



Task Force 2
**Climate Change, Sustainable Energy
& Environment**

Policy brief

POLICY DIRECTION FOR SUSTAINABLE COMMUNITIES AND COMBATING ENERGY POVERTY

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ABSTRACT

The COVID-19 pandemic has added urgency to addressing Energy Poverty challenges. Local energy initiatives can support local employment, while bringing benefits to vulnerable consumers. In more developed countries, energy communities can deliver the energy transition at citizen level. For rural areas lacking access to electricity, it appears essential to encourage the role of private investors in micro-grid development to accommodate the basic and future energy needs of developing countries. The G20 could stimulate the discussion through a global annual conference on energy poverty to identify and disseminate the best practices, and to engage the least developed countries.



CHALLENGE

The COVID-19 pandemic has added urgency to the goal of ending energy poverty.¹ The International Energy Agency (IEA) estimates that a rise in poverty levels worldwide may make basic electricity services unaffordable for more than 100 million people who already had electricity connections, presaging a return for many to more polluting and inefficient sources of energy.²

The international community must respond to the crisis by accelerating action to achieve the SDGs set down in Agenda 2030,³ and at the highest political level, the G20 can stimulate citizens, communities, and organisations in all sectors to develop new actions and share best practices and solutions beyond borders.

The energy transition comes at a cost: policymakers must bear in mind that a minor increase in the price of energy can severely impact the daily lives of millions of households already struggling financially. This raises the need for a socially fair transition based on measures, solutions and technologies that improve the living conditions of the most vulnerable households.

In the medium to long term, the power sector has the potential to play a critical role in economic recovery. An estimated US\$ 2.5 trillion COVID-19 rescue package – including a US\$ 1 trillion investment injection – is urgently needed for the world's emerging economies.⁴

In **less developed countries**,⁵ over 1 billion people have no access to electricity⁶ and even more use traditional fuels (mainly coke or wood) for heating and cooking, with devastating health consequences.⁷

In **developed countries**, energy poverty is a phenomenon connected to the affordability of a minimum bundle of energy services, and therefore relates more to economic vulnerability than absolute poverty. Within the framework of energy transition policies, governments also have to pay attention to the economic vulnerability of potential new customers, associated with transport and mobility needs.

Energy poverty is the inability to secure a socially and physically essential level of domestic energy services (e.g. cooking, heating, lighting and cooling). Energy vulnerability can be seen as the propensity of a household to suffer from a lack of adequate energy services in the home.

Energy poverty should not be confused with consumer energy vulnerability. Energy poverty is a broader concept, which includes people who either have no access or connection to the market, or are so poor that they cannot afford to participate in the market. Consumer energy vulnerability concerns the protection of people who have full access to and participate in the energy market.



Innovative business models are required, that are capable of generating value by exploiting and sharing local energy sources, and processing data in such a way that it can be used to feed international financial mechanisms (e.g. relating to CO₂ emission reduction). Local renewable energy communities, in which members share the cost of new generating capacity, share self-produced energy and share the related benefits, could help fight energy poverty.



PROPOSAL

ENERGY COMMUNITIES

In **developed countries**, there are clear benefits in supporting energy communities, especially when they are designed to allow vulnerable households to have a say in the main services the community plans to prioritise.

“Community energy” is a decentralised energy system designed to meet the specific needs of the community it serves.

Community energy is key to a decarbonised economy and a crucial step in tackling climate change⁸. Community energy can help find a new balance between local economies and the global economy. It can help overcome the urban/rural divide, and close the gap between north and south, and rich and poor — because it empowers local people. Community energy leads to energy democracy, and holds the promise of an economy and society based on co-operation rather than competition.

In order to effectively manage energy systems (such as energy communities) new employment roles are needed, with positive effects in the post-COVID phase. Their creation and management imply the integration of small companies devoted to design, installation and maintenance, giving rise to new jobs.

With modern technology it is possible to engage small consumers, who can optimise their consumption. The challenge in motivating consumers is to develop a new approach combining knowledge and incentives, appropriate to the needs of the most vulnerable and the energy-poor, which delivers awareness of energy choices and active implementation of good practices.

Where national public incentives are available, Renewable Energy Communities (RECs) can promote local service supply chains, thereby boosting the energy transition in synergy with residential building retrofit.⁹

Besides adding new renewable generation capacity, the resulting savings can be re-invested to tackle energy poverty. Digital platforms should support local operations while assuring data management and systems interoperability.

In EU countries, RECs are at the core of an approach based on value creation at local level as a powerful way to create economic and financial resources to be re-invested in tackling energy poverty. This is the result of the “prosumer-centric” vision of the European Commission¹⁰, whose Directives (2018/2001 and 944/2019) are being adopted by member states. In Italy, RECs and tax credits on expenditure on home renovation and measures to improve



energy efficiency are giving an unprecedented opportunity to citizens to engage actively in energy-related activities, which could reshape the whole energy market. The combination of such measures with specific incentives for Renewable Energy Communities (RECs) paves the way to a proliferation of new RECs, while also enabling new competencies at technical, organisational and management level.

The municipality of Bethlehem (Palestinian Territories) is an example of increasing urban energy demand, which can be met by combining existing grid capacity with additional renewable generation (mostly rooftop PV), managed through local energy communities, and promoting a change in cultural attitudes for both citizens and local energy utilities.

The NUR project is one example of the international cooperation projects initiated by the municipality to move towards citizen-centred urban sustainability.¹¹ The project involved the design and activation of a local energy system of renewable production, mainly devoted to street lighting and energy supply for public buildings, and has provided infrastructure that is ready to be used to implement an REC in Bethlehem on the basis of the experience gained in Italy. A number of participants will start operational synergies between Italy and the Palestinian Territories during the course of 2021.

In **less developed countries**, people lacking access to electricity decreased to 900 million in 2018. However, the COVID pandemic is affecting the rate of energy poverty contraction and could therefore be making pre-COVID projections over-optimistic. Hence, by 2030 many will still face energy poverty. As the cost of solar PV and batteries falls, solar micro-grids or hybrid PV/diesel generator systems are increasingly being deployed. Most of the people lacking electrification are rural populations in Sub-Saharan Africa (580 million inhabitants). According to WEO2020, 71% of rural populations in this region lack access to electricity compared to 24% in urban environments.¹²

For the electrification of rural areas, the lowest-cost approach should always be promoted, which means that micro-grid installations should always be supported when delivering a lower tariff than grid extension.¹³ A gradual improvement in energy access is sought, as conceptualised by the multi-tier approach proposed by the ESMAP division of the World Bank.¹⁴ Household electricity, energy for heating and energy for cooking are the three pillars of energy access.

Focusing on job creation, demand stimulation and the development of rural enterprise and local energy communities, supports inclusive economic growth, while also improving the viability of electricity service delivery in rural areas. For example, in Ethiopia, linking agriculture and rural electrification could unlock US\$ 4 billion in benefits to smallholder farmers from improvements in agricultural productivity and processing. Rural electrification is essential to increase the productivity of agriculture in rural areas. Crop yields would benefit from mechanisation, which requires electricity. The value chain of crops could thus benefit from electrification, in a country characterised by smallholder agriculture,¹⁵ where only 30% of the rural population have access to electricity.



Our first policy recommendation is to support rural micro-grids, by encouraging the involvement of private investors, under nationally regulated tariff frameworks, offering premiums to companies hiring and training local workers. It is important to predict the future energy demand of the newly electrified community, with possible modified electricity demand through improved social and economic conditions. Business models of micro-grid investors and operators should consider such socio-economic drivers. Of course, electricity is not the only vector needed for improving energy access: solar thermal heating technologies for space heating/cooling can also be implemented, where basic needs have already been met.

Our second policy recommendation is to enact regulations that support private investment in local renewable projects and micro-grids, similar to the way feed-in-tariffs have supported large-scale renewable projects. Once a private investor gets involved in a local renewable project, the next 20 years or more become relevant for the business model, and revenues should be secured for this overall time frame. Governments should then protect such investments against expected changes in the national energy infrastructure that might make locally generated electricity uncompetitive with national grid electricity. Subsidies and dispatch priority should be enforced to keep the local generation capacity active until end of life.

A third policy option is to stimulate the demand of users and encourage synchronisation to the PV production profile. Policies that ease the deployment of new appliances (e.g. pay-as-you-go services), or new production activities that act as anchor loads, would be highly beneficial for the economics of the micro-grid.

A fourth policy recommendation is to promote digitalisation to support new billing and payment schemes.

SOCIAL TARIFF AND SUSTAINABLE TRANSPORT POLICIES

Energy bill support and social tariffs providing targeted financial support to help households pay their energy bills also reduce immediate pressures on the energy-poor.

In developed countries, while sustainable transport policies are fostering electrification and new fuels/drivers for mobility, incentive mechanisms and social tariffs for households should also address a new potential economic vulnerability in the related energy service area of transport-mobility.

In order to avoid the exclusion of significant shares of the population from this crucial technological shift and to guarantee a smooth and thorough transition process, the transport revolution should be designed according to the potential and needs of every economic sector and geographical location.

In rural areas where renewable biomass potential will allow it, it would be more appropriate to develop circular solutions like bio-methane in comparison to electricity from renewables. In other contexts, hydroelectricity or electricity from photovoltaic and wind can be the solu-



tion, but infrastructural needs have to be considered. Where the cost of a complete overhaul of oil-based infrastructure and vehicles is prohibitive, the most effective way to accelerate the transition in an economic and just way is to favour the switch to biofuels and green gases that can use the same infrastructures and vehicles.

The SDGs aim to achieve universal access to modern energy for (e.g.) heating-cooking-mobility of poor and developing countries. Our objective is to alleviate economic vulnerability related to a minimum bundle of energy services (including mobility) in developed countries. In this way, all citizens, public institutions, businesses and industries can have access to safe, secure, affordable, reliable and adequate energy services, and can catalyse local economies to create jobs and improve access to public services.

In addition, the development of circular economy solutions in the agriculture sector can provide modern energy for mobility and electricity production from renewables (i.e. biogas¹⁶ and biomethane).

The IEA stated in its 2020 World Energy Outlook Special Report¹⁷, investments made in the wake of COVID-19 “will shape economic and energy infrastructure for decades to come and will almost certainly determine whether the world has a chance of meeting its long-term energy and climate goals”.

SUBSIDISED OR FREE ENERGY SERVICES

There is an urgent need to provide relief for people suffering from energy poverty – in the sense of low-income citizens who are connected but are having difficulty paying their energy bills and/or adequately heating/cooling their home.

G20 governments should each immediately set an initial threshold of a minimum level of energy service that should be available to each household (Kilowatt-hours per month) and a minimum income level for the household, below which it would qualify for a free service. The policy can be set at a multi-national level, but the actual thresholds used for implementation will need to be calibrated to the national characteristics.

Initially, the amount of energy to be provided should be at least what is considered the minimum service level for survival in that country. It would probably be less than 100 kWh per month. This is very low and as governments gain experience and allocate resources, they could raise the threshold to provide better service to more people.

The minimum income threshold is more difficult to determine because the economic conditions of each country are different. It is proposed that the minimum monthly wage of a labourer could be taken as a useful starting point, since it represents an economic reference for each specific country. Such actions could be implemented quite quickly and would provide some immediate relief to people suffering from energy poverty. As countries gain experience, governments can adjust the thresholds (kWh or income or both).



We propose that there should be two primary classifications for ENERGY SERVICES at the residential level:

1. Lifestyle improvement (e.g. lighting, cooking, heating, cooling)
2. Economic improvement (e.g. communication, education, home industry, mobility)

The first is important but it makes no progress towards the independent **economic** sustainability of the household; the second can lead to the household progressing towards being independently **economically** sustainable and reducing the burden on the State.

EXAMPLE SOUTH AFRICA – FREE BASIC ELECTRICITY

In 2000, the South African Government announced its intent to provide free basic services to poor households. In this regard various services, including energy, were identified as basic services to be supported by government programmes with respect to poor households.

Free Basic Electricity (FBE)¹⁸ was launched by the Government in 2003, with the aim of supporting poor households in meeting their basic energy needs. According to the Free Basic Electricity policy,¹⁹ a monthly allocation of between 50kWh and 60kWh per poor household, depending on the area of the municipality they reside in, would be made. This amount of electricity would be enough to provide basic lighting, basic water heating using a kettle, basic ironing, and power for a small television set, radio, and mobile phone.

In terms of the government's policy of providing support to unemployed, low-earning, destitute and elderly people, qualifying households approach their municipalities to register as indigents in order to collect their allocated free basic electricity every month. The qualifying criteria differ between municipalities but in 2020 to qualify for free basic electricity, households must earn R3500 (~ €200) per month or less. The threshold of R3500 is approximately equal to the minimum wage of a labourer.

The cost of these subsidies can be calculated and priced into the overall energy supply tariffs. The amount of energy being proposed is so low that it will have a very small impact on the price of energy for commercial and industrial consumers. Furthermore, if implemented effectively, it should reduce the burden on state-funded healthcare and other social services, with a benefit of reduced taxes.

G20 FORUM ON ENERGY POVERTY

In the context of energy poverty, the role of G20 is to promote dialogue between organisations that wish to combat energy poverty to catalyse the construction of a new governance model based on meaningful and accountable public participation and broad stakeholder engagement, since the aim is to engage with consumers and build awareness and social acceptance of the challenges posed by the energy transition.



The natural forum for this institutional dialogue could be a G20 global annual conference on energy poverty, bringing together key stakeholders and discussing possible definitions and exchanging experiences around the effectiveness of various measures, including best practices.

Cooperation between municipalities, civil society and private sector entities has yielded good results at local level in terms of improving the energy efficiency of dwellings and appliances and increasing awareness of ways to reduce energy bills or develop revenue streams to help combat energy poverty in developing and developed countries.

To allow for strong participation in the energy markets, providing adequate information to vulnerable consumers and energy-poor people is critical. Raising awareness of how to improve affordability of energy services is also important.

The G20 Forum on Energy Poverty could be a key space for the exchange of insights and knowledge relating to energy poverty, while opening multiple network-building opportunities among the G20 countries, but also for the development of proposals for engaging developing countries in combating energy poverty.

The aim of this Forum is to provide recommendations to inform and raise awareness of vulnerable consumers and energy-poor people in the energy sector and to highlight good practices and appropriate non-policy solutions with long-term potential to target vulnerability more effectively.

The G20 Forum on Energy Poverty can play a strong role to identify and disseminate the best regulatory and business model practices that can enable investments in transmission and generation infrastructure, as well as in circular economy solutions related to agriculture and forest management that can provide both renewable energies for a range of energy needs (e.g. electricity, heating and mobility) and economic development of rural areas.



NOTES

¹ Report Electricity Access, Global Commission to End Energy Poverty (2020), <https://www.endenergypoverty.org/>. IRENA (2020), Post-COVID-19 recovery: An agenda for resilience, development and equality, <https://irena.org/publications/2020/Jun/Post-COVID-19-Recovery>

² <https://www.iea.org/news/uneven-progress-on-achieving-access-to-sustainable-energy-for-all>.

³ <https://unric.org/it/agenda-2030>.

⁴ <https://news.un.org/en/story/2020/03/1060612>.

⁵ <https://unctad.org/topic/least-developed-countries/list>.

⁶ <https://www.iea.org/news/uneven-progress-on-achieving-access-to-sustainable-energy-for-all>.

⁷ <https://www.nationalgeographic.com/photography/article/guatemala-cook-stoves>.

⁸ <https://www.rescoop.eu/uploads/rescoop/downloads/Community-Energy-Guide.pdf>.

⁹ <https://www.rescoop.eu/news-and-events/news/rescoop-eu-welcomes-new-member-6> and <https://smart-cities-marketplace.ec.europa.eu/news-and-events/news/2021/first-italian-renewable-energy-community-created-end-2020>.

¹⁰ https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en.

¹¹ <http://www.comune.torino.it/cooperazioneinternazionale/en/nur/progetto.shtml>.

¹² <https://www.iea.org/reports/sdg7-data-and-projections/access-to-electricity>.

¹³ <https://www.seforall.org/publications/state-of-the-global-mini-grids-market-report-2020>.

¹⁴ <https://www.esmap.org/node/56715>.

¹⁵ <http://www.rmi.org/insight/ethiopia-productive-use/>.

¹⁶ https://www.consorziobiogas.it/wp-content/uploads/2019/06/BIOGAS_INFORMA_N29_web.pdf; <https://farmingforfuture.it/wp-content/uploads/2020/11/FarmingForFuture-ExecutiveSummary.pdf> and https://www.consorziobiogas.it/wp-content/uploads/2016/12/biogas-doneright_-ITA.pdf.



¹⁷ <https://www.iea.org/reports/sustainable-recovery>.

¹⁸ <https://www.eskom.co.za/search/Pages/Results.aspx?k=Free Basic Electricity>.

¹⁹ FAQ's on Free Basic Electricity | Powertime.



REFERENCES

Clo' A., L'affievolirsi dei diritti di cittadinanza nell'energia, 5 March 2021 <https://www.rivistaenergia.it/2021/03/laffievolirsi-dei-diritti-di-cittadinanza-nellenergia/>

Beyond Connections: Energy Access Redefined. Energy Sector Management Assistance Program (ESMAP) of the World Bank, 2015, <https://www.esmap.org/node/56715>

Bloombergnef and Sustainable Energy for All (Seforall), *State of the Global Mini-grids Market Report 2020*, 2020 <https://www.seforall.org/publications/state-of-the-global-mini-grids-market-report-2020>

Community Energy, A Practical Guide to Reclaiming Power, October 2020 <https://www.rescoop.eu/uploads/rescoop/downloads/Community-Energy-Guide.pdf>.

Lafakis C., L. Ratz, E. Fazio, and M. Cosma, "The Economic Implications of Climate Change", *Moody's Analytics*, June 2019 <https://www.moodyanalytics.com/-/media/article/2019/economic-implications-of-climate-change.pdf>

Borgstein E., D. MEKONNEN, and K. WADE, *Capturing the Productive Use Dividend. Valuing the Synergies between Rural Electrification and Smallholder Agriculture in Ethiopia*, RMI, 2020, <http://www.rmi.org/insight/ethiopia-productive-use/>.

Bouzarovski S. and H. Thomson, EU Energy Poverty Observatory, *Towards an inclusive*

energy transition in the European Union: Confronting energy poverty amidst a global crisis, *Third pan-EU energy poverty report of the EU Energy Poverty Observatory*, European Commission, June 2020 <https://op.europa.eu/en/publication-detail/-/publication/4a440cf0-b5f5-11ea-bb7a-01aa75ed71a1/language-en>

Marine C., "COVID-19 e povertà energetica: è il momento di un diritto all'energia", *Energia*, 13 maggio 2020 <https://www.rivistaenergia.it/2020/05/covid-19-e-poverta-energetica-e-il-momento-di-un-diritto-allenergia/>

De Maio G., "Climate Change and Decentralized Renewable Energy: The Role of Smart Cities", *European Energy and Environmental Law Review*, vol. 28, Issue 5, 2019, pp. 176-84 <https://kluwerlawonline.com/journalarticle/European+Energy+and+Environmental+Law+Review/28.5/EELR2019035>

EEPAfrica, *Opportunities and Challenges in the Mini-grid Sector in Africa. Lessons Learned from the EEP Portfolio*, EEP and NDF, 2019 https://eepafrica.org/wp-content/uploads/2019/11/EEP_Mini-Grids_Study_DigitalVersion.pdf

Magdalinski E., M. Delair, T. Pellerin-Carli, *Europe needs a political strategy to end energy poverty*, Policy Paper #259, Jacques Delors Institute, February 2021 <https://institutdelors.eu/en/publications/europe-needs-a-political-strategy-to-end-energy-poverty/>



EU, *Clean Energy For All Europeans Package*, https://ec.europa.eu/energy/topics/energy-strategy/clean-energy-all-europeans_en

EU, *First Italian Renewable Energy Community created by the end of 2020*, March 2021 <https://smart-cities-marketplace.ec.europa.eu/news-and-events/news/2021/first-italian-renewable-energy-community-created-end-2020>.

Faiella I. and L. Lavecchia, "Energy Poverty in Italy, *Politica economica*", *il Mulino*, issue 1, 2015, pp. 27-76.

IEA, IRENA, UNSD, World Bank and WHO, *Tracking SDG 7: The Energy Progress Report*, 2019 <https://www.irena.org/media/Files/IRENA/Agency/Publication/2019/May/2019-Tracking-SDG7-Report.pdf>

International Energy Agency (IEA), *Sustainable Recovery: World Energy Outlook Special Report*, 2020 <https://www.iaea.org/reports/sustainable-recovery>

International Energy Agency (IEA), *World Energy Outlook 2020*, October 2020, <https://www.iaea.org/reports/world-energy-outlook-2020>.

International Energy Agency (IEA), *Uneven progress on achieving access to sustainable energy for all*, 3 April 2017 <https://www.iaea.org/news/uneven-progress-on-achieving-access-to-sustainable-energy-for-all>.

International Energy Agency (IEA), *SDG7: Data and Projections, Access to affordable, reliable, sustainable and modern energy for all*, October 2020 <https://www.iaea.org/reports/sdg7-data-and-projections/access-to-electricity>.

[iaea.org/reports/sdg7-data-and-projections/access-to-electricity](https://www.iaea.org/reports/sdg7-data-and-projections/access-to-electricity).

IIED, "Off-grid productivity: powering universal energy access", *IIED Briefing*, 2019 <https://pubs.iied.org/pdfs/17492IIED.pdf>

IRENA, *Post-COVID-19 recovery: An agenda for resilience, development and equality*, 2020 <https://irena.org/publications/2020/Jun/Post-COVID-19-Recovery>

Global Commission to End Energy Poverty, *2020 Report - Electricity Access*, 2020, <https://www.endenergypoverty.org/>

Green K.P., J. Taylor, I. Herzog, and M. Palacios, *Energy costs and canadian households: how much are we spending?*, the Fraser Institute, March 2016 <https://www.fraserinstitute.org/sites/default/files/energy-costs-and-canadian-households.pdf>

National Energy Regulator of South Africa (NERSA), *Growth and Equity (Fridge)*, Final Report, April 2010 <https://www.eskom.co.za/search/Pages/Results.aspx?k=Free Basic Electricity>

National Energy Regulator of South Africa (NERSA), *Report on the National Free Basic Electricity for 2015-2016*, NERSA-report-on-the-National-Free-Basic-Electricity-for-2015-2016-financial-year.pdf

Nijhuis M., "Three Billion People Cook Over Open Fires - With Deadly Consequences", *National Geographic*, 14 August 2017 <https://www.nationalgeographic.com/photography/article/guatemala-cook-stoves>

Pye S., A. Dobbins, C. Baffert, J. Brajković, I. Grgurev, R. De Miglio, and P. Deane,



Energy poverty and vulnerable consumers in the energy sector across the EU: analysis of policies and measures, Policy Report, Insight E, May 2015 www.insight-energy.org.

Renewable Energy Community, *Energy City Hall of the City of Magliano Alpi* <https://cermaglianoalpi.it/>

Rescoop.EU, Rescoop.Eu Welcomes New Member, March 2021 <https://www.rescoop.eu/news-and-events/news/rescoop-eu-welcomes-new-member-6>

Rowlingson K., *Does Income Inequality Cause Health and Social Problems?*, Joseph Rowntree Foundation Report, 2011 <https://www.jrf.org.uk/report/does->

[income-inequality-cause-health-and-social-problems.](https://www.jrf.org.uk/report/does-income-inequality-cause-health-and-social-problems)

UN, “\$2.5 trillion COVID-19 rescue package needed for world’s emerging economies”, *UNNews Global perspective Human stories*, 30 March 2020 <https://news.un.org/en/story/2020/03/1060612>.

World Bank, *Mini Grids for Half a Billion People: Market Outlook and Handbook for Decision Makers* (Executive Summary), 2019 <https://openknowledge.worldbank.org/bitstream/handle/10986/31926/Mini-Grids-for-Half-a-Billion-People-Market-Outlook-and-Handbook-for-Decision-Makers-Executive-Summary>



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