

Mobile Industry position paper Access to renewable electricity

November 2022



Introduction

Since the 2015 Paris Agreement, commitments and targets by countries and companies to rapidly decarbonise their emissions in line with a 1.5C warming scenario and ultimately reach net zero emissions have accelerated. In 2019 the mobile industry announced its ambition to be net zero by 2050 and in 2020 agreed a science-based net zero pathway for the sector.

To date, 50 GSMA members, representing 63% of the mobile industry by revenue, have committed to science-based targets (SBTs)¹. To reach the decarbonisation reductions required by 2030, access to renewable electricity (RE) through national grids is essential for operators to achieve these commitments.

The estimated electricity consumption of the global operator community in 2021 was around 293 million MWh² and represents approximately 20% of their operating expenditures³. Currently, around 18% of the electricity used globally by mobile network operators comes from renewable sources.⁴ This share needs to reach at least 50% by 2030 for operators to meet their targets. Onsite renewables can and are being used to power networks in rural locations but are not suitable for most sites. Access to reliable grid electricity is needed to support mobile coverage.

The current capacity for producing renewable electricity cannot meet the growing demand of network operators that are trying to rapidly decarbonise their operations, coupled with the increase in data traffic globally. By 2025, GSMAi estimates that mobile data traffic will increase to four times the volumes seen in 2020. Emerging markets will contribute to the majority of growing mobile connections and associated additional electricity requirements. The gap between the production of renewable electricity and access to it remains significant in certain parts of the world, especially in some countries across Latin America (LATAM), Asia, the Middle East and Africa. In Europe, operators are faced with an energy crisis that could lead to a large increase in costs.

Analysis by the International Energy Agency (IEA) suggests annual renewable energy investment in emerging markets needs to be multiplied by more than seven – from less than \$150 billion in 2020 to over \$1 trillion by the end of the 2020s⁵ – to avoid being locked into fossil fuel grid infrastructure.

Supporting regulatory and policy environments enabling access to stable renewable electricity marketplaces are needed to help the mobile industry's transition to net zero. Mobile operators, together with other businesses with similar science-based targets towards 2030, can act as frontrunners to de-risk and attract investment into renewables, by committing to long-term large-scale offtake agreements.

¹ <https://sciencebasedtargets.org/>

² <https://www.gsma.com/betterfuture/wp-content/uploads/2022/05/Mobile-Net-Zero-State-of-the-Industry-on-Climate-Action-2022.pdf>

³ <https://data.gsmaintelligence.com/research/research/research-2020/5g-energy-efficiencies-green-is-the-new-black>

⁴ <https://www.gsma.com/betterfuture/wp-content/uploads/2021/04/Mobile-Net-Zero-State-of-the-Industry-on-Climate-Action.pdf>

⁵ <https://www.iea.org/reports/financing-clean-energy-transitions-in-emerging-and-developing-economies>



As policymakers consider the mobile industry as a strategic partner in the decarbonisation of the global economy, increased public-private dialogue will help to expedite the availability and access to renewable sources of energy in regions where it is today not possible or limited. Such partnerships can support governments to meet their NDCs while also enabling the mobile industry's net zero ambition.

In 2022 the GSMA conducted analysis of mobile operators' renewable energy usage. Data was collected from 33 operators covering 86 countries and 50 percent of connections. The analysis highlights that purchasing renewable electricity is a challenge in some regions.

This paper outlines the key challenges faced by the mobile sector preventing access to renewable electricity in those markets, and the key asks and recommendations that can help to overcome the challenges.



Key Challenges

Despite growing support for reducing fossil fuel use, mobile operator access to renewable electricity still faces a range of policy uncertainties preventing its deployment at the rate required to limit global warming. Financial, policy and regulatory barriers, and grid integration, are the main challenges faced in some markets within Latin America, Asia, the Middle East and Africa. Most countries also need a way of securing electricity needs from renewable sources. The challenges generally lie in countries more reliant on electricity generation from fossil fuels. This paper covers issues reported by mobile operators in the following markets:

- Latin America - Ecuador, Argentina
- Asia - Malaysia, India, Vietnam, Thailand, Bangladesh, Pakistan, Nepal, Indonesia, Cambodia, Pakistan
- Africa - Zimbabwe, Kenya, Egypt, Morocco
- Middle East – Turkey

While access to renewable electricity has been easier in Europe, the on-going energy crisis and associated rising costs, is bringing its own challenges for European operators.

The specific challenges listed below are not an exhaustive list but are some of the most common ones faced by mobile operators. They may not impact all countries within a region where an enabling regulatory environment supports access to renewable grid electricity. The next section expands on how to address these challenges.

Key issues to access renewables include:

- Regulation does not support Power Purchase Agreements (PPAs) linked to independent power producers (IPP) and mobile operators, limiting RE investments
- Transmission and distribution infrastructure is a key barrier to RE expansion
- Renewable expansion is restricted by limited grid infrastructure
- A lack of a level playing field for renewable electricity with energy markets distorted by subsidies

Key Policy Asks and Recommendations

To address the challenges outlined in the previous section, the GSMA proposes the following policy actions:

- **Enable access to power purchase agreements to support the ability to offtake renewable electricity via the grid**

Corporate Power Purchase Agreements (PPAs) allow a commercial energy consumer such as a mobile network operator (MNO) to enter into an agreement with the independent power producer (IPP) and commit to purchasing a specified amount of renewable electricity at an agreed price for a set period of time. The electricity is generated and transferred to the consumer using the national grid infrastructure.

Reducing barriers to accessing corporate power purchase agreements in emerging economies could deliver benefits, including helping countries to decarbonise their energy sector, decrease state payments to independent power producers (IPPs) and reduce reliance on fossil fuels. Changes in the regulatory framework to enable transparent long-term offtake agreements would provide confidence in local and foreign investor's ability to recover their investments.

PPAs in mature renewable electricity markets have proven to foster private investments in renewable facilities and enable developers' easier access to cheaper financing when the long-term electricity production is already committed to a buyer. The mobile industry stands ready to commit to PPAs to support their increasing needs for renewable electricity and encourages adopting and committing to regulatory frameworks that support mature renewable electricity marketplaces to reduce risk and lead times.

In some markets the purchase of electricity directly from a specific project via public grids is restricted, limiting operator renewable electricity investments to "off-grid" or "behind the meter" consumption. The mobile industry relies on thousands of offtake points distributed throughout countries and therefore depends on renewable electricity to be available through national grids. Policies that support the purchase of renewable electricity via different instruments would attract additional buyers.

A regulatory environment based on a transparent methodology with tariffs agreed upfront for all tensions, (low-medium-high) could provide guaranteed financial investment contracts for power providers and support strong partnerships with IPPs.

- **Prioritise renewable electricity capacity additions and enable private and public investment into renewable electricity markets in emerging markets**

Research shows that without significant investment into renewable electricity, emerging markets in Latin America, Sub Saharan Africa, the Middle East and Asia will not be able to achieve their climate targets or nationally defined contributions (NDCs) by 2030. The barriers to accessing renewable electricity in those markets directly impacts the private sector's ability to achieve their own science-based emission targets. Despite accounting for two-thirds of the global population, emerging markets only receive one-third of global energy investment and an even smaller 20% share of renewable energy investment.⁶

Government targeting investment into renewable electricity capacity will support emerging markets to transition away from fossil fuels. The cost of renewable power is increasingly cheaper than new and existing fossil fuel fired plants, making renewables a good investment opportunity.

To match business demand and interest in renewable electricity investment the mobile industry is ready to commit to long term energy agreements to support additional investments in renewable electricity grid capacity and generation in emerging markets. Privately funded multilateral organisations have been set up with the aim to scale up such investments and could provide a partnership opportunity with mobile operators to mitigate risks in renewable electricity investments.

- **Encourage collaboration between public and private sectors**

Governments that have set carbon reduction targets could benefit from financial innovations and risk capital from the private sector that can increase the flow of private capital for renewable electricity projects. In markets where governments have set their own carbon reduction targets and have established incentive programmes and opportunities, the promotion of these schemes should be amplified to accelerate renewable electricity investments.

There are now 130 countries committed to reducing their emissions by 2050⁷. To achieve these targets, governments need support from the private sector to accelerate the decarbonisation efforts, while private companies with science-based emission reduction targets need support from governments to reach these through access to renewable grid electricity.

⁶ https://iea.blob.core.windows.net/assets/6756ccd2-0772-4ffd-85e4-b73428ff9c72/FinancingCleanEnergyTransitionsinEMDEs_WorldEnergyInvestment2021SpecialReport.pdf

⁷ <https://www.un.org/en/climatechange/net-zero-coalition>

Supporting the use of corporate PPAs in emerging economies can act as an incentive to encourage additional investment in the energy sector. Studies show that generally there are many more emissions-saving opportunities in emerging markets compared with those available in more mature markets⁸. Early large-scale dedicated renewable electricity infrastructure investment is more efficient than trying to retrofit or retire existing assets. It is easier to build efficient or low-carbon energy into the design of these investments rather than trying to retrofit or retire existing assets. A public-private partnership between governments and the private sector could accelerate the renewable electricity investment opportunities.

The mobile industry requires long-term energy provision to provide essential services, making the mobile industry a safe and dependable investment partner. By partnering with existing energy providers and the government, mobile network operators can therefore provide an attractive and predictable long-term offtake revenue stream, de-risking the fluctuation in energy prices while providing access to capital for producers.

An increasing component of any PPA structure is the concept of additionality. Additionality generally requires the construction of new renewable energy generating technologies that would not have been constructed thus generating economic benefits.⁹ A stable regulatory environment would support a de-risked and stable investment environment to protect against future pricing fluctuations.

- **Upgrade and stabilise the national grid**

Governments can help address the stabilisation of national grids to increase the mobile industry's access to renewable electricity.

Towers that face more than six hours of power outage per day, on average, are classified as bad grid and need to find an alternative source of energy.¹⁰ Where there are outages operators must rely on alternative sources of energy, either diesel generator solutions, with associated carbon emissions or very local solar/wind solution that are less cost-efficient due to lack of scale compared to large scale renewable electricity supplied through national grids.

Collaboration between government and the private sector to increase investments in renewable electricity can help to also reduce grid weaknesses, for example by releasing public expenditures from carbon fuel imports to national grid investments that improve reliability and efficiency or attracting private investments not only to renewable electricity generation but also grid distribution, technology and flexibility.

⁸ https://iea.blob.core.windows.net/assets/6756ccd2-0772-4ffd-85e4-b73428ff9c72/FinancingCleanEnergyTransitionsinEMDEs_WorldEnergyInvestment2021SpecialReport.pdf

⁹ https://www3.weforum.org/docs/WEF_Renewable_Energy_Corporate_PPA_2021.pdf

¹⁰ <https://data.gsmainelligence.com/api-web/v2/research-file-download?id=60621137&file=300621-Going-Green-efficiency-mobile.pdf>

Renewable Electricity Analysis 2022

Regional Renewable Electricity Usage

In October 2022, the GSMA carried out a survey of members on their renewable electricity usage: data was collected on a voluntary basis from 33 operators, covering 86 countries and 50 percent of connections.

The map (on the next page) shows operator's current renewable energy usage percentages for each region using two methods of calculation: market-based and location-based. Mobile network operators use both methods when reporting renewable electricity use.

Operators use the market-based method to account for renewable electricity purchases through contractual instruments, for example, power purchase agreements with generators and renewable energy certificates bought through the energy market.

Operators also use location-based figures, for example, in countries where it is not possible to directly purchase renewable electricity. Location-based figures reflect the average renewable electricity transmitted by the grid in that country.

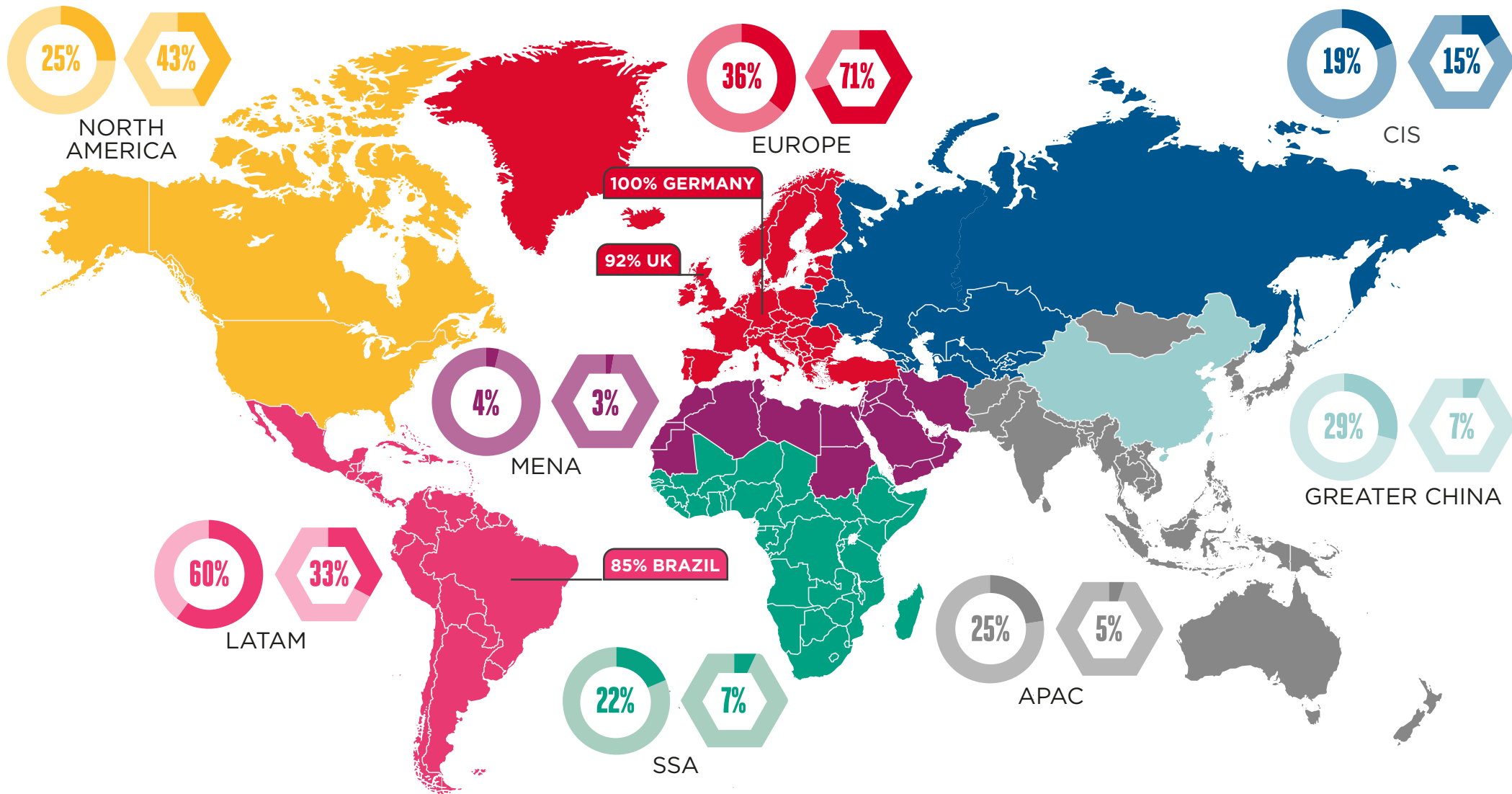
Using the market-based figures, the analysis showed that in 41 of the 86 countries operators purchase more than 75 percent renewable electricity with operators in 29 of the 86 countries purchasing less than 25 percent renewable electricity.

The map (one the next page) highlights how operators in Europe and North America have been able to access renewable electricity to power their networks. In contrast, purchasing renewable electricity is still a challenge in many countries, shown by the lower market-based regional figures across Africa, the Middle East, Asia, and South America.

2030 Ambition

As part of the data collection for the regional figures, the GSMA asked operators how much renewable electricity they plan to use by 2030. Operators across every region stated they plan to significantly increase the amount of renewable electricity they use, and in total, there is an ambition to use 64TWh of renewable electricity per year by 2030. This is approximately equivalent to the annual electricity use of Austria.

Figure 1 - Distribution of renewable electricity accessed by mobile network operators globally¹



- **Location-based**
- average renewable electricity on the grid
- ⬡ **Market-based**
- average renewable electricity directly purchased by operators

¹ Data collected covers approx. 50% of mobile connections globally



Call to Action

Given the significant demand signal this renewable electricity ambition sends, a concerted effort is needed to increase renewable electricity supply to electricity grids over the next decade. This will mean both reducing the barriers mentioned earlier in the paper, as well as providing incentives for investment.

To achieve this, the GSMA invites collaboration between the private and public sector to meet the required expansion of new RE infrastructure. This will help both companies and countries to decarbonise energy grids and facilitate the transition to net zero carbon emissions.

Glossary

IPP

Independent power producer is not a public utility but owns facilities to generate electric power for sale to utilities and end users.

PPA

Power Purchase Agreement is a contract between two parties, one which generates electricity (the seller) and one which is looking to purchase electricity (the buyer).

EAC

Energy Attribute Certificate is a market-based instrument to document and report renewable energy consumption.

NDC

Nationally Determined Contributions embody efforts by each country to reduce national emissions and adapt to the impacts of climate change.



Resources

[Renewable Energy Dashboard](#)

[The Enablement Effect 2021](#)

[Mobile Net Zero: State of the Industry on Climate Action 2022](#)

[Renewable Energy for Mobile Towers: Opportunities for low- and middle-income countries](#)

