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# Steps to an Energy [R]evolution

## Solar power



[www.greenpeace.org.au/energyrevolution](http://www.greenpeace.org.au/energyrevolution)

### Concentrating Solar Power: solar energy 24/7

The technical breakthroughs took place years ago, but in the last few years, Concentrating Solar Power (CSP) has taken off as a major player. CSP is a renewable energy technology able to generate large-scale electricity, with or without the sun shining. By using technology similar to conventional electricity and storage methods that keep the power station running overnight, CSP has proven itself ready to replace greenhouse-polluting coal.

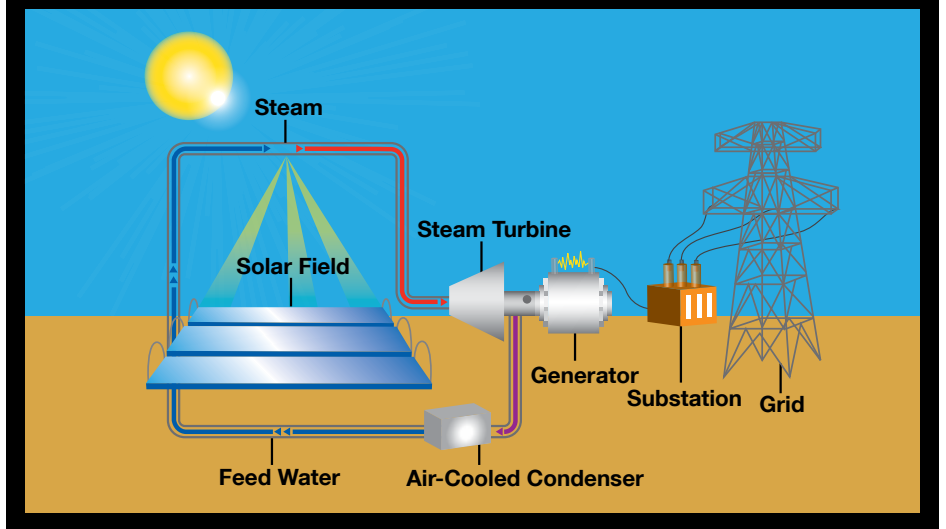
### CSP – how it works:

Large-scale electricity is usually generated by boiling water, which creates steam and spins a turbine. Instead of burning massive amounts of greenhouse-polluting coal, CSP uses mirrors to focus the sun's rays onto a focal point. That point then becomes extremely hot – between 500-2000°C, and water is boiled either directly, or through fluid exchanges.

There are several types of CSP technologies, which either concentrate the sun's rays onto a single point source, or onto tubes, which transfer the heat to a larger turbine.

At night, or if the sun is blocked by clouds, heat storage allows the power plant to keep operating – full capacity can be maintained for over seven hours on plants built in the last two years and plants are under construction that will have up to 18 hours of storage capacity. One of the most advanced CSP stations in Spain can run 24/7, supplying enough electricity to power over 100,000 homes with no drop in output.

### Diagram of how Solar Power works



### CSP around the world

There are currently 560 Megawatts of CSP stations in operation around the world, with more than twice that number under construction. That's enough to power about half a million homes.

The leading countries in CSP are Spain, where feed-in tariff policies to develop the industry have seen several commercial CSP plants being built, and the United States, where companies are developing their renewable energy power plants in regions such as California. Spain is planning to build another 850 Megawatts of CSP in 2010 and, by 2017, another 17,000 Megawatts will be online between these two CSP leaders.

▶▶ You can now visit solar power stations at night and watch them working.

▶▶ CSP is already working at a scale that can replace coal-fired electricity plants.

▶▶ The Energy Revolution scenario shows that by 2020, Concentrating Solar Power could provide 15% of Australia's electricity, providing over 12,000 Australian clean energy jobs.

## The potential for CSP in Australia

Australia has some of the best solar resources in the world. In fact, a 50km by 50km square in the outback receives enough solar energy to power the country. We also have the luxury of choice as to where our CSP stations would be placed. Modelling commissioned by Greenpeace has revealed it is technically and physically possible that by 2020, all of Australia's greenhouse-polluting power stations could be replaced with a combination of seven renewable energy technologies and energy efficiency. CSP's role in Australia's Energy [R]evolution could be massive, providing 15% of Australia's power demand by 2020, creating over 12,000 jobs and reducing our annual emissions by 40 million tonnes.



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The Solar Flagships program, announced in the May 2009 Federal Budget, intends to deliver 1000 Megawatts of large-scale solar, roughly half of which would be concentrating solar power. The Energy [R]evolution shows that about twenty times the amount of CSP in the solar flagships program could be built by 2020. Considering that the first round of applications, which will approve only two projects, received fifty-two applications, it is clear there is a lot of untapped potential.

## How can we deliver CSP in Australia

Australia urgently needs policies that revolutionise how we produce and use energy, moving us to zero-emission and energy efficient power as soon as possible. Governments must introduce policies that ensure no new coal-fired electricity plants are built, and the renewable energy industry is able to meet its full potential.

The most proven policy for renewable energy industry development is the feed-in tariff, which provides a financial incentive to generators of renewable-energy. It is because of a generous feed-in tariff that Spain has quickly become a world-leader in CSP.

Australia needs to introduce a feed-in tariff that ensures all renewable energy technologies meet their technical potential. Governments also need to massively expand their investment in early CSP projects, to get the industry off to the best possible start in Australia.

## You can make the Energy [R]evolution happen!

We need Australians to use their power, as consumers, voters and active members of the community to help make the Energy [R]evolution a reality. The planet is teetering on the verge of triggering catastrophic climate change but we have the solutions to prevent it. You can:

- ▶ **Stay informed** – visit the Greenpeace website: [www.greenpeace.org.au/climate](http://www.greenpeace.org.au/climate) to sign up for our monthly emails or learn more about climate and energy issues.
- ▶ **Contact your local MP** – use your power as a voter and make sure your local politicians are aware that this issue matters to you.
- ▶ **Put your savings to work** – like all working Australians, you've got savings in a superannuation fund. Unfortunately, the chances are that your hard-earned savings have been used to invest in risky, unsustainable, coal-fired power stations. Super funds have a legal obligation to consider inquiries from members – so write to yours and ask them to stop investing in coal and start investing in renewables.