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Oasis Plan Conference: Dr. Kelvin Kemm

Doubling Electricity Use and Fresh Water with Networks of SMRs

This is Dr. Kelvin Kemm's presentation to Panel 2 of the Schiller Institute's April 13, 2024 conference, "The Oasis Plan, the Physical Foundation for Economic Development of Southwest Asia." Dr. Kemm, based in Pretoria, is a nuclear physicist and engineer who heads a company offering a pebble-bed small modular nuclear reactor (SMR). He is a former chairman of the South African Nuclear Energy Corporation and a business strategy consultant. He was [interviewed](#) by EIR in 2018.

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SAAI

Dr. Kelvin Kemm stands before a model of an HTMR-100 small modular reactor (SMR) plant offered by his company, Stratek Global. He refers to it in his presentation. This still image is from an excellent [video introduction](#) to the HTMR-100 in the form of an interview with Dr. Kemm, presented by the Southern African Agri Initiative (SAAI). The interviewer begins in Afrikaans and soon moves to English.

April 13—Over many centuries, if there is one subject that has transcended political conflict, it's been science. Scientists who continue to talk to each other during times of conflict; this is terribly important.

We also have to look at something else now, and that is the direct correlation between the GDP of a country and its electricity consumption. There is a rather well-known graph in economics that shows that there is an absolute direct correlation; there's a straight line. No countries do not fall on this line or near to the line. If you want to double the income of a person, you have to double the electricity consumption of the country; end of story. Nobody makes money without electricity; it is the lifeblood of a country. It's the lifeblood that keeps everything going, just as much as if your heart stops beating, your body immediately starts to stop and your liver and stomach and your everything doesn't work. If electricity stops in a country, the country winds down.

Technology itself is changing mankind. Not only are we getting new devices coming about—food mixers and microwave ovens and so on—but what is happening is that more and more people are getting individually influenced through things such as Facebook, email, the Internet, and so on. So, individuals who only a few years

ago were hidden in the background, can now become prominent around the world by getting onto the internet and so on.

But this is going even further now. For example, Elon Musk has been launching thousands of Starlink satellites. The Starlink satellites enable people to directly communicate on the Internet without going through a local service provider, which means you are not constrained by the politics of your own country unless they decide to block the transmission—which can happen.

So, what's happening is, more and more people are getting more and more individual influence. There's a good side to that, but, unfortunately, often when you get a good side to something, you also get a bad side to it. Because aside from that, society needs social cohesion and social discipline. You get teenagers walking around with T-shirts with "No Rules" written on them. It looks very good to say, "I just do my own thing. I don't conform to society's rules." It feels good as a youngster to have that opinion.

But unfortunately, that's not how society works. We heard Helga [Zepp-LaRouche] say earlier that the extreme left in Germany is becoming so dictatorial. What's happening is that some of these left-wing elements are saying they have a version of society which apparently is this free version of society, no rules and so on. They determined that that is the best society, but then what happens is, they come along and say, "Now you will do as we say. You will run your life as we say." The so-called "rules" turns into their rules imposed on everybody else. That is very worrying. That infringes the freedom of others who don't want to be part of it. To my mind, this is a force in the world at the moment which is terribly worrying. I think that some of

Lyndon LaRouche's comments we saw earlier apply directly to this.

Then they come along and they say their plan for living is to live simply. Not individuals becoming powerful through capitalism and so on. Everybody is supposed to have an equal sort of life. But you can't run society with solar panels on everybody's roof. You cannot run an electric train hundreds of kilometers on solar panels. It's all well and good having a solar panel that helps you with your electricity in your house to maybe cut your bills. But solar panels and wind are not going to run countries. You can't force people into this so-called simple life.

So, what happens is that this left-wing element wants to have this no-rules [kind] of society, but on the assumption that everything continues to work—the roads will work; the railway lines will work; telephone communications will work; TV will still work. This and that will all work, but there will be no rules. That, unfortunately, is not how it works.

Electricity: 'We Need Big Increases'

If you look at two of the critical things that we've been talking about—electricity and water. Electricity and water in our modern world have come to be, effectively, basic human rights, so to speak. It can't be a right, in the sense that somebody has got to pay for it, but electricity and water are really critical. But you also have to take note now: If you look at water, the total amount of water on the planet is fixed. No water is being used up, and no water is being added, in terms of the number of molecules on the planet. What's happening is, we move them around. Mother Nature is not going to double the rainfall on the planet. Rainfall is water that evaporates; it goes up into the air; forms clouds; clouds move a

certain way, and then it comes down again. But when you look at societies growing now, not only is the population of the planet increasing a lot, but more and more people are expecting to have electricity and water running to their houses and so on.

So, we've got to appreciate that we need big increases. If you look at electricity, for example: The world's consumption of electricity doubled over the last 25 years. There is actually no reason to assume that it won't double over the next 25 years. In fact, I think it will go much quicker; I think it will double in 20 years or earlier, because of the number of electrical devices that are coming along, and the fact that many people are becoming electrified. It's well known that in Africa, there are still something like 600 million people or so who don't have access to electricity. And they're wanting electricity.

So, what we have to look at is an increase in electricity consumption of 100%. When that's happened, there will be another 100%, and then another 100%. These fanciful ideas that you can have solar panels on your roof, and somehow everything will [work], in the interests of supposedly saving the planet, and we won't have any more industrialization and so on, is just plain and simple nonsense. We need to double the quantity of electricity being consumed, and therefore we need to double the production of electricity.

The same goes for water. The water consumption of the planet is going to double, and then it's going to double again. But Mother Nature is not going to produce any more water.

So, water becomes an electricity issue, an energy issue. We're going to have to move the water around a lot more, so we need much more desalination; we need much more pumping, canals, and all sorts of

scientific methods of shifting this water around. We've heard the previous speaker speak very eloquently about the situation of the water distribution in the Middle East region; some have got more than others, and so on. What we've got to do is take more water out of the ocean, desalinate it, get it onto the land and shift it around and recycle it. So, this becomes a technological issue.

Cooperation Needed Among Countries

Referring back to where I started, South African technology has always tended to transcend political functions. We need that. When we look at conflicts over the world, and the number of people dying, it's just so sad that the people who are dying are not the people who started the conflict in the first place. They are the cannon fodder who are going in there. Young men and women and children have been victims when conflict breaks out.

So, we need to have a society in which there are rules and in which there is structure. We cannot allow this extreme Green left wing to come along and do as much damage as they are. We've got to look toward doubling electricity consumption, doubling water consumption. And that means things like desalination on a large scale.

I think it's also very important, therefore, for there to be a lot of technological cooperation between countries. If we're going to do these big water schemes, it can't be just within the political borders of a country. You've got to be able to look at moving water from the ocean through a desalination system far away from where it originates.

We in South Africa have been looking at these challenges. We developed, here in Pretoria, a small modular nuclear reactor. And South Africa was the first country in the world to start developing a commercial small modular reactor. We have one now ready to go, that produces 100 MW of heat, or 35 MW of electricity. What's happening now is, the psychology of how the energy can be used changes. The small modular reactors can be owned by a state, a municipality, individual companies like mining companies, agriculture groupings. It's no longer necessary for electricity to be controlled by the country. It's not necessary to have a national grid.

With a small modular reactor, you could put it wherever you'd like. In Africa you can go far away from the current transmission lines, put in a nuclear reactor there, and have a 2- to 3-km-diameter grid; completely independent of the national grid. So we have to look at a completely different way of supplying this energy; and similarly with things like moving water around, desalinating the water, pumping it very long distances. That is all technologically feasible.

Here in South Africa, every year there is a bit of a gamble that happens, like playing roulette at the casino, as to whether or not we're going to have a good maize crop. If the rains happen to come at the right time, the right amount of water over the right number of days, we get a bumper maize crop, and we export maize around the world and make a little money. The next year, we find we don't get the water at the right time; then there's a maize shortage, and we end up importing it. That's all because of the rain. If we could pump the water in there, and guarantee the water supply every year, there would be a bumper maize crop every year, and we would produce much more maize to feed many more people.

Here we have pipelines that pump petrol and diesel from the coast up to where I live in Pretoria. Initially, when this was proposed years ago, it was quite astounding; the distance is 600 km. They put petrol into the pipeline, pump some up to the country; then they leave it; they put a spacer in the pipeline. This metal thing travels along, and immediately behind it they put diesel, and then immediately behind, another spacer, and they put a different grade of petrol. The petrol and the diesel all travels through the 600-km pipeline and comes out in the Johannesburg-Pretoria area.

If we can do that over 600 km, pumping petrol and diesel in the same pipeline, there's no reason one can't pump water over very long distances from a point of desalination to where the water is required. These need an attitude of how we get technological cooperation and how we get things like our small modular reactors deployed over wide areas.

'Do the Best for Mankind'

Across Africa, for example, we could put small modular reactors, effectively, in every country. But to have a nuclear reactor, you require International Atomic Energy Agency collaboration; you require a national nuclear regulator. South Africa has one of the oldest national nuclear regulators in the world; it's 40 years old now. You can't expect every country to develop a sophisticated nuclear regulator to be able to own a nuclear reactor.

So, what we've been looking at is connecting all these reactors together, so to speak, via the Internet. From one central monitoring point you can see the pressures in a number of reactors, in different countries. You can monitor a number of parameters and have a whole collaborative interaction between reactors. If something

goes wrong, and you need a rapid response, then regulators can get onto an aircraft which can fly there rapidly with Geiger counters and such, to check. All of that technological cooperation is required to ensure that people have a good lifestyle. Because as I said earlier, GDP growth is directly linked to electricity, which is technology.

So, we need somehow to transcend this political bickering that goes on over borders and so on, and try and get a higher intellect that is going to look at how we deploy modern technology in a macro-scale, in a much more collaborative way, all over: Bearing in mind that individual people now are getting more power, like being able to connect directly to the Internet through the Starlink satellites and so on. So, more and more individuals are getting power that they didn't have a few decades ago.

The danger there is that more of these individuals, if they're on the extreme left-wing side, are starting to go for this radical Green thing, to put all sorts of fantasy plans into place which are not going to work.

We need to get the realistic people to be able to create these frameworks [so] that we can, through technology, do the best for mankind. I think it's all possible, but it's an intellectual challenge, and it's quite a challenge all around. But I'm sure it's possible to solve this with the right vantage point. Thank you.

EIR Offprint Special Report Available

**The Great Leap Backward:
LaRouche Exposes the
Green New Deal**

Executive Intelligence Review has released this Special Report to warn of the extreme danger to mankind represented by the Green New Deal, also called "The Great Reset" by the leaders of the Davos World Economic Forum.

Already being implemented, this plan is taking over the direction of national economies from sovereign governments, using the power of central banks and the too-big-to-fail private financial institutions, cutting off credit to fossil fuel power generation and to industrial and agricultural enterprises claimed to emit too much carbon. Meanwhile it is creating a new huge bubble in the "sustainable fuel" sector, hoping to prop up the increasingly bankrupt financial system.

Stopping it by returning to a Hamiltonian American System credit policy, requires an understanding which is the purpose of this report.



February 2021

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