



# The future is bright! How to invest in the solar energy revolution

**ASX: TANN**

## Betashares Solar ETF

### Introducing the Betashares Solar ETF (ASX: TANN)

Reflecting both the urgent need to deal with climate change and rapidly improving cost competitiveness, the demand for solar powered energy solutions is set to grow strongly in coming decades.

To tap into this growth potential, Betashares is pleased to introduce the Betashares Solar ETF (ASX: TANN). TANN will offer investors exposure to a portfolio of leading companies that are making solar energy more accessible, reliable and a part of the globe's power grid.

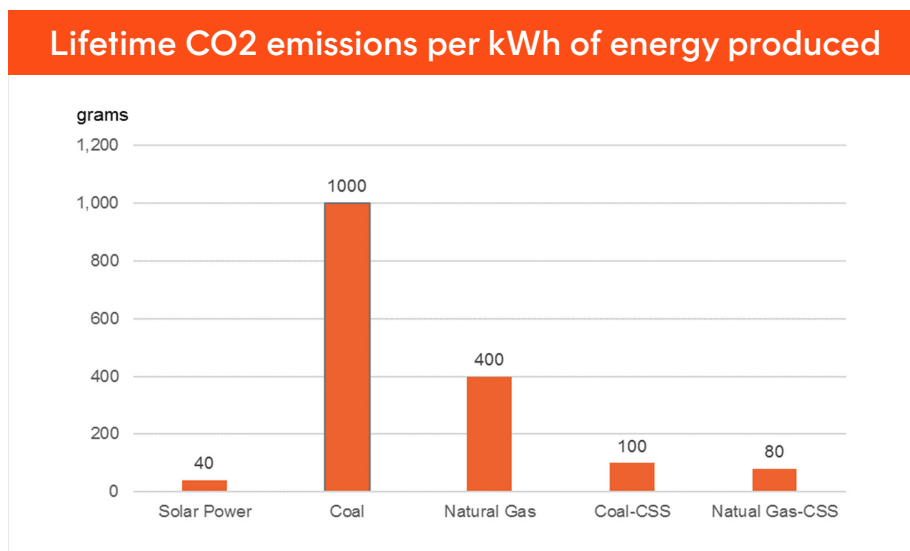
### Solar as a solution to climate change

From an environmental perspective, one of the key benefits of solar powered energy is that it produces very little CO<sub>2</sub> emissions. Accordingly, the shift to solar powered energy over coming decades is seen as critically important to global efforts to limit CO<sub>2</sub> carbon emissions and hence global warming.

According to the United Nations Intergovernmental Panel on Climate Change (IPCC), the world needs to almost halve net CO<sub>2</sub> emissions from 2010 levels by 2030, and to eliminate them by 2050 if we're to have any chance of limiting global warming to a possibly manageable 1.5°C by 2100.



Solar will be key in this quest. Due to the need to build, deliver and install solar panels, it's not strictly correct that solar energy produces no CO<sub>2</sub> emissions. But according to scientific estimates, solar's carbon footprint is vastly smaller than traditional fossil fuel-based sources of energy. For example, solar energy is estimated to produce the life-time equivalent of 40 grams of CO<sub>2</sub> emissions per kilowatt hour (kWh) of energy produced.



Source: Solar Bay, US national Renewable Energy Laboratory.

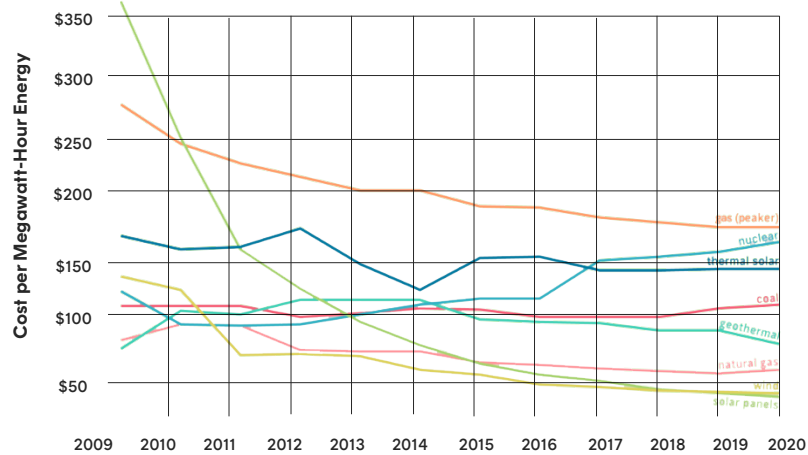
By comparison, a coal-fired power station produces 1,000 grams of CO<sub>2</sub> emissions over its lifetime per kWh of energy produced – or 25 times more carbon pushed into the atmosphere. Even with associated carbon capture or storage (CSS) technologies, coal-produced energy is estimated at 2.5 times more carbon intensive than solar. Solar also produces a significantly smaller carbon footprint than natural gas, even if the latter benefitted from CSS technologies.

## Solar's rapidly improving cost competitiveness

Even without its environmental benefits, the adoption of solar powered energy would likely also increase over time due to significant technological advances that are making it a much more cost competitive source of energy.

By some estimates, the cost to produce solar power from newly installed systems has already declined by around 90% over the past decade (from \$US 359 per megawatt hour in 2009 to around \$US 40 more recently). These days, newly installed systems for most other energy sources - including coal, gas, and nuclear power – would cost even more to produce similar levels of energy.

## \$US cost per MWh of energy produced by energy source

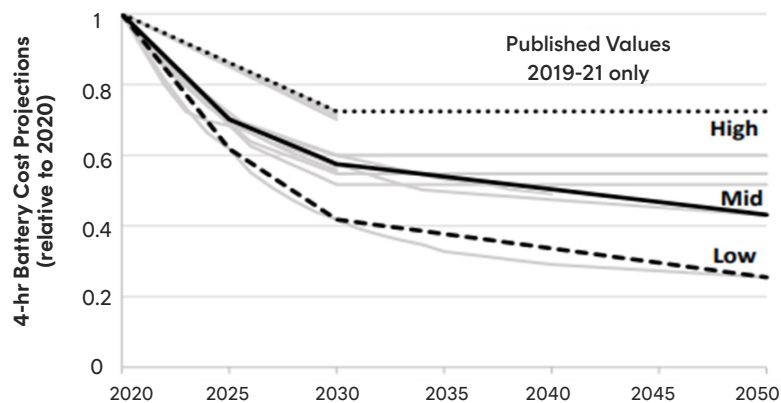


Source: Lazard's Levelized Cost of Energy Analysis, 2019.

Not only are solar panels getting cheaper, so are the batteries used to store this energy if it can't immediately be used. In time, many experts anticipate solar energy systems and associated battery storage will enable solar energy to provide a critical source of 'base load' power i.e. a storable source of energy that can be switched on or off as required, that to date has typically only been available through fossil fuel sources such as coal and gas.

According to some studies, the cost of battery storage could decline by around a further 40% by 2030, and by 60% by 2050<sup>1</sup>.

## Battery cost projections for 4-hour lithium-ion systems, with values relative to 2020



Source: US National Renewable Energy Laboratory. Actual outcomes may differ materially from projections.

<sup>1</sup> Cost Projections for Utility-Scale Battery Storage: 2021 Update. US National Renewable Energy Laboratory.





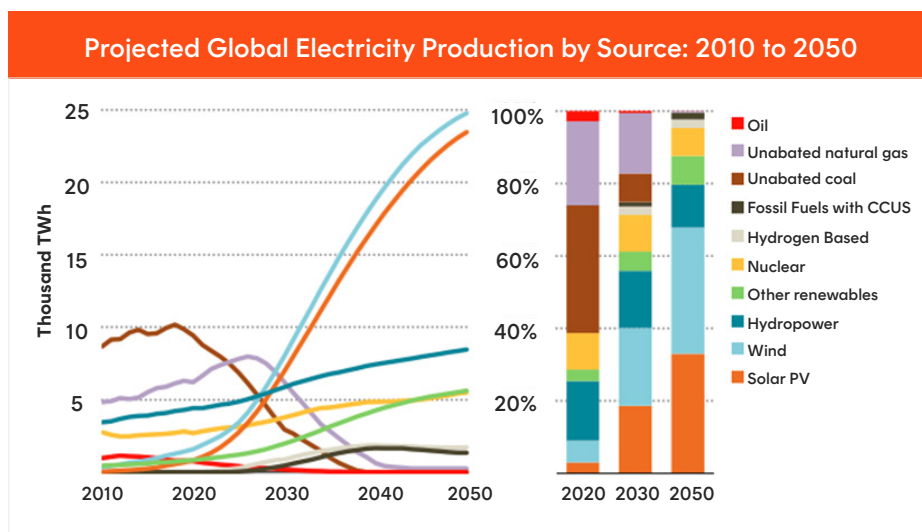


## Strong growth in solar power expected

Reflecting both environmental need and improved cost competitiveness, solar power is anticipated to grow strongly as a source of global energy in coming decades.

According to the International Energy Agency (IEA), solar power is projected to account for more than half of the increase in global power capacity between 2020 and 2026<sup>2</sup>. The IEA also estimates the number of households worldwide with rooftop solar panels will increase from 25 million in 2020 to 240 million by 2025, a near tenfold increase<sup>3</sup>. The share of electricity produced by renewable sources is forecast to grow from 30% in 2020 to almost 90% by 2050, the vast bulk of which will be equally shared between wind and solar power.

Indeed, solar's contribution to global electricity production is estimated to grow from around 3% of total production in 2020, to just over 30% by 2050.



<sup>2</sup> IEA Report, Renewables 2021.

<sup>3</sup> IEA, Net-Zero by 2050, May 2021

# Betashares Solar ETF (ASX: TANN)

To tap into the growth potential of solar energy systems, Betashares Solar ETF (ASX: TANN) has been designed to provide exposure to some of the world's leading companies in the solar energy space.

TANN will reduce stock specific and geographic risk compared to investing in individual solar energy companies - an important consideration given the risks associated with individual projects in the industry.

To be eligible for inclusion in the index that TANN aims to track, companies must derive at least 5% of revenue from solar-related business operations, in a range of relevant areas such as:

- ▶ Manufacturing of photovoltaic, solar cells, and systems
- ▶ Producers of solar power generation, equipment, and components
- ▶ Providers of solar power system installation, development, and financing, and
- ▶ Manufacturing of solar-powered charging and energy storage systems.

To ensure sufficient exposure to more 'pure play' solar companies, the Index attaches a higher weight to companies with more than 60% of revenue from solar-related business activities<sup>4</sup>. In addition, companies that form part of TANN's Index must also not be involved in activities related to controversial weapons, conventional weapons, tobacco or thermal coal.

As evident in the table below, the index of companies which TANN aims to track currently includes some of the world's largest solar energy system providers for both residential and commercial use.

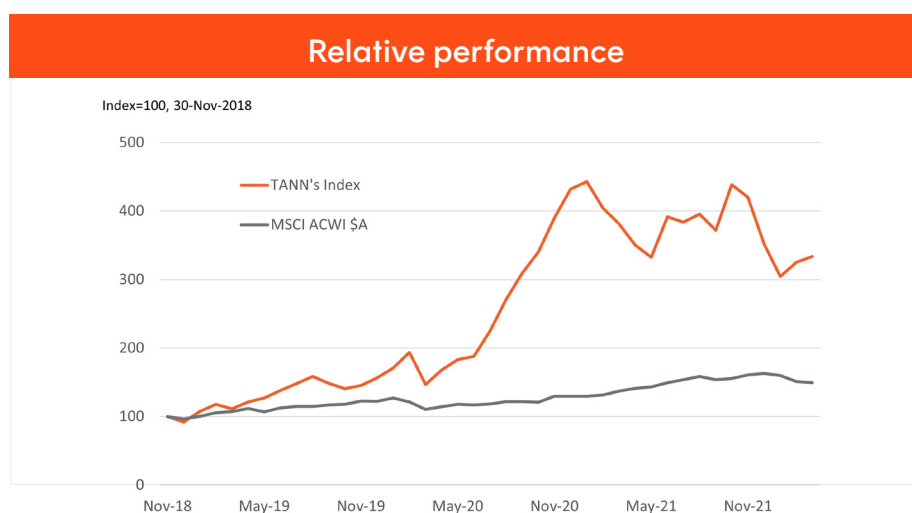
Top 10 constituents: 30 <sup>th</sup> May 2022	
Security	Weight
Xinyi Solar Holdings Ltd	8.2%
Enphase Energy Inc	8.0%
Sunrun Inc	7.9%
Solaredge Technologies Inc	7.4%
First Solar Inc	7.4%
Daqo New Energy Corp-Adr	5.5%
Hannon Armstrong Sustainable Infrastructure Capital Inc	4.8%
Jinkosolar Holding Co-Adr	4.5%
Encavis AG	3.8%
Atlantica Sustainable Infrastructure Plc	3.1%

<sup>4</sup> Further details regarding index construction can be found in TANN's product disclosure statement.





Supported by the strong take-up in solar energy systems in recent years, the Index which TANN aims to track has delivered solid returns since inception in late-2018. Between 7 November 2018 and 31 May 2022, the Index (after deducting TANN's management costs of 0.69% p.a.) returned 39.8% p.a. in \$A terms, compared with \$A returns from the MSCI All-Country World Equity Index of 11.8%. Of course, TANN's returns can be expected to be more volatile than a broad global equity exposure, given its concentration in the solar sector.



Source: Bloomberg. TANN's inception date was 8 June 2022. Chart shows Index performance (not actual fund performance) after deducting TANN's management costs of 0.69% p.a. to illustrate the longer-term historical performance of solar energy companies captured by the Index's methodology. Past performance is not an indicator of future performance of index or ETF. You cannot invest directly in an index.



## Summary

Due to the need to tackle climate change, along with sharply improving cost competitiveness in its own right, the uptake of solar energy systems has grown strongly in recent years and is projected to continue to grow solidly in the decades to come.

Combined with improvement in battery storage technology, solar energy offers the promise of providing a critical source of base load power in the decades ahead. Solar energy's share of total global electricity production is forecast to grow tenfold, from 3% to 30% by 2050.

With this in mind, Betashares is pleased to offer TANN, which aims to provide a cost-effective and easily accessible way to gain exposure to some of the global companies leading the unfolding solar power energy revolution.

There are risks associated with investment in the Fund, including market risk, sector concentration risk, international investment risk and regulatory risk. The Fund's returns can be expected to be more volatile (i.e. vary up and down) than a broad global shares exposure, given its more concentrated exposure. The Fund should only be considered as a component of a diversified portfolio. For more information on risks and other features of the Fund, please see the Target Market Determination (TMD) and Product Disclosure Statement, available at [www.betashares.com.au](http://www.betashares.com.au).

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