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Millennium development holes

The political commitment to helping the developing world is failing to deliver on its promises. The problem is made worse by the questionable evaluation of progress.

In 2000, 189 world leaders committed to eight Millennium Development Goals (MDGs), ranging from halving extreme poverty and hunger, and rolling back killer diseases such as AIDS and malaria, to providing universal primary education. The deadline of 2015 to achieve all these ambitious goals is now rapidly approaching.

As a rallying cry that has pushed development up the international political agenda, the goals have been an indisputable success. They have also, for better or worse, conferred power and legitimacy on interests within the international aid machine, in particular the United Nations (UN) and the World Bank.

But the goals are ultimately political promises, and as such they are fickle. As the economist Jeffrey Sachs pointed out at last week's 'BioVision' meeting in Lyon, France, the G8 leaders promised in 2005 to double aid to Africa from US$25 billion in 2004 to at least $50 billion in 2010. But African countries still have no idea how or when aid levels will increase. Creative accounting means that supposed new aid is sometimes just a repackaging of existing aid or a debt cancellation. What aid has emerged has not led to the organized, massive expansion of investments in clinics, schools, agriculture and infrastructure that is needed.

This bad situation is made even worse by the pseudoscientific veneer conferred by evaluating progress on the MDGs using 48 quantitative indicators compared with a 1990 baseline. Every year, the UN rolls out reports with slick graphics, seemingly noting with precise scientific precision progress towards the goals. But the reports mask the fact that the quality of most of the underlying data sets is far from adequate. Moreover, the indicators often combine very different types of data, making aggregation and analysis of the deficient data even more complicated.

There are decent data for just a handful of indicators, such as child mortality, but for most of the 163 developing countries, many indicators do not even have two data points for the period 1990–2006. And few developing countries have any data for around 1990, the baseline year. It is impossible to estimate progress for most of the indicators over less than five years, and sparse poverty data can only be reliably compared over decades. To pretend that progress towards the 2015 goals can be accurately and continually measured is false.

Significant efforts are now being made to improve data collection. Meanwhile, UN agencies fill in the missing data points using 'modelling' — in practice, a recipe for potentially misleading extrapolation and political tampering.

Indeed, the lack of data makes it impossible not only to track progress, but also to assess the effectiveness of measures taken. Has the existence of the MDGs changed pre-existing trends? Are bednets helping to control malaria? Are improvements in Asia down to the MDGs or simply economic growth? Currently, it's impossible to tell. Meanwhile, spurious claims of achievement are promoted.

Funding the scientific evaluation of interventions would pay dividends in enabling rigorous project management. But although billions of dollars are now flowing into aid and disease control, researchers complain that they struggle to get even tiny funds for evidence-based research to assess which interventions work. "If I want 10 tonnes of DDT it's no problem; if I want $10,000 to see if the 10 tonnes made any difference, forget it," says one malaria researcher.

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It is important to take action towards the goals rather than use the lack of reliable information as an excuse for inaction. But investment in an evidence-based approach to aid interventions, assessed independently of the UN, is also essential. Otherwise, in 2015, the MDGs could be buried in history's graveyard alongside other well-intentioned but failed development efforts. ■

Independence day?

Spain has increased science funding but now needs to modernize the organizations at the top.

'New government pledges to double research budget.' How often have scientists heard this type of promise and been disappointed? All the more credit, then, to Spain's politicians, who have delivered on it. When the socialist government swept to power in March 2004, it launched a multifaceted programme called Ingenio 2010, founded on a commitment to raise the country's spending on research from 1.1% of its GDP — well below the European Union average of 1.8% — to 2% by 2010. The civilian research budget has already more than doubled.

Given equivalent budgets, would Spain's researchers be able to deliver the same quality as the big European players? Some of Spain's élite research institutes, such as the CNIO, the national cancer centre in Madrid, already do so. But broader success will depend on Spain's plans to modernize its science management. If the money is to be well spent, the new basic-research agencies currently being created must adopt European Union norms. In particular, they must be free of direct political interference — a point of contention among some government bureaucrats.

Researchers say the new money is already making a palpable difference. The number of research positions, the acceptance rate of grants, and grant sizes have all increased. There are more diverse sources of grants, thanks to strategic programmes opened up within

Ingenio 2010. There is significantly more money for infrastructure, and astronomers and particle physicists will gain from Spain's recent membership of the European Southern Observatory and higher subscription to CERN. The budget of the CSIC, the national research organization, which runs 115 research institutes and centres, has seen a healthy 74% increase.

The country seems well placed to absorb the new money. Despite very modest investment over the previous two decades, the quantity and quality of Spanish publications have increased markedly. The bad news is that Spain's science organization is stuck in a time warp. Both the government's research funding department and the CSIC are embedded in a slow and bureaucratic research ministry, where, it is said, a grant application arriving in the first-floor mailroom can take weeks just to arrive in the correct department a few floors higher. Scientists paid from the public purse — at the CSIC or at universities — are civil servants, hired for life and virtually impossible to fire. The positions, like the detailed budgets, are fixed centrally.

Recognizing the need for more flexibility, the government last year passed a law allowing certain ministerial activities to be spun out into more independent agencies. Two of these, now in a rather painful process of creation, will be the CSIC and an agency for research funding, evaluation and foresight.

The new CSIC concept, steered by its president, immunologist Carlos Martínez, will seek government approval in the coming weeks. It allows the CSIC to be run by its president, who must be a respected scientist, with arms-length oversight by government representatives, and with the opportunity to offer scientists negotiable contracts. This change will enable the CSIC's institutes to compete internationally.

This proposal has to make its way through other government departments, no doubt nervous of delegating responsibility for large amounts of public money. It is nevertheless imperative that it emerges as an appropriate model for others to follow. It is equally important that the concept for the research funding, evaluation and foresight agency is accelerated so it can be put in place before Spain's general election in March next year.

Until Spain has these independent and flexible research structures safely in place, the success of the well-conceived Ingenio 2010 programme is threatened. Failure would be a heavy price to pay for a lack of imagination, especially when the required independence plays such a key part in success elsewhere. ■

Going underground

A new study's recommendations for carbon capture should be pursued.

The world has no shortage of coal: about a trillion tonnes of the stuff is considered to be recoverable worldwide. It's also cheap: joules from coal cost considerably less than those from natural gas. But coal has a deservedly bad reputation for carbon emissions, which are greater per kilowatt-hour than for any other major electricity source.

The United States has a quarter of the world's coal, and half of its electricity is coal-generated. But power companies are finding it increasingly difficult to build new coal plants, even with increasing demand. The difficulty is twofold. Environmental lawyers and lobbyists are making the process as lengthy, expensive and unpredictable as possible. And companies are increasingly convinced that carbon regulation is coming to the country, maybe not today, maybe not tomorrow, but soon, and for the rest of our lives. Politicians in the Democratic Party have made clear their intention of penalizing any attempt to cheat future regulations by building large numbers of plants before these regulations take effect.

This confluence of factors contributed to the decision this year by Texas electricity company TXU to back away from its idea to build eleven new coal plants (see page 362). Instead, the company looks set to be bought out by a group of investors who cannily obtained public support for the deal from environmental groups, in part by pledging not to build eight of the eleven plants — a decision they would probably have made anyway. Meanwhile, the idea of banning further construction of coal plants is being promoted by an unprecedented range of people, including NASA's Jim Hansen, members of the Texas legislature, and a United Nations panel chaired by the director of the Missouri Botanical Garden, Peter Raven. The epoch of US coal plants without carbon capture and storage may be coming to an end.

That would be just fine for many people, to whom coal is anathema. There are plenty of alternatives, from renewables to natural gas. The latter is plentiful in the United States and is cleaner-burning. And although the general idea behind carbon capture and sequestration seems reasonable to most experts, it hasn't been tried at the truly colossal scales that would be needed. Pumping gigatonnes of carbon underground is not to be undertaken lightly. Early studies indicate that there is sufficient capacity, but detailed surveys must be made. Questions about leakage and the best ways to monitor the sites must be answered. Full-scale demonstration plants must be built with varying technologies and on different geologies, and they must be carefully monitored and studied.

This is challenging indeed, but a study by researchers at the Massachusetts Institute of Technology, *The Future of Coal*, finds that the technology is viable. According to their models, it will be adopted when carbon emissions cost US$30 a tonne. The report calls for immediate investment in carbon capture and sequestration projects, with a total of ten projects worldwide at a cost of about $15 million each per year for ten years.

"The MIT report calls for immediate investment in carbon capture and sequestration projects."

This figure of $1.5 billion may sound big, but it's tiny when compared to the role of coal in the worldwide energy industry. Despite all the uncertainties and all the other energy options, this proposal should be implemented. If carbon markets and competing technologies eventually lead most countries to abandon coal as an energy source, so much the better. But it is impossible to be sure of such an outcome, and the risks of global change are serious enough for the United States and other countries to be pursuing all low-carbon energy sources with vigour. ■