THE IMPACT OF RECENT CRISIS ON ENERGY ACCESS AND AFFORDABILITY

The energy crisis and pandemic set back the goal of universal access to affordable, reliable and modern energy services to a degree that is unparalleled in recent decades. Policies implemented by states have mitigated the impact on consumers, but have not prevented the consequent rise in energy inequality. This is particularly notable in the rural–urban divide. Cities have a key role to play in driving housing renovation and energy efficiency.

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The COVID-19 pandemic and the energy crisis have reversed some of the progress made in universal energy access and worsened global energy poverty. For the first time in decades, the number of people without access to electricity increase in 2022, especially in sub-Saharan Africa, where 80% of these people are located. The International Energy Agency (IEA) estimates that nearly 75 million people who recently gained access to electricity are likely to become unable to pay for it, while 100 million people now using clean cooking methods are likely to revert to traditional biomass (e.g. wood, charcoal or animal waste). These are setbacks to two indicators (SDG 7.1) measuring universal access to affordable, reliable and modern energy services, that are part of the Sustainable Development Goals (SDGs) of the United Nations by 2030. Other indicators addressing energy access challenges are SDG 7.2 on access to renewable energy and 7.3 on improving energy efficiency.

In Europe, like most developed countries, decades of reliable supply meant energy access issues tend to be measured solely in terms of affordability. Thus, most definitions of energy poverty refer to the difficulties households face meeting their basic energy needs due to insufficient income,

high energy prices and the poor energy efficiency of housing. The supply of electricity, natural gas and home air conditioning tend to figure among these needs, but transport-related expenses are often excluded, along with the difficulties businesses and SMEs face in accessing energy.

2022: Energy shortages, rising prices and reduced ability to pay

The lower supply of Russian natural gas to Europe and rising global energy prices laid bare the urgent need to avoid energy rationing and ensure affordable access to energy. European countries, especially those most dependent on imported Russian natural gas, took aggressive measures to secure supplies from elsewhere, mainly liquefied natural gas (LNG) from the United States, Norway, Qatar and Australia. This European hoarding of LNG transported by ship, coupled with Russia's inability to redirect its exports through pipelines, led to worldwide natural gas shortages, rising global prices and energy shortages in less developed countries that were unable to compete on price to attract supplies. In emerging countries like Pakistan there were even cases of energy companies reneging on long-term supply contracts in order to seek more lucrative markets.

THE CONSEQUENCES OF THE WAR IN UKRAINE, AT FIRST, RESULTED IN WORLDWIDE NATURAL GAS SHORTAGES, RISING GLOBAL PRICES, AND ENERGY SHORTAGES IN LESS DEVELOPED COUNTRIES THAT WERE UNABLE TO COMPETE ON PRICE TO ATTRACT SUPPLIES.

The energy price rises occurred in the midst of the third-sharpest economic slowdown in 50 years and the third-fastest rise in inflation since the 1980s. According to the International Labour Organization (ILO), this resulted in negative real wage growth at global level for the first time this century, which translated into a sharp loss of purchasing power and greater difficulty paying for energy inputs. This loss was particularly pronounced for middle-class and low-income households, which spend a higher proportion of their disposable income on essential goods and services. These items also underwent higher price increases than other non-essential goods.

Globally, households spend about 7% of their income on energy, with half of that going on heating. But this figure masks the greater weight of advanced economies to this average, as well as other inequalities. In the most developed countries, households in the bottom 20% income bracket consume just a third of the energy of the richest households (the 20% with the highest incomes), while in emerging and developing

economies the poorest households consume up to nine times less energy than the richest households, despite spending a much higher proportion of their income paying for it. These differences, estimated in the World Energy Outlook (2022), might be much higher if transport energy consumption (e.g. petrol) were included. Specifically, single-parent families, the unemployed, pensioners, families with dependent children and families with lower education levels suffer higher incidences of energy poverty, as do households in rural and semi-urban areas.

As well as income, part of the explanation for these differences is that lower income households tend to live in less energy-efficient buildings that require higher energy consumption to maintain the same level of comfort. In emerging countries, lower income households also tend to use lower quality and more polluting fuels at home (e.g. charcoal or liquefied petroleum gas), which are also more likely to experience greater price volatility. Finally, it should be noted that energy consumption and deprivation differ greatly from place to place. In developed countries, the demand for heating is eight times higher than for cooling, with only 700 cooling degree days (CDDs) on average.[1] Emerging countries, on the other hand, experience 2,150 CDDs per year and yet only 30% of households have access to air conditioning. In India, only 11% of households have access to air conditioning and in Africa only 7%, according to IEA data.

As if these impacts were not enough, the economic crisis and inflation have caused investment in electrification to slow down, especially in less developed countries whose currencies depreciated sharply. The alternative solution of promoting self-consumption in homes has thus been undermined by the cost of solar panels rising between 30% and 40% since 2020. This has made it particularly difficult to improve access to energy in rural areas.

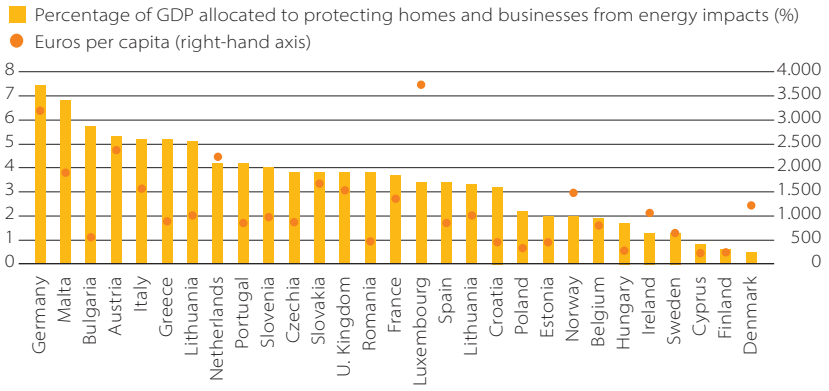
The role of the state

The impact of the energy crisis on households and businesses has differed widely according to states' financial capacity. The think tank Bruegel estimates that, from the start of the energy crisis in September 2021 to January 2023, European countries allocated €758 billion to protecting consumers from rising energy costs. According to their

1. CDD is a measure of how warm a given location is by comparing the temperature to a standard base temperature. The IEA calculates the CDD using a base temperature of 18 °C and incorporates the impact of humidity.

calculations, the EU has allocated €646 billion, 40% of that (€265 billion) from Germany, which has spent 7.4% of its GDP (€3,180 per inhabitant) to shield its economy from the energy impact. By comparison, EU countries on average spent "only" 3.5% of GDP (€1,161 per inhabitant) (see Figure 1).

Figure 1. European government support to households and businesses to mitigate the energy crisis



Source: Bruegel (2023)

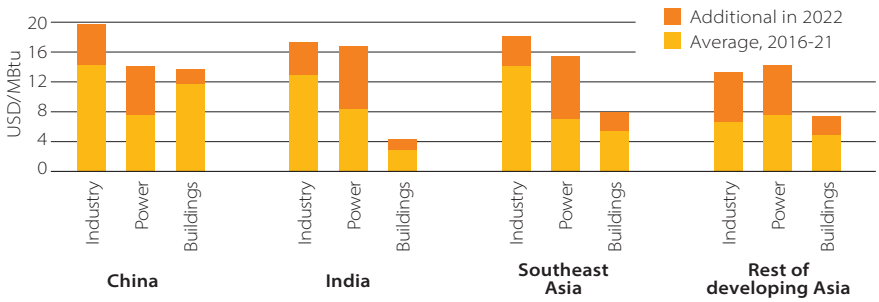
It is thus very important to distinguish between the impact and changes in the wholesale energy price and the retail price paid by consumers, since the theoretical price of electricity differs from the price actually paid after taking into account taxes, tolls and discounts and other types of subsidies. It is also worth noting that most of the measures adopted by European governments have been of a generic nature (e.g. reductions to VAT and specific taxes) with only 18% taking into account household income levels.

In general, emerging countries have had less fiscal capacity to intervene in the market. Perhaps because of this reduced fiscal space, the measures adopted have focused more on households (note in Figure 2 how the orange bar, which shows the price increase, is smaller for buildings, e.g. housing, than other sectors of the economy). Among these interventions are caps on tariff increases and subsidies on bills for low-income households.

Another protective measure most countries applied is the use of legislation and regulated tariffs that particularly protect vulnerable households. In Spain these interventions included the Tariff of Last Resort (TUR, in Spanish) to pay for natural gas and the Voluntary Price for the Small Consumer (PVPC, in Spanish) for electricity; however, paradoxically, in this crisis the PVPC has performed

worse than free market tariffs. In the event of supply cuts, households and small businesses in cities would be the last consumers to be affected by restrictions on energy services – due to the impossibility of distinguishing the destination of supply– along with basic services such as hospitals.

Figure 2. End-user natural gas prices by economic sector in Asia



Note: US Dollar (USD) per million British thermal units (MBtu)
Source: World Energy Outlook (2022)

Finally, it is also worth highlighting that most governments worked to reduce energy demand. In Europe, energy demand contracted dramatically due to favourable weather and demand destruction, above all in the energy-intensive industrial sector. On the other hand, fossil fuel energy production was reactivated and investments in renewables and energy efficiency increased, with the aim of improving the ability to cope with similar crises in the future.

The urban dimension

Around the world, large differences exist between access in rural and urban areas to affordable, reliable and modern energy services (SDG 7.1). Since 2016 electricity access in urban areas has virtually stagnated at around 97% of the population (compared to 83% in rural areas), although this ratio drops to 78% for urban areas in Sub-Saharan Africa, according to the latest available data. Although urban electrification is only increasing by 0.2% per year (compared to 1.1% in rural areas), rapid urbanisation means that in absolute terms more people are gaining access to electricity in urban areas than rural. At the present rate, the target of universal energy access by 2030 in the SDGs is unlikely to be achieved. According to the IEA, fewer than half of the countries will reach this target on time. On the other hand, poor access to electricity limits households' ability to improve their living conditions, access quality public services (e.g. healthcare) and lift

themselves out of poverty. At the urban level, this contributes to 14% of the global population still lacking access to clean cooking methods.

Regarding the impact of the crisis in Europe, households in rural areas have seen their bills increase more than households in semi-urban and urban areas, as rural households spend more on heating and on private transport due to their greater mobility needs and the shortage of alternatives. After the interventions at different levels of the state are taken into account, the impacts can vary greatly depending on what measures are applied in each territory. In the case of Spain, a report by the Basque Centre for Climate Change shows that households in rural areas and municipalities with under 10,000 inhabitants have benefited most from the measures adopted, particularly when fuels policies are included, as inhabitants of rural areas tend to use cars more.

LARGE DIFFERENCES EXIST BETWEEN ACCESS IN RURAL AND URBAN AREAS TO AFFORDABLE, RELIABLE AND MODERN ENERGY SERVICES. DURING THIS CRISIS, CITIES TOOK MEASURES LIKE IMPROVING THE EFFICIENCY OF PUBLIC LIGHTING, INCENTIVISING PUBLIC TRANSPORT AND INFORMING ABOUT ENERGY SAVING MEASURES.

Cities also had a crucial role to play in reducing energy consumption by driving housing renovation and improving energy efficiency. During this crisis, cities took measures like adjusting the temperatures of public buildings, improving the efficiency of public lighting, incentivising public transport and informing about energy saving measures. The impact of these will be more visible over the medium term, as three out of four buildings in Europe have low energy efficiency ratings and air conditioning in residential buildings accounts for over half of urban natural gas consumption. Fortunately, in the end, it has not been necessary to activate municipal emergency plans for blackouts, which may include meeting points and evacuation procedures, warming centres in major public spaces and capping energy consumption in buildings and urban settings.

The energy crisis and the pandemic have set back the goal of achieving universal access to affordable, reliable and modern energy services to a degree that is unparalleled in recent decades. State policies have been instrumental in mitigating the impact on consumers, but the financial effort involved is not sustainable over time. Clearly, affordability and a just energy transition are vital to preventing a negative social backlash that could hinder climate ambition.