

**TRANSCRIPT OF SPEECH BY SENIOR MINISTER THARMAN SHANMUGARATNAM
MCDUGALL MEMORIAL LECTURE AT THE FAO MINISTERIAL CONFERENCE
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Director-General Qu Dongyu, Ministers and Distinguished Guests,

Thank you once again for giving me the privilege of addressing this biennial meeting of ministers from member states.

I speak first as a Senior Minister and former Deputy Prime Minister of several years from Singapore. And as you know, Singapore is a country which is both water and food vulnerable, by virtue of our geography. My speech is fundamentally not about Singapore, but from our very inception as an independent nation, we have treated water and food as central to national strategy. It has required innovation. It has required public policy reform. It has required a whole of society effort, particularly on water – to understand that water is scarce, it needs to be preserved, it needs to be recycled.

I also speak as the Co-chair of the Global Commission on the Economics of Water, which as Director-General Qu Dongyu mentioned, helped shape the outcomes of the recent March 2023 UN Water Conference - the first such conference in 47 years, which tells us how neglected the issue is in multilateral discussions.

Turning point in global food security

We are at a turning point in global food security. We've seen remarkable advances Since the inception of the McDougall Memorial Lecture, 65 years ago. Both through the Green Revolution and the introduction of new seeds, as well as through the global spread of nitrogen-based fertilisers, we have seen remarkable improvement in yields, in farmers' incomes, and most importantly, in the reduction of hunger.

Globally, hunger today is about one-third of the level it was in 1970. But we now risk seeing an enduring level of global hunger at still unacceptable levels. Post-COVID, we still have 10% of the world's population experiencing hunger, about 828 million people. It has come down a little since then but the projections for 2030 are still dire: 670 million people facing the prospect of hunger. That is 8% of the world's population; no different from where it was in 2015 when the 2030 agenda was set out.

And that, frankly, would be an optimistic projection because it does not factor in the very real risk – not a theoretical risk – of the accelerating effects of climate change, the loss of biodiversity, and the destabilisation of the global water cycle. It is not easy to factor that in a precise way. Even the scientists have been surprised by the effects we have already seen, the extreme weather events at a frequency that was not anticipated.

It is thought to have something to do with the crossing of tipping points in the Earth's system, that are accelerating change. One tipping point from the Arctic, leading to another tipping point in the boreal forests, and to the tropics. The scientists may find it hard to quantify the impacts with precision, but we know that change is in the wrong direction.

So, when we think of 8% of the world's population still living in hunger by the end of the decade, that is very likely an underestimate. And it should concern us greatly, not just because it is a humanitarian crisis in its own right, but because it is going to rebound on many other

dimensions of the SDGs, and on what every country feels are important to human wellbeing – health, education, and the development of human potential.

I will highlight what I think is one of the most neglected dimensions of this global crisis: childhood stunting, caused by child and maternal malnutrition. 20% of children are now projected by 2030 – that is about 129 million – to suffer from stunting. And as we all know, once you suffer from stunting at a young age, it affects your life chances. Your cognitive development, your ability to work at an increasingly skilled level, your ability to contribute to the society you live in, your whole life trajectory. So it's a serious loss of human potential for the societies involved and for the world. 20% of the world's young growing up stunted is totally unacceptable.

We can solve the global food crisis. We can solve for global hunger.

It requires a few fundamental shifts in our thinking and the way we organise ourselves globally. And some specific policy shifts and interventions. I will talk about each of these briefly in the course of the rest of my lecture.

Fundamental shifts in thinking to solve for global hunger

The fundamental shifts:

First, addressing food, not as a silo, not just an SDG on its own like SDG 2 on zero hunger, but as part and parcel of the broader challenge of ecological insecurity.

Second, we have to recognise – by the same virtue – that this is not just a local problem; nor just a regional problem; it is a global problem which we have to all take responsibility for.

And third, on the optimistic side, we have to see this not just as a burden on the world, something requiring burden sharing, but as a huge growth opportunity. The opportunity of investing in food and ecological insecurity together represents a very significant growth opportunity and national development opportunity in the years to come.

So those are three fundamental shifts in thinking we must make. And there are solutions to translate that thinking into action. First, policy reform. Second, scaling up technologies which are already available, or which can be made available and at low cost precisely through the scale-up and tapping into economies of scale. Third, new financing strategies, particularly international financing strategies. And fourth, the strengthening of multilateralism, including the local cultures of trust, in domestic institutions, that are needed to support multilateral action.

Addressing food and ecological insecurities together

First shift in thinking – we have to address food and ecological insecurities together. The science and evidence are clear. Food is the first victim of the triple-headed crisis of the global environment – climate change, the loss of biodiversity, and the destabilisation of the global water cycle.

We cannot solve for food without solving for water. We cannot solve for water without solving for climate change. And we cannot solve for climate change without solving water. They are intertwined.

We have to now address these not as agencies working on separate silos, not as departments in government working on separate agendas, but as a collective challenge of restoring stability in the Earth system and in the fundamentals that assure us of human welfare. The science links them up, and our development strategies too, have to link them up – taking a whole of government approach, a whole of society approach, and a whole of the global community approach to address this combined challenge.

And it has to be said that food is not just the first victim of this ecological crisis, but also part of the cause. Because how we produce food is a very important cause of today's problems and an important part of the solution to today's problems. Agriculture accounts as we know for about 70% of global freshwater withdrawals, i.e., the water that is withdrawn for agriculture, largely for irrigation and very often for flood irrigation. About 60% of this water is wasted mainly due to leaks in irrigation systems, or inefficient irrigation methods that go back 1000 years.

If you look at what is happening in manufacturing, logistics and commerce, in finance and many other areas, the technologies which existed 100 years ago are unrecognisable today. In agriculture, however, they are fully recognisable. We are using the same methods that we used centuries ago.

Second, our rivers are being polluted with chemical runoffs from farmland, due to some of the very solutions that led to improved agricultural yields – the use of agrochemicals as fertilisers in an uncontrolled way, leading not just to the rivers being polluted, but to algae blooms in the lakes and in the seas, impacting biodiversity and severely affecting marine life.

And third, another way in which agriculture is part of the cause, and now has to be part of the solution, is that keeping inefficient methods alive in agriculture simply means that, to feed a growing world population, we have to keep expanding agricultural land which has typically meant more and more deforestation. And the loss of the forests and the loss of biodiversity is itself now part of this vicious cycle of climate change and the global water cycle being destabilised.

Agriculture is therefore part of the solution. We need more efficient agriculture, higher yields for farmers, more efficient use of water - so that for the same yield we use far less water - and more efficient with regard to land use. Solutions exist for each of these. Food is the first victim, but how we produce food must be a key solution.

Food and water insecurities as global challenges

We have to view food and water insecurity as global rather than just local challenges. It is not just a problem happening in the Sahel or parts of Southeast Asia or any parts of the world that sees extreme weather shocks. We will all increasingly face extreme weather shocks.

It is effectively a global challenge. We have understood this well with regard to climate change. Everyone knows that carbon produced here is carbon in the atmosphere that everyone will see the consequences of. The same is the case for water. There is a global water cycle. It is not just a local matter. It is not just a matter of transboundary rivers and the occasional conflicts over the use of those transboundary rivers. There is a global water cycle – 40% of the rainfall that we see comes not from the evaporation from the oceans or the rivers. It comes from atmospheric rivers, of what's called green water - the evapotranspiration of moisture flows around regions and around the world as part of the global water cycle.

So it is not just what we do locally that rebounds on what happens to us locally; what we do locally anywhere rebounds on others around the world. It is a global water cycle and we have to take global responsibility.

And because food security is now inextricably linked to these global crises of climate change, water and biodiversity, we have to recognise that solving the food problem also requires global responsibility and actions.

A significant growth opportunity

The third shift in mindset that we require is to see this as a growth opportunity. When economists first started looking at the problem of climate change about 40 years ago, they used the way of thinking that economists have always used, which is to think of trade-offs. Much of economics is about trade-offs. And the way the issue was framed was there would be a trade-off between addressing climate change and economic growth. It is one versus the other and you had to decide on the right trade-off.

That was 40 years ago, and it turns out to have been a mistaken framing. Because we now know that it is possible to achieve sustainability and economic growth together, by using appropriate technologies, market development, and finance. In fact, we have the opportunity now to have higher quality growth, not just for the sake of the global commons, but for the sake of each of our own countries. Higher quality growth, less pollutive, much better for the health, much better for sustaining the tangible welfare of future generations.

It is not a trade-off between development and global public goods. It is not fundamentally a trade-off between having food security in a particular location and solving other problems somewhere else in the world. The strategies come together. We know this now as economists. We know that markets have been imperfect and underdeveloped, and we can create more complete markets so as to be able to achieve sustainability without compromising on national development.

We also know very importantly that policies, even today, are working in the wrong direction. Policies on pricing and subsidies are today encouraging the inefficient use of water, quite apart from encouraging, undiminished carbon emissions in large parts of the world.

And we do know a lot more now about the economies of scale once we get going on green technologies. We see it already in solar energy. If we exploit these economies of scale, if we create fuller markets through public-private collaboration, if we scale up the use of technologies that exist, we can avoid this trade-off between food security, environmental security, and economic growth.

That is fundamentally a growth opportunity, and it is going to require more investment.

When you think of it this way, as a growth opportunity, and you think of it as a global issue and not a local issue, it is not to be solved through a call for more aid. This is not about aid budgets. This is a case for investment – investment in future growth that will earn returns, both commercially as well as social returns for society as a whole.

The scale of the investment required for this combined challenge of food security and ecological security is significant – about three percentage points of GDP extra in investment each year, for the next 30 years. If we succeed in mobilising the resources and organising ourselves for that purpose, it will lead to a significant increase in growth globally – roughly 20

to 25% increase in growth with an even further increase in the developing world. So this is a growth opportunity and a national development opportunity that is to be seized.

Policy reforms in the water sector

Solutions next. I start with policy reform because our policies are still by and large in the wrong place, internationally. In particular, when it comes to water, we today have in most parts of the world pricing strategies and subsidy strategies that encourage the inefficient use of water.

The supply of fresh water globally is finite. The demand has been either unmanaged or mismanaged. It is either neglected or it is mismanaged in the sense that the pricing of water or subsidies for its use encourage people to use more water.

So we have a fundamental problem. The supply is fixed, but the demand is poorly managed, and water is going to become more and more scarce everywhere in the world, including in the most advanced countries. Europe already has a severe crisis of groundwater shortages. All of us have to address this fundamentally.

Politicians and many others who take an interest in these issues, tend to think of pricing water as something offensive, as something that is unfair to the poor, something that is not good for equality. In fact, the reverse is almost always the case.

The more efficient use of water will be good for the poor. Currently we have systems which either do not price water or price it vastly below its true costs, leading to excessive use by the largest users and inadequate water, particularly clean water, for poor and vulnerable populations. Inefficiency is the biggest threat to the poor – inefficiency in the use of water. Pricing water also enables governments to get revenue from large corporations, the rich and the middle-income group, which can be used to expand water systems so that everyone has access to clean water, and to subsidise the poor.

More efficient use of water encouraged by proper pricing strategies and the withdrawal of subsidies that encourage overuse of water are hence helpful to the poor and enable more inclusive development. We have to recognise that forthrightly, explain it to our populations, explain why we need proper pricing of water, and that we will use subsidies to benefit the poor and to expand our systems to ensure that we have sustainable water systems, which do not exist today.

So that is the first fundamental policy reform. And the low hanging fruit there is in the \$700 billion of subsidies in agriculture and water each year, most of which goes towards encouraging unsustainable practices and benefiting the largest users.

Scale up high potential technologies that already exist

Second, we have to use technologies that already exist, scale them up particularly in the developing world, and make them affordable. I will focus very quickly on agriculture because the scope to improve irrigation practices, so as to improve farmers yields and income as well as to reduce the use of water, is very significant. The techniques exist, whether it is drip irrigation or other techniques.

The scope for improved seeds, just like we did in the Green Revolution long time ago, is also significant. Seeds that allow for crops to be drought-tolerant, to have much less water requirements, to be pest resistant, and yet have higher yields compared to today's seeds.

And the scope for sensor-based technologies – we need not just a Fourth Industrial Revolution in sectors like manufacturing, but an agricultural revolution that involves affordable use of sensors so that you know exactly when you need to put more water in the soil. Countries like China have started implementing this: having farmers equipped, and making sensors affordable by scaling it up. It is not some fancy frontier technology anymore.

Urban farming, which countries like the Netherlands are leaders in, and Singapore is also moving into, require far less water. Hydroponics uses nutrient-rich water, recirculated in closed systems, to cultivate crops directly. Dramatic reductions in water required – about 90% reduction in water compared to conventional soil-based agriculture.

And finally, regenerative agricultural practices: crop rotation that can also improve yields whilst improving water retention in the soil and, again, doable on a much larger scale internationally. And besides improving water retention in the soil, it also increases carbon sequestration; when there is not enough water in the soil, the soil is no longer a carbon sink. So these existing technologies can be scaled up.

But I want to highlight a very particular opportunity there.

We have to transform the way rice is produced, particularly in Asia, because it is in Asia where over 90% of the rice is produced and over 85% of the rice is consumed. Asia is both the rice basket of the world but also the rice consumer of the world.

We have a problem because current methods of rice production are simply not sustainable. They are extraordinarily water intensive, and there is lesser and lesser water available, and more salinity in water.

This is not just a problem of water, because rice is also a major source of methane emissions from agriculture. It accounts for 10% of methane emissions in all agriculture including livestock farming. And for about 40% of global greenhouse gas emissions in croplands. So we have to do something about this.

The examples that are already in play are encouraging. In Vietnam, government's promotion in the Mekong Delta of new irrigation techniques – what they called 'alternate wetting and drying irrigation' where you first irrigate to fill up about five centimeters above soil and then you wait until the water has subsided to about 15 centimeters below the soil before adding a little bit more water – has led to a very significant improvement in water use: up to 40% reduction in water use and improvement in farmer yields as well. So it improves incomes, serves national development purposes, and it reduces water use.

China is another good example and on a larger scale. China embarked on a climate smart staple crop production project some years ago. Again, farmers have benefited from significant improvement in yields – something like 22%. Significant reduction in greenhouse gas emissions, just like in Vietnam, and reduced water use by almost 40%. They did it mainly through drip irrigation, but also through the use of sensors and other techniques, while making it all affordable for farmers.

If we do not adopt these known techniques, ASEAN or Southeast Asia is going to become a net importer of rice before long rather than a net exporter. But it is also possible that you would not have net exporters anywhere in the world. So you then have a problem. We have to change for the purpose of food security; for the purpose of water security; and for the purpose of environmental security.

The techniques exist but they require policy support; and they require financing support for farmers especially. These are techniques that do not require a five- or 10-year payback periods when you invest in them. The payback period is six months, one year, maximum three years depending on the technique. It is a fully investable opportunity. So I want to highlight that – we need a revolution in the way rice is grown. The techniques exist. And in the next decade, we have to start making significant moves in that direction.

Mobilise greater private finance for the public good

Finance is a third solution. Wherever we are in the world, whatever the level of income, we must always think first and foremost about how we raise domestic resources, including through tax strategies that are fair to the poor. In other words, progressive tax strategies, and making sure that tax collection systems are modernised and tax evasion is not prevalent or easy. And we have to make more use of domestic capital markets, particularly in the lower middle-income countries and the middle-income countries.

When you combine the challenge of food security with ecological security, we are all going to have to raise more resources domestically in the public sector. But it is not going to be enough because the scale of investment required vastly exceeds what the public sector alone can provide, nationally or through international institutions. So we have got to mobilise a lot more private resources for this task. Mobilise private resources for the public good. And that means it has got to be commercially viable projects.

For this purpose, we need to update our thinking quite fundamentally in how we use the international financial institutions. We need a greater scale of financing – public, private, and philanthropic. But public sector finance has to now be used to mobilise private sector finance, by improving and derisking investment environment.

The scale has to go up several fold. We are talking about \$3 trillion a year, and that excludes China, \$3 trillion a year to invest in the developing world in the next 30 years. That is a lot of money. But there is no lack of money in global capital markets, which are about \$280 trillion. We've got to organise it and incentivise it so that you have enough money flowing into sustainable investments in the developing world.

That's the scale required, and it is determined by the science. If you do not invest now, the science tells us of the consequences, and the costs of dealing with these in future are going to be vastly larger. So investing now, mobilising resources now, is far more cost effective than delaying the investment quite apart from being far more beneficial to human welfare.. So we have got to avoid being myopic about this.

In particular, we must reorient the multilateral development banks to the task of mobilising private finance. There are several studies that are underway on this. A G20 expert group that I'm a member of will be very shortly presenting a report on the reforms to the MDBs - not pie in the sky but doable reforms.

It also requires that we do not just raise more finance, but we also organise ourselves differently. The fact of the matter is international finance today is a fragmented picture. Each MDB doing its own thing, each national development finance institution or DFI, also doing its own thing. The private sector doing their own thing, and philanthropies coming in and doing their own thing. The system does not work as a system. We have got to make the system work as a system. Because when you organise yourself country by country, in a country platform,

where there's some understanding as to how we are all going to go in together to invest in a coherent fashion, the outcomes are far more powerful. The impact of our investment is far more significant compared to individual investments in individual projects.

So we have to avoid taking a project-by-project approach in the MDB world and move towards a sectoral and country platform approach that involves working together with the DFIs, the national-based DFIs, the private sector, and where relevant, the philanthropies. It's key to scaling up both resources and impact.

Strengthen multilateral mechanisms

We will only achieve all this if we strengthen multilateral mechanisms. The UN is planning a Summit for the Future next year that will be a very important moment in time. An important opportunity for us to strengthen multilateralism.

There was a recent high-level panel advised UN Secretary-General Guterres on ways to achieve a more effective multilateralism, a panel that I was also a member of. The solutions are themselves not complex. They require political will. They require a sense of what we are up against, in terms of the scale of the challenge and how every nation is going to be affected. Not just the poorest nations, but every nation is going to be affected if we do not get our act together, mobilise more resources, deploy it more effectively.

It requires strengthened multilateral mechanisms. The UN Secretary-General at the recent water conference in fact committed to strengthening the way in which UN agencies organised themselves to solve the water problem, providing a stronger home for water in the UN system, working better across UN agencies, and also appointing a UN water envoy to work with the agencies. It is an important start, but it requires all member states to really join efforts together, and coalitions of the willing to drive specific initiatives to tackle the global water crisis.

Tackling polarisation at home

Ultimately, however, having been a politician myself for many years, interacting with politicians around the world, in both the developing world of the advanced world: we know that something has gone wrong.

And that something that has gone wrong is not just when people gather in New York at the United Nations or gather at Geneva at the WHO or gather at any other international organisation.

Something has gone wrong domestically, within societies themselves. There is good evidence to show that the loss of trust in international cooperation is related to a loss of trust in government and institutions domestically. We highlighted this in the UN Human Development Report last year, for which I co-chaired the Advisory Group. And typically, in fact, there has been greater loss of trust in domestic institutions than there in international institutions.

When trust in government is higher, trust in international cooperation is also higher. And even when trust amongst people themselves is higher, trust in the idea of cooperating with the rest of the world is higher. This is not black and white. Surveys never are. But you can tell that there is something real in it. People are not inherently selfish or against communities elsewhere. They are not devoid of humanitarian impulses. But where they are getting along better within their own societies, and where they have greater trust for their own governments

and institutions, they are also willing to see a prospect of improved lives for themselves coming out of international cooperation.

So we have to fix the problem of domestic polarisation and the loss of trust in domestic institutions, as well as amongst people within society itself. That is fundamental to multilateralism. We will not achieve a less polarised world or prevent a bifurcated world if we do not address domestic polarisation.

And that requires a certain orientation to politics that requires much greater emphasis, and that is ultimately in our self-interest wherever we are in the world. A recognition that the global commons are the global commons – they are common to all of us. They will affect all of us. And food insecurity somewhere in Africa is something that results not just because of happenings in Africa. It comes about because of what's happening in the global cycle for water, from global warming, and from the loss of biodiversity. Everyone has to take responsibility for it. And if we do not, we will all be the worse for it.

So let us have that sense of reality about the global system, that sense of opportunity, that sense of being able to unleash a new growth opportunity. We can do this. It requires political will and it requires a political reorientation at home, wherever we are.