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The is set to run on Sunday at 3 p.m. EDT on *The Hill*

This will be the link:

<http://thehill.com/blogs/congress-blog/energy-environment/303392-coal-makes-global-poverty-worse>

## *Coal makes global poverty worse*

On the eve of the Marrakech Climate Conference (COP22) the global energy and development community has an opportunity to embrace and launch a new era of clean energy for development.

We all need energy. Without affordable, reliable, safe sources of electricity which can be easily accessed, people remain stuck in poverty. There aren't lights in homes for children to do homework nor energy for economic opportunity and advancement. Health clinics don't have refrigerators for storing store vaccines. The ambitions of would-be entrepreneurs are stifled by an electricity-free environment.

Over a billion people lack such access to electricity. But progress over the past two decades mean very simply that coal isn't the cheapest or most reliable source of energy. Building coal-fired power stations and supplying the energy generated isn't even the simplest option. And coal is responsible for hundreds of thousands of premature deaths around the world each year. The open secret is that the key to ending poverty isn't coal; it's renewable energy.

Coal has been found out. Even its advocates acknowledge the devastation it causes to health and the destruction it wreaks on the environment. Yet they still pretend that coal lifts "entire populations from poverty". It doesn't. They argue that it's a sustainable solution to the problem of energy poverty. It isn't.

The problem is that out of date, simplistic, thinking still makes a case for coal. Instead, let's take a quick history lesson. Change is slow, and sadly even today coal has been cited as the magic fuel which powered poverty reduction in China over recent decades. The reality is that two-thirds of the people who escaped extreme poverty over recent decades in China did so through reforms to agriculture and the wider economy between 1981 and 1987 – before industrialization and the large-scale growth of coal. Even accounting for the expansion of coal in the 1990s, it wasn't until after the millennium – when most of the poverty eradication in China had already occurred – that there was the real explosion of coal consumption.

The same is true in southeast Asia, in the Balkans and in Est Africa – all locations where my laboratory, RAEL (link to: <http://rael.berkeley.edu>) is active in partnership with local organizations -- where the pace of renewable energy deployment has been slower, but the same economic and health fundamentals apply. The work my laboratory has done documents clear evidence of the superiority of distributed clean energy in each region.

Coal's role in lifting people out of poverty continues to be exaggerated. But to access energy, people have to be able to reach it. Some 84% of those living in energy poverty reside in rural areas. Extending grids to these communities in the near term is a pipedream punctured by price and political will (or lack thereof). The 'fortunate' few who live closer to infrastructure can rarely afford connection costs or are thwarted from accessing power by sector mismanagement. Coal does not fix these problems but an integrated strategy that extends grids where cost-effective and invests in mini-grids and individual family energy solutions is.

The health implications of coal are enormous. Indoor pollution from unventilated cooking with fuelwood and charcoal is the fourth-largest cause of mortality worldwide and has a disproportionate impact on women and girls. The coal industry's consumption and pollution of water resources devastates communities and smallholder agriculture

pletion of water resources devastates communities and undermines agriculture.

And coal contributes to that elephant in the room: climate change. Scientists worldwide and experts in international development from organizations such as CAFOD, Christian Aid and the Overseas Development Institute and my laboratory have detailed how the changing climate is pushing people further into poverty in a new report, *Beyond Coal* [link to <https://www.odi.org/publications/10589-beyond-coal-scaling-clean-energy-fight-global-poverty>]. Only one-third of planned coal-fired power stations would surpass the 2C warming limit established by the Paris Agreement. The world can't burn coal without frying the planet.

There are better options for lifting people out of poverty. In the main, these are mini-grids or off-grid renewable energy solutions such as solar power.

The cost of renewable energy has plummeted – by 80% since 2009 for solar power – making it much cheaper than fuels, such as kerosene, relied on by people who lack more reliable energy. These costs continue to fall as investment and capacity increase. It has been acknowledged from South Africa to India that, besides the price of pollution, renewable energy is cheaper than importing coal or building new plants. It's also quicker to set up off-grid or mini-grid systems powered by the sun or the wind than to construct coal power stations.

Once in place, the operating costs of renewable energy are almost non-existent. When the sun isn't shining or the wind blowing, power sources such as hydropower, geothermal or natural gas provide a better back-up than the inefficiency of ramping up and down of coal plants. This alleged Achilles' heel is diminishing with smarter management of grids and improvements in energy storage capacity and competitiveness.

Coal lobbyists' last trump card is jobs. The sector has been a significant employer since industrialization and is embedded into the culture of many communities. This should not be dismissed. Indeed, this is why support must be given to the renewable energy industry, which already employs more people worldwide than coal (9.4 million people compared to 7 million). My laboratory has documented the jobs benefits of energy efficiency and renewable energy in our clean jobs project (<https://rael.berkeley.edu/project/green-jobs/>).

The question is whether we work towards a just transition in the workforce or await the inevitable market-induced catastrophe for communities as coal becomes consigned to history. This is why governments must stop bailing coal out with taxpayers' money. Renewable energy offers the road out of poverty. Coal condemns people to it.

***Daniel Kammen is a Professor of Energy at University of California, Berkeley, founding director of the Renewable and Appropriate Energy Laboratory, and Science Envoy for the U. S. State Department.***

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