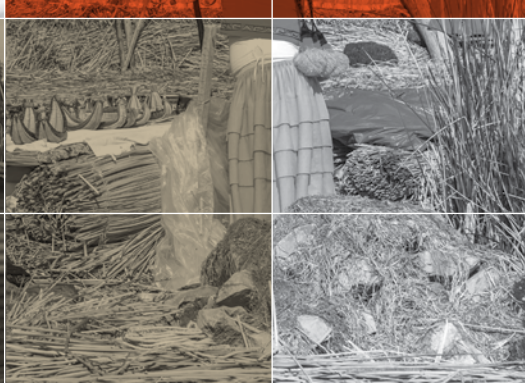
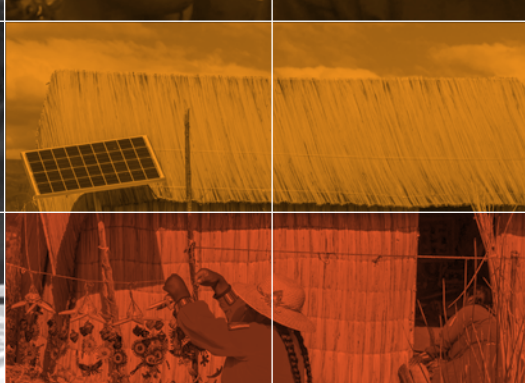
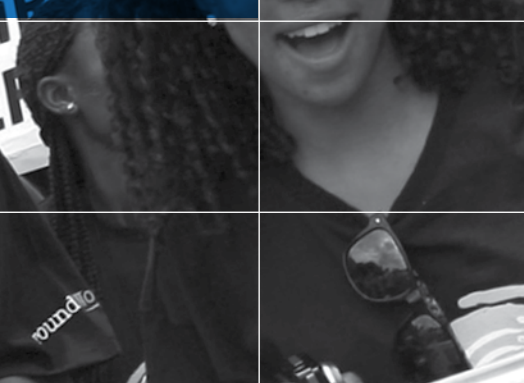
 **AN ENERGY  
REVOLUTION  
IS POSSIBLE**



THE WEALTH OF  
THE RICHEST  
**782**  
PEOPLE  
COULD POWER  
HALF THE WORLD  
WITH 100%  
RENEWABLE  
ENERGY  
BY 2030



### An energy revolution is possible

The 782 wealthiest people on the planet (many CEOs of major corporations) hold personal fortunes of around \$5,149 billion<sup>1</sup>. Friends of the Earth International calculates that this sum could power Africa, Latin America and much of Asia with 100% renewable energy by 2030.

And the wealth of the richest 53 people globally could power the whole of Africa with 100% renewable energy by 2030.

We are not advocating that these 782 people give all their money specifically to fund renewable energy in the global South. However, this briefing clearly illustrates that the finance for an energy revolution certainly exists. The political will to drive the transformation is, on the other hand, shockingly absent. This is revealed in the weak pledges of emission reductions submitted by countries, especially the richest developed countries, ahead of the Paris climate change negotiations. It is a gross injustice that 0.00001% of the global population hold the kind of wealth that could halt a climate disaster, but instead often exacerbate the problem.

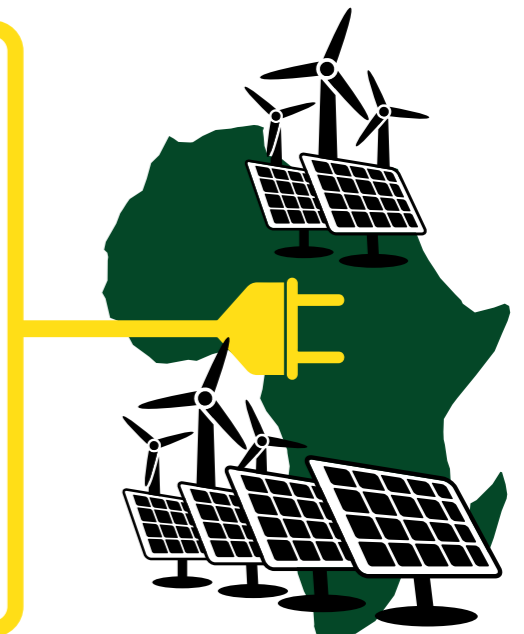
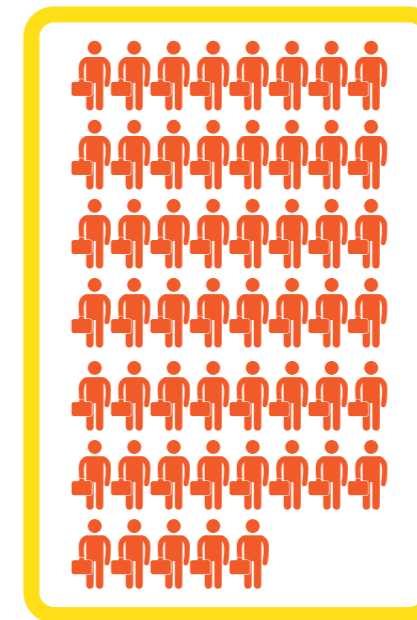
### Climate change and inequality

**Business-as-usual is no longer an option. After twenty years of insufficient action on climate, carbon emissions continue to rise. Our world faces two destructive and entwined crises – growing inequality and climate change. The time has come to address them together.**

We live in a world of unacceptable and growing inequality where nearly 1.3 billion people – or a fifth of the world's population – lack access to electricity and 2.6 billion people lack access to clean cooking fuels<sup>2</sup>. Yet major corporations and the wealthiest 1% continue to pollute without limit.

Climate change is already happening – wreaking devastation on communities and ecosystems around the world. Without urgent and drastic action to reduce global greenhouse gas emissions, we face far worse runaway climate change, with impacts that would dramatically overshadow anything we see today. Exceeding climate tipping points will mean greater hunger, drought, floods, and weather extremes, as well as mass extinctions and the forced migration of millions of people. Climate change especially hits the poorest and most vulnerable people, who didn't create this crisis in the first place.

THE WEALTH OF  
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THE WEALTH OF  
THE RICHEST  
**32**  
PEOPLE  
COULD POWER  
LATIN AMERICA  
WITH 100%  
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ENERGY  
BY 2030

Energy production from fossil fuels is one of the main contributors to sky-high levels of carbon emissions and tackling it is central to stopping a climate disaster. To create a climate-safe, just and sustainable world it is crucial that we completely transform the way we produce, distribute and consume energy. Friends of the Earth International believes that the transformation of the energy system is connected to the transformation of economic structures and the need to dismantle corporate power, which underpins the exploitative global economy.

This report is a wake up call to policy makers, NGOs and governments alike. It is not a policy position on the expropriation of wealth, nor a technical blueprint for a renewable energy future. Friends of the Earth International believes that the energy transformation will be and must be complex. It involves not just changing the energy source from fossil fuels to renewable energy, but a deeper transformation including democratic ownership of renewable energy resources. This is a call to work together on new and innovative ways to address the crises threatening our planet and its people.

Our findings demonstrate the urgent need to address inequality in order to create a climate safe future, while establishing that a 100% renewable energy revolution is financially well within reach. Certainly the finance to bring about an energy revolution exists. The political will does not.

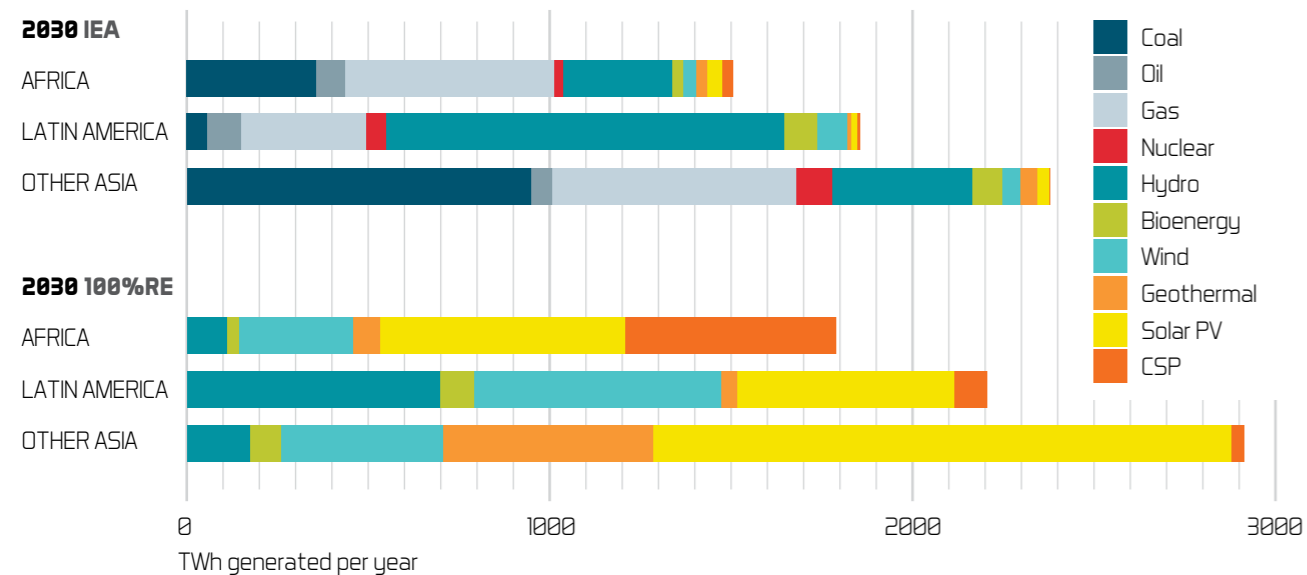
## Essential principles for 100% Renewable Energy

Friends of the Earth International calculated the costs of meeting the International Energy Agency's predicted energy demand with 100% renewable energy to certain parts of the developing world. While the technical feasibility of this vision is important, it is imperative that renewable energy policy is guided by certain principles that guarantee a just and sustainable energy system for all.

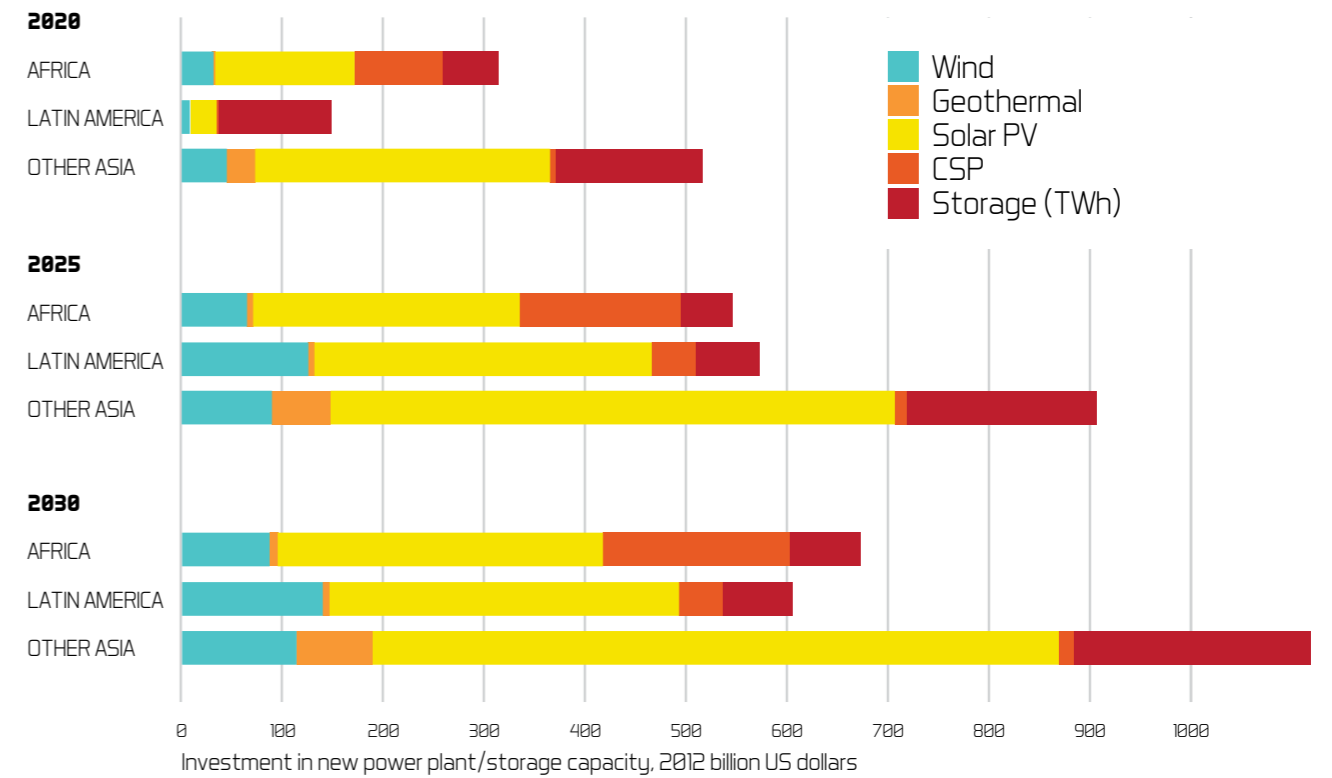
Our definition of 100% renewable energy is one that adheres to the following principles<sup>3</sup>:

- provides energy access for all as a basic human right
- under direct democratic control and governed in the public interest
- based on locally-appropriate technologies
- reduces energy consumption and waste
- prioritises energy efficiency where appropriate
- ensures communities rights to free, prior and informed consent and does not lead to further human rights violations such as land grabbing.

## Renewable Energy generation prediction<sup>4</sup>



## Investment required in additional renewable power plant capacity<sup>5</sup>



## A price tag for 100% Renewable Energy

Under the International Energy Agency's (IEA) business-as-usual projections, globally \$20 trillion will be spent on building power plants and transmission infrastructure, but only 12% of electricity would be provided by solar and wind power. However fossil and nuclear power plants have significant fuel costs<sup>6</sup>. Greenpeace's 2015 Energy [R]evolution analysis update, also based on IEA demand projections, shows that switching to 100% renewable electricity globally by 2050 would save \$42 trillion in fuel costs alone<sup>7</sup>. Their analysis confirmed that over the long run, the extra upfront investment costs of renewable power generation will be paid back by savings in fuel costs.

But we ask how much extra investment would be required to generate 100% of electricity with renewables, in regions of the developing world most affected by and least responsible for climate change? Our result, for achieving this goal by 2030, is \$5,148 billion.

The calculations for this analysis use projections of electricity demand from the International Energy Agency's World Energy Outlook 2014<sup>8</sup> (WEO2014). The regions selected – Latin America, Africa and 'Other Asia' (including only non-OECD countries and excluding India and China) are based on the WEO2014 regional classifications.

While there are significant wealth disparities between and within these regions, on average they represent many of the poorest regions of the world.

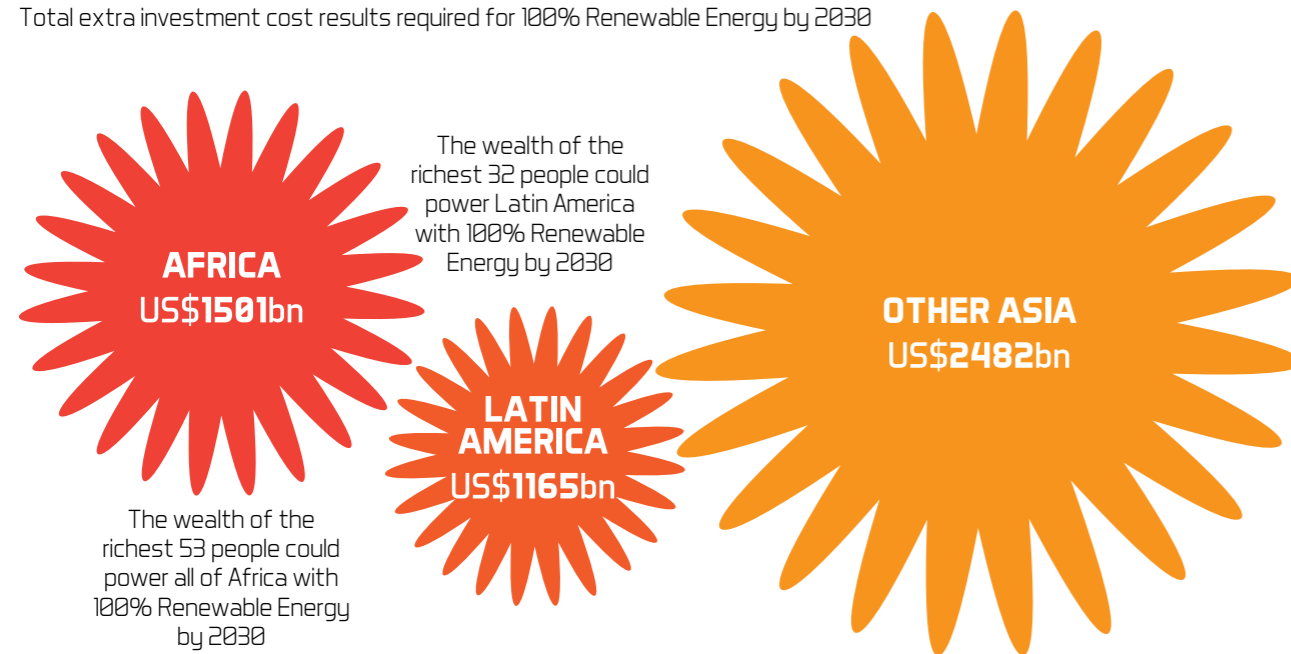
The World Energy Outlook projects electricity demand for all regions of the world based on conventional expectations of population growth and economic activity. It predicts a dramatic rise in energy demand and supply for regions in the global south, yet per-capita energy use for 2030 still have some parts of the world remaining at relatively lower levels of energy usage. Any other modelling was beyond the scope of this study and IEA projections are the internationally-recognised benchmark. We reiterate that a 100% renewable energy future must prioritize access to energy for all, community or social control and ensure the rights of communities. Furthermore, this report aims to highlight global inequality.

Based on the WEO2014 projected demand, we have calculated how much renewable power infrastructure would be necessary to meet this demand, taking into account strategies such as energy storage and spare capacity for excess generation that would be required to create a reliable renewable power grid and multiple micro-grids. We also recognise that many parts of the developing world may and should leapfrog large transmission grids altogether, opting for energy independence with local renewable generation and storage in micro-grids, particularly in rural areas and on small islands.



## Total Renewable Energy costings

Total extra investment cost results required for 100% Renewable Energy by 2030



**100% renewable electricity for most of the developing world and over half the global population by 2030 could be achieved with an investment equal to the wealth currently held by the 782 richest people on the planet - 0.00001% of the global population.**

We used the IEA's projections of performance (annual capacity factor) and costs for the various types of renewable power sources in each region of the world to calculate the required investment in renewable power infrastructure. We calculated the additional investment required over and above the renewable generation already included in WEO2014 projections.

The energy mix we present is based on regional generation capacity factors, however it only represents one possible scenario. It should be the right of communities, and in some cases, governments and other stakeholders to determine their own locally appropriate renewable energy mix. In most areas of the global south we have looked at, there are excellent renewable energy resources. Solar and wind are likely to be the dominant renewable power source. In each region, we modelled that between 62-88% of energy could come from variable renewables coupled with storage:

- Wind turbines
- Solar photovoltaic panels
- Concentrating solar thermal power with integrated thermal energy storage
- Other forms of short-term energy storage such as batteries and pumped hydro

The remaining energy can be provided by renewable sources that can be more easily dispatched when needed, to ensure reliable grid operation even during times of low wind and solar output:

- Geothermal in areas with good, accessible geothermal resources
- Hydro dams that already exist – but no new hydro dams built from today due to environmental and social impacts
- Bioenergy in minimal amounts (2-4%), the same levels of generation as projected in WEO2014.

Transmission costs are not accounted for, as projecting future transmission needs is beyond the scope of this analysis, and it is difficult to project how much they would differ from business-as-usual. Extending the electricity network will need to occur under a fossil or renewable future, considering the current setup leaves 1.3 billion people without energy access, and developing countries will invest in new transmission to new power plants and to provide power to areas that currently do not have any electricity grid connections. But some areas may leapfrog the grid entirely.

Although we have listed several energy sources which are renewable and could be part of a sustainable and just energy future, we reiterate that our planet and its people need a much bigger transformation than merely switching energy sources. We need an energy revolution.



Wealth of the world's 10 richest people<sup>9</sup>  
2014 in \$US billions

Bill Gates	76	Charles Koch	40
Carlos Slim Helu & family	72	David Koch	40
Amancio Ortega	64	Sheldon Adelson	38
Warren Buffett	58.2	Christy Walton & family	36.7
Larry Ellison	48	Jim Walton	34.7

## Some recommendations for kickstarting an energy system that serves people and the planet

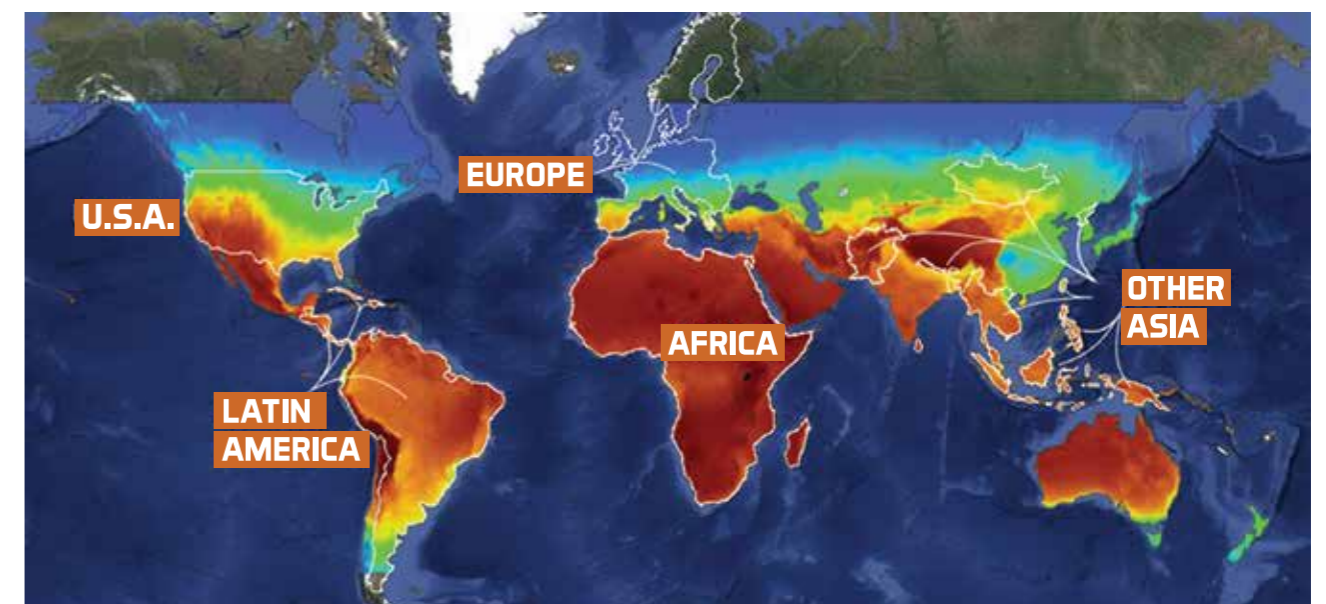
**Climate change is a symptom of the dysfunction of the current system, especially the way that we produce, distribute and consume energy. An energy system that fails to provide for billions of people, is clearly a major cause of catastrophic climate change and sky-high levels of inequality, all at the same time.**

This report does not suggest that the wealth of these particular individuals can or should be directly used to drive the needed energy transformation. It is merely a shocking and stark reminder that the finance for an energy transformation is certainly available.

However, there are some specific ways that could be used to kick-start this transformation:

- End current fossil fuel subsidies and redirect funding to community and socially controlled renewable energy.
- End new dirty and harmful energy projects and plan a phase out of existing destructive energy sources.
- Reduce energy dependence and consumption especially in developed countries.
- Transform transport and prioritise strong, diversified, local economies.
- Increase energy efficiency and regulate energy-intensive industries.
- Ensure just transition for affected workers and their families.
- Developed country governments must make the most drastic cuts in their carbon emissions.
- Developed country governments must repay their climate debt for using far more than their fair share of atmospheric space by providing money - without conditions - to drive the energy transformation in developing countries.
- Implement measures such as a global feed-in tariff, tax on all financial transactions and other policies to finance and facilitate community and socially/ democratically owned and controlled renewable energy in the global south.

## Global solar map



## References

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- 2 *World Energy Outlook 2014* (2014), International Energy Agency, [www.worldenergyoutlook.org/publications/weo-2014](http://www.worldenergyoutlook.org/publications/weo-2014), accessed 26 May 2015
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**Front cover photos L to R, top to bottom** Sheila Menon / Marco Cadena - COP16 Climate Dialogue March, 2010, Cancun  
Babawale Obayanju - COP20 March for System Change And Not Climate Change, 2014, Lima  
FOEI - Wind farm  
SunJack, Wikimedia Commons - Rural African villagers holding portable solar charger  
Luka Tomac - Global Day of Action, 2011, Durban  
Abri le Roux - New solar heating system, South Africa  
Shutterstock - Reed huts with solar panel, Peru  
Asian Development Bank - Off grid solar networks in India

**Other photos** page 3 Babawale Obayanju - COP20 March for System Change And Not Climate Change, 2014, Lima  
page 4 Sheila Menon / Marco Cadena - COP16 Climate Dialogue March, 2010, Cancun  
**Solar map** page 7 GNU Image Program

This report is the summary of research carried out by Pat Hearps for Friends of the Earth International.

The full report with details of how we made our calculations is available on our website at [www.foei.org](http://www.foei.org)  
with hard copies available by request.

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