**If you’re a regular viewer of this channel, you’ll no doubt have heard me going on about COP26 in several previous videos. For those of you who don’t yet have it on your radar, it’s the annual International Climate Conference that takes place every year. You know, its the one that achieved the Paris Accord in 2015 that Donald Trump unilaterally and uniquely removed his country from, and that Joe Biden thankfully re-joined on his first day in office. This year’s conference is taking place in Glasgow in November. The reason I mention it so often is that COP26 could turn out to be a genuinely make or break year for the future of international cooperation on climate change mitigation. You see in 2013 it was agreed that each of the one hundred and ninety six countries in the club should be allowed to set their own targets for reducing their greenhouse gas emissions. The system was called Nationally Determined Contributions, or NDCs. What we needed in time for the 2015 COP21 meeting in Paris was a set of NDCs that would show a glide path for the world to reduce its emissions enough for us to keep atmospheric warming to well below two degrees Celsius above pre-industrial levels. And it was agreed that those NDC’s would be reviewed after five years, which would have been 2020. What we got was a slightly half-hearted set of measures that when combined together, set us on a path to more than three degrees of warming. Which by the way would be really, really bad.**

**Then we all set about comprehensively failing to implement even those measures in the ensuing years, to the extent that we’re currently on track for more like 5 degrees of warming by the end of the century, which coincidentally is a**

**similar temperature increase to the one that pulled the entire planet out of the last ice age, so hopefully that gives you an idea of just how much of an effect five degrees Celsius can have on our planet’s balancing systems.**

**So, we’ve got this gap between the current NDCs and the two degrees target, and an even bigger gap between the two degrees target and current reality. So at COP 26 this November all one hundred and ninety six countries will be called upon to bring very robustly increased NDCs that genuinely begin to address the issue within the next nine years, which is the amount of time we’ve now got left before our current global way of life uses up all of the so-called carbon budget to remain below two degrees.**

**One of the initiatives being strongly considered, and actually implemented in some parts of the world, is something called Global Energy Interconnection or GEI. It combines clean renewable energy with global interconnectivity via ultra-high voltage transmission lines.**

**We’ve already got those lines bringing power from continental Europe to the UK. China also employs high voltage transmission from its power generating regions to its populated regions, and it fully intends to expand these lines as part of its monumental Belt & Road initiative.**

**Now, I think it’s fair to say that China’s moves don’t sit comfortably with their equally populous and mighty neighbour, India. And now Narendra Modi has announced plans for his own global outreach program which he’s given the catchy title of One Sun, One World, One Grid.**

**So, what’s his plan, and will it work?**

**Hello and welcome to Just Have a Think**

**It was at the International Solar Alliance meeting in 2018 that Prime Minister** [**Narendra Modi**](https://www.business-standard.com/topic/narendra-modi)  **first mentioned his grand plan of One Sun, One World, One Grid.**

**And it turned out that it had the somewhat unfortunate acronym, of OSOWOG**

**Probably, probably use the full title…mostly…**

**Anyway, his idea is to connect as many as 140 countries through a common grid that will be used to transfer solar power. The sun is always shining somewhere on the planet, so in theory if you can harness that energy and send it instantaneously from sunny daytime regions to other parts of the world where it’s night time, then you’ve got yourself a grid that is permanently on. It’s a bit like what the industry bods refer to as baseload power. Modi’s plan is for India to be the central hub of an electrical web that would be divided into two zones – one for the far East including countries like Myanmar, Vietnam, Thailand, Laos and Cambodia, and another zone going West towards the Middle East and Africa.**

**The implementation would take place in three phases. Initially India would build out interconnectors from its grid to share renewable resources with Middle Eastern, South Asian and South-East Asian countries. Then in the second phase all those countries would get connected up to a network of renewable energy in Africa. The final phase would add more interconnectors to take the supply even further afield, possibly even into Europe.**

**It’s a pretty ambitious plan and India already face some significant competition.**

**North African countries Morocco and Tunisia, neither of whom have much in the way of fossil fuel resources, but both of whom have shed loads of sunshine, are already implementing major renewable energy infrastructure onto their grids.**

**This is the Noor Power plant in the Agadir region of Morocco and it’s the largest of its kind in the world. A vast array of mirrors focusses the suns heat on a single point where the energy is captured in molten salt that can then provide a steady stream of power throughout the night. It’s part of a wider complex that when completed will develop five hundred megawatts of capacity.**

**A briefing paper published just last week by the European Council on Foreign Relations urges the EU to enthusiastically embrace these countries with whom Europe has very strong historical ties, and an agreement on the construction of a power interconnector running beneath the straits of Gibraltar between Morocco and Spain, has already been signed by those two countries.**

**But the briefing paper warns that CHINA is also investing massively in African energy infrastructure and has a great deal of expertise and manufacturing economy of scale in renewable technologies which makes them an economically attractive partner for African nations, many of whom are devoid of reliable electricity supply and who therefore represent a ready market for electricity infrastructure and renewable energy development.**

**So, it’s become a bit of a strategic focal point in the race for dominance in the global energy marketplace. And most people agree that whoever controls the energy, controls the economy. No doubt that was a big factor in Prime Minister Modi’s decision to stretch his new initiative as far as that vast continent.**

**Australia are also in the game, at least in terms of South East Asia. Sun Cable is developing the Australia-ASEAN Power Link or AAPL. It’s a ten-gigawatt capacity, thirty gigawatt hour grid link that’ll supply renewable electricity from Australia to Singapore when it’s completed in 2027, and then later to Indonesia too.**

**The project will integrate three technology groups - the world’s largest battery storage facility, the world’s largest solar farm, and a 4,500km high voltage direct current, or HVDC, transmission system running from the facility in the Northern Territory of Australia under the water to Singapore and eventually to Indonesia.**

**In his 2020** [**Independence Day**](https://www.business-standard.com/about/when-is-independence-day) **speech Modi ALSO suggested an increased partnership with the ASEAN nations, stating “For India, neighbours are not only ones we share a border with, but also those with whom we share emotions and values.” [] “ASEAN nations don’t just have a great partnership with us today, but have shared values and cultures for centuries,”**

**In October 2020 the Indian Ministry of New and Renewable Energy, or MNRE, put out a request for consulting companies to execute on Modi’s scheme. The member states of the International Solar Alliance appear to be on board, as is The World Bank, which provided a six hundred and twenty-five million dollar concessional loan to the Bank of India to finance grid-connected rooftop solar PV projects.**

**It’s clearly a very smart piece of geopolitics by Modi, who is determined not to let China gain global supremacy with its Belt and Road initiative. But there are some who criticise the concept of interconnectivity and suggest that the rapid rise in availability of energy storage and the corresponding drop in their costs means that a better strategy may be for each nation to focus on their own grids and just build out loads of renewables combined with mega storage capacity.**

**They argue that the One Sun One World One Grid initiative ignores several key factors. Firstly, they say, if you have batteries, you don’t need to follow the sun along any latitude, or worry about day and night. Local microgrids also avoid the gargantuan capital expenditures that are often a barrier to entry into the energy market. In their scenario anyone who can install rooftop solar or set up a microgrid can be in the electricity business.  It would, they say, be the death of “economies of scale” and the rise of the “economics of large numbers.”**

**Local generation, local consumption, and local autonomy would be in the public interest, they argue, and entrepreneurs should be encouraged to drive the implementation. Smaller local grids would certainly reduce national level vulnerability to accidents, weather, and cyber-attacks, and they would, more or less, completely negate the transmission losses that long distance lines are constantly battling against.**

**This article by Mahesh Bhave, published on the website Renewable energy world, suggests that a kind of “federation of microgrids” – within and across state and national borders – could then come into being organically based on ground level economics.**

**But the developers of the continental interconnection scheme argue that, right now energy storage only provides grid balancing, or at best overnight power. That’s fine if the sun shines and the wind blows all day every day to charge up those batteries, but it doesn’t does it? And in the darker winter months further north and south, you either need a much longer-term storage solution, or you need to be getting your daily supply of electricity from somewhere else. It’s one of the central points that the fossil fuel and nuclear industries use to argue that renewables can never fully take over the grid and that we’ll always need to be burning something nasty like coal or gas or uranium to produce steam to drive generators that keep the lights on 24/7.**

**And that’s why proponents of continental smart grids and ultra-high voltage interconnection lines believe it is still the best way forward. They point out that from East to West you get the benefit of the sun 24 hours a day, and by installing north-south interconnectors that cross the equator you could even overcome the problem of seasonality.**

**It’s very early days for Prime Minister Modi’s grand plan, and it remains to be seen whether he can get a foothold into the international arena quickly enough to avoid being crowded out by the other players. I’m sure it’ll be yet another topic of fierce debate at that all important conference up in Scotland later this year.**

**If you’ve got a view on how we should develop the world’s energy supply or if you’re in India and have direct knowledge of the situation of the ground there, then dive down to the comments section below and leave your thoughts there.**

**That’s it for this week though.**

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**As always, thanks very much for watching, have a great week, and remember to Just Have a Think.
See you next week**