Nuclear stalemates

The nuclear powers are maintaining their ageing stockpiles, without much thought or explanation.

Sixteen years after the end of the cold war, roughly 27,000 bombs and warheads are gathering dust in the hinterlands of the world's established nuclear powers. More than 95% of these weapons are in the United States or Russia, but France, China and Britain all have stockpiles of several hundred devices. Each nation spends several billion dollars a year to house and maintain the weapons and train physicists and engineers with weapons expertise. Yet their political leaders have given little thought as to why this approach makes sense, or where it will lead.

During the cold war, the warheads were supposed to deter either a conventional military attack or a nuclear first strike by the opposing side. Under the cheerfully and accurately named paradigm of mutually assured destruction, or MAD, they were made ready for use in large-scale retaliation, to annihilate cities and nations.

That era is, mercifully, behind us. Now the five main nuclear powers all wish to maintain their ageing stockpiles, while offering confused messages about what they are for, and how many are needed.

The United States' latest nuclear-weapons research programme, called the Reliable Replacement Warhead (RRW), captures the flavour of this era of nuclear befuddlement. As described on page 18, the programme's supporters envisage a future nuclear weapon that will be cheap to build and easy to maintain.

They portray the design as neither old nor new, but rather as an amalgam of previous designs. It will be assured to work, but, the designers envisage, will never be tested to see if it does. Calling the weapon 'reliable' angers critics, who hold that existing warheads will be reliable for many decades. They see the RRW as another jobs programme for the vast US weapons labs, and fear that its arrival will further undermine the Nuclear Non-proliferation Treaty.

The RRW's advocates believe it will allow scientists and engineers to confront some important issues. At the end of the cold war, the United States closed its huge facilities for producing nuclear weapons. At some stage, they say, the country has to decide how to replace its existing weapons.

What's lacking is a political vision to guide such decisions. The administration of George W. Bush has reduced its nuclear-weapons stockpile, as agreed with Russia in 2002. But it has also floated the desirability of nuclear strikes on buried targets. Were it not for its rejection by Congress, the administration would be pursuing new 'bunker-buster' weapons for this purpose. Critics are left wondering whether the RRW is a pathway to a smaller arsenal, or to a new nuclear weapon.

"Business as usual meets neither military needs nor obligations on disarmament."

The United States is not alone in sending mixed messages. France is reconfiguring its arsenal to be 'flexible', while the British government seems intent upon replacing its fleet of Trident submarines. Russia, like the United States, is committed to cutting back its arsenal, although President Vladimir Putin has begun to significantly increase funds for its nuclear-weapons laboratories.

This business-as-usual approach meets neither the nuclear powers' military requirements, nor their obligations, under the 1968 non-proliferation treaty, to move towards nuclear disarmament.

It is past time for these governments to re-examine what their nuclear-weapons research and development capability, as well as their weapons stockpiles, are actually for. Once they've figured that out, it may even be possible for them to manage their arsenals in ways marginally saner than those necessitated by the cold war. ■

Learning from Africa

Development projects need data as well as money.

The issues that hinder development in sub-Saharan Africa are many and complex, but one factor that stands out for scientists is the dearth of reliable data on the decades of development projects there.

A lack of information on what has worked and what hasn't has contributed to a lack of accountability among donor nations, host nations and even development professionals. Donors in particular have learnt little from past mistakes, and are impatient. When a project fails, as so many do, the tendency has been to move straight on to the next idea.

Development specialists know this, and today data and analysis are prized. In this issue (page 22) we examine the early progress of one notable experiment in Africa. It involves the support of 12 African Millennium Research Villages, which are receiving a package of interventions, at a maximum cost of US$110 per person per year, tailored to lift them out of poverty and onto a sustainable path.

The approach has won support from the African governments involved and from private philanthropists, who have pledged $100 million to a charity, called Millennium Promise, that aims to expand the programme to an additional 78 villages in the next year.

The administrators of the village projects intend to measure 27 important indicators of project performance, mainly by closely monitoring the progress of some 300 households in each village.

They hope to learn three things: whether each intervention works, whether the links between various interventions can be exploited, and whether the community is ultimately better placed to manage its own future. This last involves 'softer' measures of capacity and sustainability, and will be the hardest both to monitor and to achieve.

"When a project fails, the tendency has been to move straight on to the next idea."

It is early days yet — the longest-running project, at Sauri in Kenya, is just two years old — and few hard data are available so far. But it is crucial that the schemes deliver on their research goals and that they absorb lessons, positive or negative, from the data. ■