

Tackling Energy Poverty the Cleantech Way

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The issue of China bankrolling coal power projects has come under a lot of scrutiny in recent years. China has been funding these projects for over a decade, and as of 2019, the country had financed over 200 coal projects in more than 30 countries as part of its Belt and Road Initiative (BRI).

China's funding has been called dirty and understandably so; climate change is a nightmare and there's pressure to reduce greenhouse gas emissions. Yet there's also another big issue – energy poverty.

Yes, the predominance of China's fossil fuel projects is a problem, but the reality is that hundreds of millions of households lack access to modern energy services. If you take a simplistic view of the entire situation, China is just trying to help meet the high demand for energy.

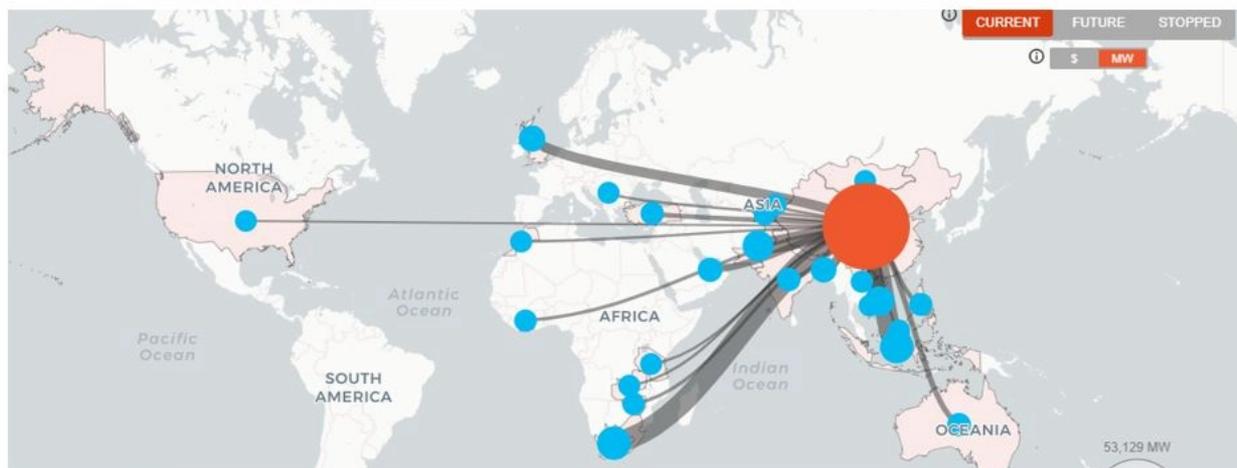
Why Cutting Demand for Fossil Fuel Energy is Hard

China's investment is highly concentrated in Africa, South East Asia, and South Asia – three regions where a disproportionate number of people live in energy poverty. Meanwhile, there's a notable lack of this “dirty” Chinese energy in most developed parts of the world. A lot of people in these regions have access to energy (including clean, renewable energy) so the Chinese hold is not so big there.

People may be aware of the downside of coal as a power source, but when it comes down to a choice between having no power at all and taking the coal route, many will choose the latter. From living in areas with no power at all to grappling with regular power cuts for extended periods and living in regions without any infrastructure to support clean energy, many people don't have the luxury to choose their power source.

Tackling energy poverty while still being mindful of environmental impact requires finding solutions that address both the urgent need for energy and the need for sustainability. To do this, we first need to identify the problems with the current system.

China's Global Investments in Coal



The Problems with the Current Energy Setup

Here's a rundown of some of the major problems.

1. The true cost of Chinese financing

In addition to contributing to greenhouse gas emissions, China's coal projects are also called dirty because they apparently often involve opaque contracts that trap low-income countries in debt. There's even concern among Western countries that the financing is China's strategic attempt at gaining economic and political influence in the African and Asian regions.

Bottom line – the more debt low-income countries get into, the harder it is to tackle energy poverty.

2. The lack of global energy finance

The countries most affected by energy poverty are also the same regions most affected by general poverty. These low-income countries often rely on aid from developed nations, but the developed countries have not stepped up their energy finance, green or not.

On the other hand, China is playing a dominant role in global energy finance. For example, China's biggest policy banks invested close to \$200 billion into overseas energy sectors between 2007 and 2016. This investment is as much as all the energy funding availed by all the biggest Western-backed multilateral development banks, according to the American research group, [Brookings Institute](#).

3. The lack of infrastructure

This problem is closely linked to the lack of energy finance. The infrastructure investment needed to support the curbing of energy poverty is beyond the reach of many low-income countries. For example, [Wood Mackenzie projected](#) that the US will need around \$4.5 trillion to convert to 100% renewable energy. While this is possible for the US, such amounts are simply not an option for developing nations.

4. Renewable energy sources are expensive

Much discussion around curbing energy poverty revolves around renewable energy sources as a solution. However, for many people, phasing out coal and shifting to renewable energy means an increase in utility bills, and consequently, an increase in energy poverty.

Although the cost of renewable energy is falling, there's still a big affordability gap. A lot of people still regard renewable energy sources as expensive and inaccessible, prompting the need for more public financing to subsidise energy access. Without this, renewable energy will remain out of reach for many.

5. Renewable energy has its limitations

Considerable progress has been made towards embracing renewables such as wave, wind and solar. But while it's theoretically plausible for renewable energy sources to provide all of the world's power requirements, this idea is a bit impractical and perhaps even unprofitable.

For instance, climate change is causing extreme weather conditions that can affect certain power sources. The recent cold wave in Texas is proof – solar panels were covered in snow and wind turbines froze, leaving millions of people without power. If we are going to deal with energy poverty, we'll need to develop sustainable power sources that complement renewable energy sources and scale as needed.

Solutions to Energy Poverty

It looks like world leaders are starting to take a more serious stance against energy poverty and China's financing of fossil fuels.

For example, developed countries are discussing energy projects in Asia and Africa that are funded by both private and public investors. The US has even proposed setting up infrastructure to rival the BRI. China is also amping up its promises to scale down coal project financing and it may start funding green infrastructure projects in the near future.

Energy funding is likely to become more available, but even with funding, efficiency is key to curbing energy poverty. Without efficient, sustainable solutions that can be scaled to help many people, the funding won't go far. This brings us to cleantech, a solution that can help make clean energy available in a way that's efficient and sustainable.

How Cleantech Can Address Energy Poverty

Cleantech is showing a lot of potential in terms of providing scalable, sustainable energy at a reasonable cost. The following are some examples of cleantech at work.

Flexible alternating current transmission systems (FACTS) technology

In Colombia, cleantech is making the transition to sustainable energy cost efficient, thus helping to curb energy poverty in this South American country. Using flexible alternating current transmission systems (FACTS) technology, which manages grid power flow, one of Colombia's main utility companies has managed to improve energy access without investing in new infrastructure.

The technology is providing environmental benefits, improving system reliability and lowering operational costs, thereby reducing customers' energy bills. Leveraging this technology to optimise existing energy infrastructure can go a long way in reducing energy poverty.

Fusion energy

Fusion energy has lots of potential to provide safe and sustainable electrical power, especially considering that hydrogen is found abundantly across the globe. But nuclear fission reactors are complicated and costly, hence fusion energy is not as big as it could potentially be. Fortunately, cleantech companies are stepping up their efforts to make fusion energy more widely available.

For example, Tokamak Energy is looking to provide “commercial fusion energy that is globally deployable,” through its spherical tokamaks and HTS **magnet technology**. These tokamaks can be installed in decommissioned coal power plants, eliminating the need for new infrastructure, grid connections, and a lot of installation time.

With funding and the right systems, fusion energy will make it easier to scale energy production and go a long way in curbing energy poverty.

Decentralised energy solutions

By combining distribution networks, digital highways, partnerships and clean technology, Bboxx is decentralising energy solutions and helping utility companies scale and reach their customers more efficiently. Decentralising power solutions makes it easier for people in remote locations to access clean and safe energy. Since a significant number of people who are affected by energy poverty live in remote locations, the ability to service these areas will help reduce the poverty.

These are just a few examples of how cleantech is proving to be a scalable, cost-effective and efficient solution for tackling energy poverty. Cleantech is the present and the future; we need to start harnessing its power to make a change.

The Way Forward

Going forward, we need to rethink how we deal with energy poverty. Renewable energy is great, but we don't have to ignore other viable energy solutions. Energy poverty is not pretty and climate change is not making things any easier, so it's probably best to make the most of all the available options.

Already, some accessible and clean off-grid technologies are being used in Africa and Asia, but we need to think more about long-term investments that can make it easier to develop and expand the tech. Funding needs to be channelled into the right projects more effectively and subsidies should be made available to help keep energy accessible to everyone.

This is a lot of work, but a lot can be done with collective action and coordination.