



Australian Citizens Party

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MEDIA RELEASE

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China set to test world-first molten salt nuclear reactor

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Construction of China's experimental Thorium Molten Salt Reactor (TMSR) is scheduled to be complete this month, and a test run could start as early as September. This technology is set to revolutionise nuclear power for the future by using thorium rather than the traditional uranium fuel used in commercial reactors today. The inherently safe design of the TMSR is a selling point, and since the reactor does not require water for cooling, the government plans to build several commercial TMSRs in the deserts and plains of central and western China. On 19 July 2021 the [South China Morning Post reported](#) that construction work on the first commercial TMSR reactor should be completed by 2030.

In January 2011 the China Academy of Sciences (CAS) launched a program of research and development for TMSRs, otherwise known as liquid fluoride thorium reactors (LFTRs). The Chinese government approved the TMSR prototype reactor that year to be built in Wuwei, a desert city in Gansu province. Being the world's largest national program for TMSRs, China looks to obtain full intellectual property rights on the technology. The timeline for full commercialisation of the technology was originally 25 years, but this has been dramatically shortened, assisted by an ambitious commitment to technological progress by the Chinese government.

The leading scientist in China's TMSR program is Jiang Mianheng, son of the former Chinese president and Communist Party general secretary Jiang Zemin. Jiang Mianheng is currently the president of ShanghaiTech University, and has served as Vice President of the CAS. He received his doctorate in electrical engineering from Drexel University in the United States and despite current US-China tensions, the [World Nuclear Association states](#) that the US Department of Energy is collaborating with the CAS on the TMSR program.

Other international collaboration with China's TMSR program has come from Australia. One of the nation's chief advocates for nuclear power, Dr Adrian (Adi) Paterson, former CEO of the Australian Nuclear Science and Technology Organisation (ANSTO), headed discussions with China's Shanghai Institute of Applied Physics which saw Australia [sign a memorandum of understanding \(MOU\)](#) for collaboration on the next generation nuclear reactors. The MOU was signed in 2012 and renewed in 2019. The world desperately needs more of such win-win initiatives in technological development!

"China may also consider building these reactors for some countries that have signed up to the Belt and Road Initiative because, unlike uranium, thorium cannot be used to make nuclear weapons", reported the *South China Morning Post* article. And by lending a hand to assist other nations in economic development, China will be seen to be a good neighbour. Assisting other nations with nuclear power will in turn provide China with new markets in the future, as living standards improve in the developing world.

The TMSR is a small reactor, with a capacity of around 100 megawatts (MW). Such reactors are known as "small modular reactors" (SMRs), because new modules can be added as more electricity supply is required. By contrast, most large coal-fired and nuclear power stations have a capacity of about 1,000 MW. SMRs are suitable for regional areas with a lower population. As populations and the economy grow new modules are easily added.

"Small-scale reactors have significant advantages in terms of efficiency, flexibility and economy. They can play a key role in the future transition to clean energy. It is expected that small-scale reactors will be widely deployed in the next few years", Professor Yan Rui and colleagues at the Shanghai Institute of Applied Physics wrote in a paper published in the Chinese journal *Nuclear Techniques* in June 2021. "A molten salt reactor has the advantage of being multipurpose, small in size and highly flexible. It is as easy to design as a small-scale reactor. In recent years, the potential of small-scale molten salt reactors has caught international attention." A commercial reactor vessel as designed by Prof. Yan and his colleagues would be only 3 metres tall and 2.5 metres wide, but could produce enough electricity to power a city of 100,000 inhabitants.

While China and other collaborating nations such as Russia push for the expansion of nuclear power, most of the Anglo-American and European leadership are determined to shut down such proposals. Former Bank of England governor Mark Carney now heads up the United Nations' zero-net carbon

agenda as UN Special Envoy on Climate Action and Finance. But the UN's Intergovernmental Panel on Climate Change (IPCC) has made every effort to squash nuclear power, which ironically is the only way emissions could be significantly reduced without plunging the world into poverty.

The IPCC's latest report, *Climate Change 2021: The Physical Science Basis*, in its 3,949 pages has only one reference to nuclear power: an alarmist scenario that "thermal and nuclear electricity plants may be challenged when using warmer river waters for cooling". On 16 August, the World Nuclear Association wrote with dismay that the organisers of the United Nations' upcoming COP26 climate conference in Glasgow this November have [rejected every application](#) on nuclear energy for the "Green Zone". This is the area designated for members of the public to interact and learn more about COP-related initiatives and projects.

Notwithstanding its token statements and actions on climate change, China has a policy of economic growth and expanded high-density energy generation capacity required for such growth, including the continued construction of coal-fired power stations. But most importantly, China's commitment to massive expansion of nuclear power should inspire Australians to follow this path to economic prosperity and reject the green anti-nuclear agenda, which is a road to ruin.