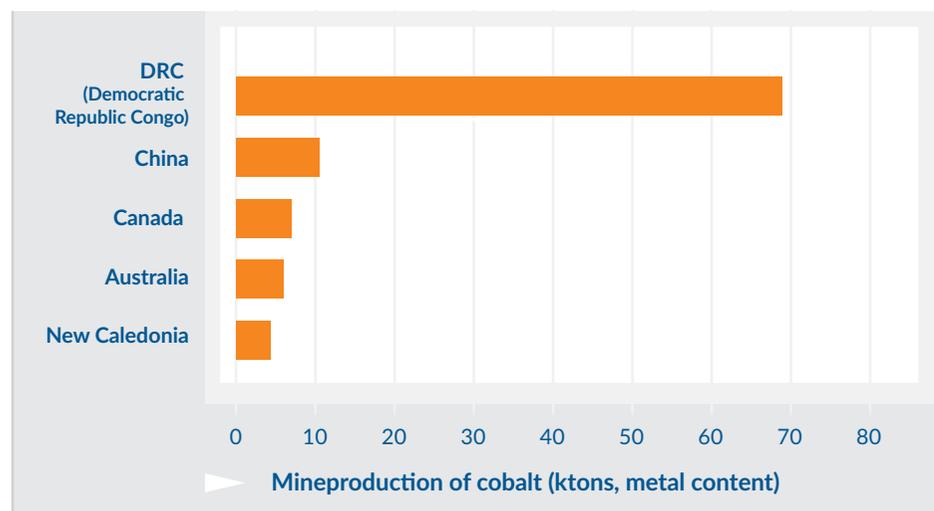


Figure 11 – The Democratic Republic of Congo produces the main share of globally mined cobalt (2016).¹

“The mining and mineral processing sector is Congo’s main source of state revenue. However, it is also associated with severe human rights violations.”³

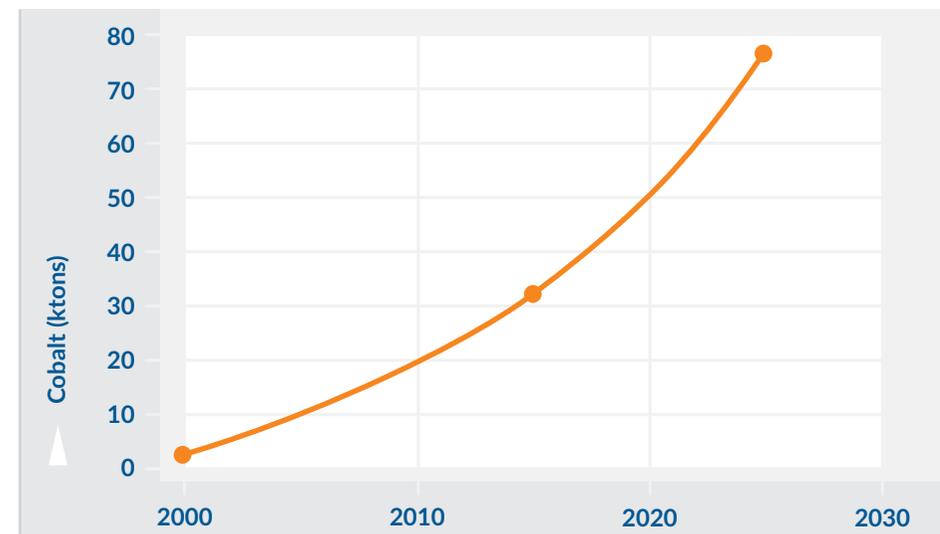


Figure 12 – Cobalt demand for lithium-ion batteries is expected to double by 2025.²

“In readiness for growth in mineral demand, countries will need to have appropriate policy mechanisms in place to safeguard local communities and the environment.”⁴

- ¹ [British Geological Survey \(2018\)](#). World mineral production 2012-2016.
- ² [Washington Post](#)
- ³ [The World Bank \(2018\)](#)
- ⁴ [SOMO \(2016\)](#). Cobalt blues.

Universal access to energy is far out of reach

previous

At the same time, universal access to affordable, reliable and modern energy for all (Sustainable Development Goal 7) will remain far out of reach, for many African countries.

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Christiana Figueres, former Executive Secretary of the UNFCCC: “The global renewable energy revolution is unstoppable, irreversible and exponential. Solar energy is a powerful force to democratise energy. But poverty is still a major issue for off-grid communities, which are not yet electrified. We have to understand what is stopping the advance of solar [energy] to poorer people’s homes.”²

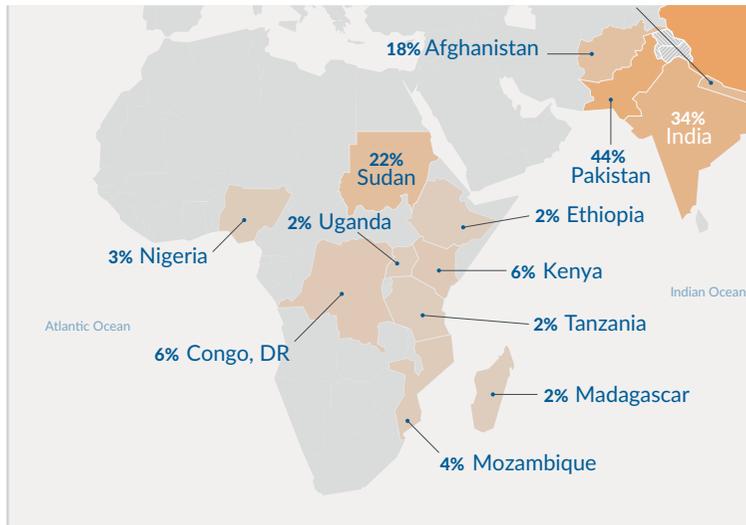


Figure 13 – The share of the African population with access to clean fuels and technologies for cooking is still very small.¹

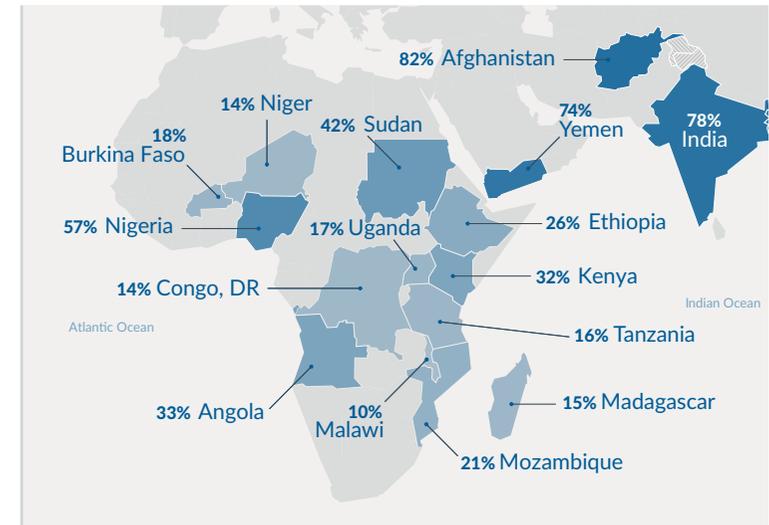


Figure 14 – The share of the African population that has access to electricity is still very small.¹

¹ Sustainable Energy for All (2017). Energizing Finance: Scaling And Refining Finance In Countries With Large Energy Access Gaps

² Christiana Figueres, former Executive Secretary of the UNFCCC, Making Solar Bankable conference, evolving business models in emerging markets, 15-16 February 2018.

Create millions of new green and decent jobs

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When communities become co-producers of energy, this will drive productivity of clean small and medium-sized enterprises.

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“These results highlight how off-grid solar can driver economic activity, create new business opprtunities and enable households to increase their income.”

Many jobs are still fossil-fuel dependent



1 Diesel-powered electricity generation Nigeria¹



2 Oil jobs in Nigeria²

Off-grid solar energy creates new local business opportunities



3 Solar Sister Nigeria, in collaboration with the Solar Nigeria programme, has called for an increased role for women in clean energy access, especially in underserved communities across the country.³



4 Off-grid solar PV driving economic activity⁴

1 From: [Blue Ocean, Pay-As-You-Go \(PAYG\)](#)

[Solar for Commercial Use](#)

2 From: [naija247news.com](#)

3 From: [abovewhispers.com](#)

4 From: [Powering opportunity. The economic impact of off-grid solar.](#) Gogla (2018)

Improved policies needed

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The growth in off-grid renewable energy in African countries requires strong improvements in the policy environment.

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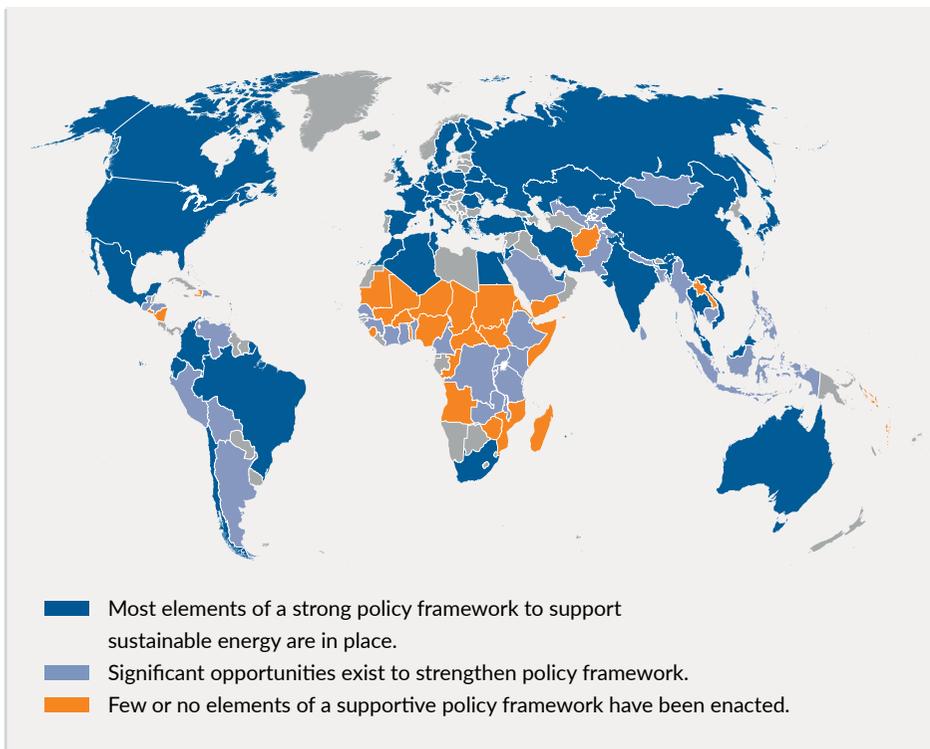


Figure 15 – The attractiveness of national policy environments for sustainable energy. The policy environment in African countries clearly needs improving.¹

	Energy access targets (national)	Energy access targets (rural)	Decentralised energy access
Uganda	+	+	+
Nigeria	+	+	-
DR Congo	-	-	-

Table 2 – Energy access targets in three African countries. An effective policy mix would include targets for national and rural energy access as well as those for decentralised (off-grid) energy systems.²

“Most countries suffering from energy poverty have yet to truly mobilise decentralised renewable energy to accelerate universal energy access—either in policy or in practice.”²

¹ Banerjee, Sudeshna Ghosh; Moreno, Francisco Alejandro; Sinton, Jonathan Edwards; Primiani, Tanya; Seong, Joonkyung. 2017. Regulatory indicators for sustainable energy: a global scorecard for policy makers. Washington, D.C. : World Bank Group.

² Power for all (2017). Decentralized renewables: from promise to progress.

Prioritise the decentralisation of solar energy

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Efforts to scale and accelerate the implementation of decentralised solar energy solutions should immediately be prioritised.

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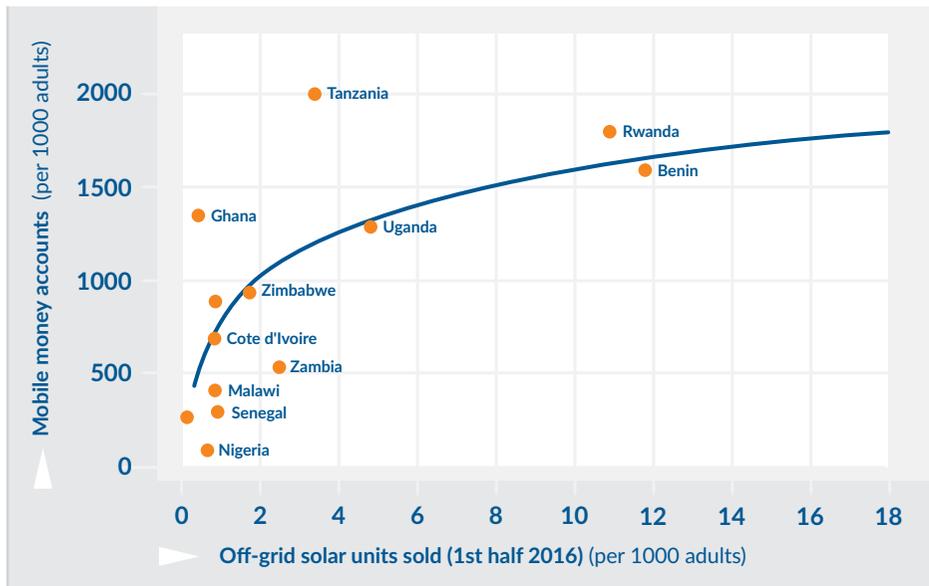


Figure 16 – Improved access to mobile money would also accelerate the off-grid solar market in Africa.^{1, 2} Increasingly, small-scale PV systems are bought through mobile money transfers, in monthly instalments. After a certain period of time, the installations become privately owned.



Figure 17 – Growth in installed solar PV capacity in the Netherlands is much more rapid than is the case in Uganda and Nigeria. The rapid growth in the Netherlands can be explained by its clear policies and stable investment climate.^{4, 5}

*"The leadership of Kenya in the African off-grid solar PV market has been contingent on a range of factors, including policy clarity, a well-developed financial sector, an active mobile money market (Figure 13), ready access to foreign exchange and a relatively stable currency, as well as simplified import procedures."*³

- 1 McKinsey (2017). Mobile financial services in Africa: Winning the battle for the customer (data on Y-axis).
- 2 Gogla et al (2017). Global Off-Grid Solar Market Report Semi-Annual Sales and Impact Data January - June 2016 (data on X-axis).
- 3 Sustainable Energy for All (2017) Energizing finance
- 4 CBS (2018). Zonnestroom naar regio [regional solar power (in Dutch)].
- 5 Solarplaza (2018). Updated facts and figures, Solar Energy Africa 2018

Allocate development aid to countries most in need

previous

Development finance provided by OECD countries should be allocated to the countries most in need. And Dutch Climate Financing should reach its 'fair share' target in 2020.

next



Figure 18 – Dutch contributions to international Climate Finance to support developing countries are increasing. This is due to an increase in privately funded aid. Whether the 'Paris rule book' will allow private funding to be counted as national contributions is still unclear. Despite the current optimistic tally, Dutch Climate Financing is still far from its 'fair share' target for 2020.²

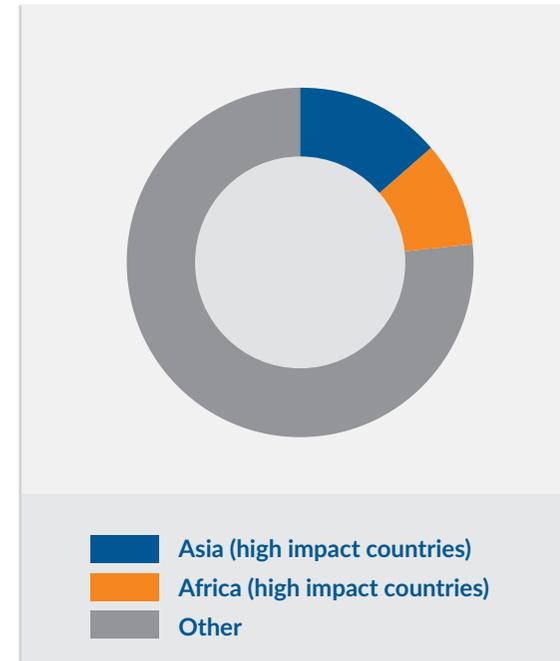


Figure 19 – Disbursement of development financing for electricity projects during the 2011-2015 period.¹

“The share of development finance allocated to 20 high-impact countries—where efforts to increase access to electricity and clean cooking are most critical and which represent 80 percent of the global population without electricity and 84 percent without clean cooking— remains small”.¹

¹ Sustainable Energy for All (2017). Missing The Mark.
² Oxfam Novib (2018). Hoog Spel met Klimaatgeld [the high stakes of Climate Finance (in Dutch)].

Strongly increase funding for clean cooking financing

previous

Financial commitments for clean cooking solutions are currently shockingly low and should be increased strongly.

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Charcoal kiln on a site recently cleared of trees in DRC. Rising demand has turned the country's charcoal trade into a multimillion dollar industry.

*"The improved cookstove is very economical," said Jacquie Kangu, the president of a network of women's groups in Mbandaka. "[With other stoves] sometimes it was two weeks to buy a bag of charcoal, but at the moment I can go two and a half months or three months without buying another bag."*¹



Figure 20 - The clean cooking hierarchy. More than 700 million sub-Saharan Africans use solid fuels, such as wood and charcoal, for their primary cooking needs. These inefficient cooking practises not only threaten forests but also cause more than 500,000 premature deaths each year, due to indoor air pollution.⁴ Penetration of clean cooking technologies in this population is alarmingly low.

- 1 WRI (2017). Article.
- 2 Global alliance for clean cooking stoves (2014). Results report (figure 3)
- 3 Sustainable Energy for All (2017). Energizing finance: scaling and refining finance in countries with large energy access gaps.
- 4 Institute for Health Metrics and Evaluation, global health data exchange (select: context: risk, risk: household air pollution from solid fuels)