CHAPTER 5

The great hydro-rush: The privatisation of Africa's rivers

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'Viva Inga! Viva Inga!' chanted then South African Minister of Water Affairs Buyelwa Sonjica on the closing day of the March 2006 African Ministerial Conference on Hydropower and Sustainable Development. The room was abuzz over Inga, a 15 kilometre stretch of rapids in the lower Congo River that reportedly holds the highest hydro-power potential in the world. The minister's words were met by cheers and applause from hundreds of African government representatives, a range of impassioned believers and energy bureaucrats.[1]

A champion of the people, Sonjica knew that 500 million Africans did not have access to electric power. As she rallied the participants, she seemed to believe the hype coming from potential developers and the hydro industry: Inga could light up Africa and form the foundation of the continent's energy future.

A discussion point which seemed lost amongst the giddiness filling the conference hall was the true risks that projects such as Inga will bring, both to communities who now depend on the Congo River and to fragile economies across Africa. The continent's history of large hydro dams has been one of overlooked social costs to local communities, lost river-based livelihoods, and unmitigated impacts on human and environmental health. Rural communities in particular have sacrificed their lands and livelihoods to these projects, yet reaped few benefits.

Time and again, Africa's large hydro development schemes have falsely promised public benefits, but instead resulted in a slowed expansion of energy access for citizens, and the privatisation of the benefits provided by rivers coupled with reduction of the many free ecosystem services they provide. Building the world's largest dam in a nearly failed state as part of a grand scheme to 'light up Africa' is not only unlikely to avoid such pitfalls, it is rapidly becoming a *cause célèbre* that threatens to divert attention from the kinds of incremental projects that might actually bring light to Africans.

This chapter reviews the destructive patterns of large dams, some experiences with hydro dams in Africa, and the efforts of the World Commission on Dams (WCD) to change these. The model of African energy development based on large hydro and centralised grid schemes is analysed, including a review of important

financiers and enabling processes. The Grand Inga scheme is reviewed in detail. Finally, some recommendations for Africa's energy development are given.

The problems with large dams

Large dam projects are among the most controversial and potentially destructive of all internationally financed projects. Large dams tend to transfer river resources from one set of users to another – usually, from the poorest to the richest. An estimated 40–80 million people have been displaced by large dams worldwide. Dam displacement puts communities at great risk of decreasing their standard of living and tearing apart their social structures and culture. Efforts to resettle and compensate people for their losses have been inadequate at best (McCully 2001; WCD 2000).[2]

Nearly two-thirds of the world's rivers and their associated ecosystems are suffering from the profound and often irreversible impacts of dams. Decreased and altered water flows can change the natural patterns of flooding upon which downstream ecosystems and people rely. Dams can change water temperatures, sediment levels and chemical composition. Sediment held behind dams can cause nutrient-starved rivers to erode the river banks and bed. Aquatic species have been badly affected by the world's dams, and many extinctions have resulted. Impounding rivers in reservoirs can also cause a variety of health impacts, such as creating breeding grounds for mosquitoes and parasites, reducing water quality and quantity, and harming food security for affected communities. Millions of people living downstream of dam sites have been harmed by these impacts on riverine resources.

Many sub-Saharan countries, including Cameroon, Tanzania, Uganda, Ghana, Kenya and Zambia, are all already over-dependent on hydro-power for their electricity, and all have experienced increasingly crippling droughts that have sidelined their hydro-power production and resulted in energy shortages. All but Kenya have prioritised building more large hydro-power projects over other electricity projects – a choice that will only intensify their vulnerability to climate change. The alteration of hydrological patterns and increases in extremes of drought and flooding will cause Africa's already highly variable climate and hydrology to be even more difficult to predict.[3] For example, the Inter-governmental Panel on Climate Change cites research showing a 20 per cent reduction in run-off in the Nile Basin between 1972 and 1987, corresponding to a general decrease in precipitation in the tributary basins studied and significant interruptions in hydro-power generation as a result of severe droughts (IPCC 2001).

A recent study by climate experts at the University of Cape Town reveals that even a small decrease in rainfall on the continent can cause a drastic reduction in river flows. The study predicts that a decrease in water availability could occur across about 25 per cent of the continent. For example, a 10 per cent reduction in rain

over the Johannesburg area could lead to a 70 per cent drop in the Orange River's levels. A similar situation could hit Botswana, while in parts of northern Africa, river water levels would drop more than 50 per cent (De Wit & Stankiewicz 2006). 'It's like erasing large sections of the rivers from the map,' said Maarten de Wit, who headed up the study (Pottinger 2006).

According to a 2006 study by the United Nations Environment Programme (UNEP) and the World Agroforestry Centre, one-quarter of African nations are considered water-stressed or water-scarce, and the number is expected to double in less than two decades (ICRAF & UNEP 2006). Under such conditions, free-flowing, healthy rivers will become an even more valued resource than they are today.

Numerous African hydro projects have been proposed with little or no regard to whether they are the best option for meeting citizens' energy needs. Private foreign investments usually receive guarantees which protect private developers, leaving the risks to be borne by the government and citizens. Electricity from large hydro-power will not reach the majority of Africans, who live far from the power grid; expanding the grid to reach them would be prohibitively expensive. Hydro projects increase a nation's electricity supply in big increments, an inefficient way to address the gradual increases in market demands typical of African economies.

Meanwhile, the economic benefits of hydro and other large dams are often elusive. Hydro-power dams tend to underperform in relation to their targets for power generation, providing smaller revenues for paying off debts incurred to build the projects. Lengthy construction delays and large cost over-runs are routine, making numerous projects unjustified in hindsight. For local communities, project benefits, even those promised, seem to be out of reach. Time and again, transmission lines pass over the houses of villagers next to hydro dam sites, a symbol of the many benefits from dams never captured by local people. Large hydro projects can also increase national debt burdens by tens of millions of dollars.

Hydro dams are also playing a major role in spurring the development of long-distance, regional electricity grids. While regional grids and electricity trading can provide numerous benefits, regional grid systems are biased toward developing the largest supply projects, usually from big hydro and traditional fossil fuel plants. A large hydro-power dam, which a single country may not be able to justify developing on its own, can be more easily justified as part of a regional master plan. In fact, the regional planning process helps justify development of the largest hydro dams in a region, especially if planning follows a traditional least-cost planning approach, which usually does not account for the costs of externalities such as environmental damage and the full cost of social impacts. Such planning also excludes consideration of other social objectives such as renewable energy and rural electrification targets, and diversifying the energy mix. For example, the Southern African Power Pool (SAPP) anticipates that co-ordinated planning will

save the region US$3 billion over individual utility expansion planning (Economic Commission for Africa 2004: 49; World Energy Council 2003: 36).

The recipients and beneficiaries of the electrons flowing over long distances in Africa are not generally Africa's un-electrified majority but large, often foreign-owned industries and urban centres. Such projects are not the most practical way to improve access for new customers, especially not for the rural areas most in need of electrification. Wider distribution of modern energy services could bring enormous benefits for the health, education and livelihoods of the majority of Africa's rural population involved in such activities as small-scale agriculture, but for now the priority is clearly industrial expansion and mega-projects.

A brief history of Africa's big hydro dams

Hydro-power accounts for two-thirds of total electricity production in sub-Saharan Africa, excluding South Africa (US EIA 2004). Below are a few examples of Africa's troubled history with large hydro dams.

Zambia, Zimbabwe: Kariba Dam

Completed in 1959, Kariba was built to bring electricity to Zambia's Copperbelt and Zimbabwe's fast-growing manufacturing sector when the countries were still under colonial rule. At 128 metres high, it was the largest dam in Africa (and in the world) for some time and its reservoir, still one of the largest worldwide, drowned 282 kilometres of the Zambezi River and an average of 16 kilometres of river banks on either side.

The project marked the debut of the World Bank's controversial role in dam financing. Additional financing came from private banks and the Commonwealth Development Fund. The project achieved its goal of sending power to the copper-mine companies where one-third of the world's copper is mined, and numerous mining companies have prospered greatly. In Zimbabwe, the power helped build up Harare, Bulawayo and other main cities.

The Kariba Dam also achieved something that project planners did not expect and to which they had barely given a passing thought beforehand: the near genocidal destruction of the Tonga people. A total of 23 000 Tonga in Zimbabwe and 34 000 in Zambia – some two-thirds of the entire Gwembe Valley Tonga population – were dislocated by the reservoir and forced by colonial authorities to move from their ancestral lands into resettlement sites on barren ground, in conditions too cramped to support the population size. It has been deemed one of the worst resettlement projects in dam history by anthropologist Ted Scudder, an expert in the field of dam resettlement in general and Kariba in particular (Leslie 2005: 127).

Little funding was allocated to the initial resettlement, and promises to supply water and electricity in the resettlement areas were never fulfilled. The reservoir physically split the Tonga community, making it difficult to maintain family ties

between the two political regions. The Tonga began suffering chronic food insecurity after losing the fertile river valley lands, where they had been able to plant and harvest crops twice a year. Today, their single crop season often yields insufficient food for subsistence. In many of the resettled communities, poor yields are exacerbated by elephants invading crop fields, and a lack of government response to the problem. The effects of food insecurity, separation of Tonga families across the reservoir, and unfulfilled promises of water and electricity in the resettlement areas have led to a disintegration of many aspects of Tonga culture.

In addition to the immediate harm caused by the poorly managed resettlement process, the Tonga people have been excluded from sharing in the project's economic benefits. Much of the land lining the reservoir was turned into national parks in Zimbabwe or snatched up by colonialists and expatriates in Zambia. The fishing industry has been largely exploited by outsiders able to leverage capital to invest in fishing boats and other equipment. For Tonga fishermen, even the licences they must buy to fish are prohibitively expensive. In addition, no mechanisms were put in place to share revenues generated from tourism, commercial fisheries or sales of hydro-power.

Kariba Dam controls more than 40 per cent of the total run-off of the Zambezi River, and is operated to generate steady hydro-power production by storing peak floods and releasing a constant outflow of water. Much of the rest of the river flow is captured by Cahora Bassa and two large dams on the Kafue River, a major tributary of the Zambezi. These dams have collectively had major environmental impacts all the way downstream to the Indian Ocean, with major economic and social implications for those dependent on the ecosystem. Kariba Dam's environmental impacts were not assessed at the time of construction.

Amidst the years of kleptocratic rule, and the chaos of today's hyper-inflation and a near-bankrupt government, Zimbabwe's electricity sector has fallen into disrepair. In recent years, concerns have been raised about the dam's safety and the catastrophic risk all the way to the Zambezi Delta should the dam ever fail. The project's current status is uncertain, however: a US Army Corps of Engineers' team was not permitted to visit the dam wall during an inspection of Zambezi dams around the time of major floods in 2000. The project design also did not take into account the risk of earthquakes, although the project was built in a seismically active area.

Mozambique: Cahora Bassa Dam

In 1999, Dr Richard Beilfuss, a hydrologist with the International Crane Foundation, summarised the experience of the Cahora Bassa Dam as follows:

> While Kariba was built before the impacts of dams were well-understood, Cahora Bassa, just downstream on the Zambezi River, has no such excuse. The degree to which scientists' concerns were ignored in the planning of the Cahora Bassa project is staggering. Before the dam was completed in 1975,

South African river ecologist Dr Bryan Davies warned of the dam's severe consequences in a pre-project assessment: 'Reduced artisanal fisheries and shrimp industry productivity, reduced silt deposition and nutrient availability, severe coastal erosion, soil salinization, salt water intrusion, replacement of wetland vegetation by invasive upland species, reduction in coastal mangroves, failure of vegetation to recover from grazing, and disrupted or mistimed reproductive patterns for wildlife species.'

Just ten years later, deleterious changes to the Zambezi's riverine, wetland, deltaic and coastal ecosystems were already apparent. Fisheries ecologists G Bernacsek and S Lopez lamented in a UN document, 'It is clear that in the case of Cahora Bassa there was no serious attempt to ecologically optimize the dam prior to construction…Cahora Bassa has the dubious distinction of being the least studied and possibly least environmentally acceptable major dam project in Africa.' For decades, erratic and mistimed flooding below Cahora Bassa Dam has adversely affected the living standards of hundreds of thousands of downstream households and decimated one of the most productive and diverse wetland ecosystems in Africa, the Zambezi Delta.

The impacts predicted years ago have sadly come true. Due to the lack of the natural seasonal variations in flow, the once lucrative delta prawn fishery has declined precipitously, and only one of the main channels of the Zambezi Delta mouth supports relatively healthy mangrove. According to Davies, 'there are now large gaps in the mangrove forest along the entire northern and southern sectors that didn't exist prior to 1975, and areas of coastal erosion with dead mangroves in evidence.' Downstream residents have been further impoverished by the changes in river flow, sedimentation, and to species they depended on. Research by Mozambican ornithologist Carlos Bento suggests that the breeding cycles of many delta species have been disrupted by the irregular flooding patterns below Cahora Bassa Dam.

The devastation of the lower Zambezi seems all the more tragic in view of the fact that power lines were sabotaged shortly after the dam was completed. For more than 17 years, all but one of Cahora Bassa's turbines remained idle while Mozambique's civil war raged. Only in the past few years has power production been restored to its original capacity. (Beilfuss 1999: 8–9)

Ghana: Akosombo Dam

In 1960, Ghana embarked on its West-approved path toward prosperity. President Kwame Nkrumah had adopted a scheme that would drive the newly independent country into industrial and economic development. The scheme's cornerstone was a vertically integrated aluminium sector, the most energy-intensive industry in the world, powered by Akosombo hydro-power dam. Today, Akosombo Dam generates most of the country's power, but less than half the population has access to electricity.[4]

Fifty years on, the negotiating power of Ghana's government is proving no match for the powerful aluminium companies with whom it is dealing, and Ghana's integrated aluminium industry has not yet materialised. The long-term power purchase agreement guaranteed sales of electricity to the aluminium smelter for decades at a locked-in, ultra-low rate, while residential tariffs more than doubled, in part due to growing demand beyond the leftover supply. Benefits in terms of taxes and other revenues generated and local jobs created have been minimal. The government has at times been forced to import oil and use thermal generators to help meet its domestic electricity demand. The smelter's supply of cheap electricity means that ordinary Ghanaians increasingly subsidise the operating expenses of wealthy aluminium companies. No final products from the raw aluminium are produced in Ghana and virtually all inputs besides electricity are imported. Even though Ghana has bauxite, the mineral used in aluminium, it has no refinery to turn the mineral into alumina, the production step prior to smelting it into aluminium. The foreign companies have purposely kept their investments in Ghana away from the missing production steps in order to maintain their own vertically integrated production, which involves processing plants owned by subsidiaries in multiple countries.

Akosombo's reservoir, which displaced thousands of people in a poorly managed resettlement process, flooded 4 per cent of Ghana's land mass and represented the largest constructed lake at the time of its creation, has dropped so low that in February 2007 the aluminium smelter closed for the 11th time in its 40 years of operation, causing load shedding. While the 2007 closure left 700 employees out of work and was expected to last until 2008, it helped to boost aluminium prices on the world market, allowing foreign corporations to profit. Ghana's over-dependence on hydro-power, coupled with recent droughts, anticipated climate change, and a failed industrialisation strategy, have left Ghana's electricity sector and economy vulnerable.

South Africa: Gariep and Van der Kloof dams

The Gariep and Van der Kloof dams were part of the Orange River Development Project, a massive irrigation scheme whose roots were intimately tied to the development of South Africa's apartheid regime. As planned in the 1960s, hydro-power was one of numerous secondary functions of the project, while irrigation was the primary goal.

Gariep was commissioned in 1971 and Van der Kloof in 1978. The dams were originally planned with the option of raising each dam's height in later phases of the scheme. However, instead of waiting, both dams were built to their greatest height at the time of original construction, due in part to increasing demands for power generation. This decision increased the size of the reservoir and the number of people displaced, and was responsible for much of the project's cost increases (from US$571 million in 1962/63 to US$870 million two years later) (WCD 1998: 18).

The apartheid regime used the dams and the Orange River Development Project as a tool of development for the politically powerful white minority, and as a weapon against South Africa's black communities. The dispossession of black farm labourers during construction of the Gariep and Van der Kloof dams was done with no consultation and virtually no compensation. They were dislocated en masse to the strip of land between each dam's right of way and the road, known as the corridor. Due to policies prohibiting black people from freely moving to urban areas, many in the corridor squatted there for no less than 10 years. The squatters were forced to sell their valuables, including cattle, to buy food and other goods to meet basic needs. At a public hearing for dam-affected communities held in Cape Town in 1999, one woman recalled, 'I am even more poor than I was before, because the farmer just told us to move from the farm' (Mbalula 1999). She gave birth in the corridor shortly after being displaced.

The displaced communities suffered cultural and spiritual losses, too. Ancestral burial grounds under the dam reservoir were not properly moved and communities were not consulted about the impact on community grave sites beforehand. As of 2007, communities affected by these dams were continuing to struggle for adequate redress for the unjust impacts experienced as a result of the development of the dams.

The relevance of the World Commission on Dams for Africa

Like those communities affected by dams in Africa, numerous other communities around the world were also experiencing this reallocation of public river resources, marginalisation of their peoples, and degradation to the environment caused by dams. During the 1980s and 1990s, an intensifying chorus of voices from communities affected by dams around the globe was being echoed by their allies in civil society. With a fierce public campaign to expose World Bank and other public funding for dam projects, the global movement gained leverage in 1998 when the World Bank agreed to a review of the impact of the world's large dams. The independent WCD was born.

Between 1998 and 2000, the WCD undertook an unprecedented global process to review large dams and their development effectiveness. Twelve commissioners, representing a variety of backgrounds and a broad spectrum of interests in large dams, were appointed. A secretariat was set up in Cape Town, South Africa, and headed by former South African Minister of Water Affairs Kader Asmal. The Commission's mandate was twofold:

- to review the development effectiveness of large dams and assess alternatives for water resources and energy development; and
- to develop internationally acceptable criteria, guidelines and standards for the planning, design, appraisal, construction, operation, monitoring and decommissioning of dams (WCD 2000).

In November 1999, South African non-governmental organisations (NGOs), led by the Environmental Monitoring Group in Cape Town, organised the Southern African Hearings for Communities Affected by Large Dams, whose final report was submitted to the WCD (Environmental Monitoring Group 1999). Other important African contributions were made to the WCD Knowledge Base, including a case study on Kariba Dam, a case study on the Van der Kloof and Gariep dams in South Africa, and a regional consultation on Africa and the Middle East.[5]

In its final report, the WCD found that while 'dams have made an important and significant contribution to human development, and benefits derived from them have been considerable…in too many cases an unacceptable and often unnecessary price has been paid to secure those benefits, especially in social and environmental terms, by people displaced, by communities downstream, by taxpayers and by the natural environment' (WCD 2000: 310). The report went on to say that a 'lack of equity in the distribution of benefits has called into question the value of many dams in meeting water and energy development needs when compared with the alternatives'.

The WCD recommends transparent and participatory decision-making, and advocates for directly affected communities to be able to negotiate legally binding agreements with developers. Such an approach favours projects with low social, economic and environmental risks and high rewards for communities. Implementing the WCD recommendations would lead to energy policies which optimise existing infrastructure before building new schemes, and give preference to decentralised projects with widespread benefits over centralised mega-projects with unmanageable social and environmental impacts and benefits for limited areas.

Since the release of the WCD's final report, efforts have been made to promote its rights-based approach to water and energy planning across Africa. In South Africa, efforts were under way almost immediately to conduct a national dialogue on how to integrate the WCD recommendations into national policies and planning. The South African Multi-Stakeholder Initiative on the WCD culminated in its final substantive report in late 2004 (South African Multi-Stakeholder Initiative 2004). The Initiative's supporters now face the daunting task of implementing its recommendations in the form of tangible changes to South African governmental policy and regulation.

Impassioned NGOs in other countries have attempted to replicate the South African Initiative by educating local communities on the WCD's findings and by launching national multi-stakeholder dialogues in order to review and improve their respective nations' laws and policies relevant to energy and water planning. In Uganda, the National Association of Professional Environmentalists (NAPE) brought together various stakeholders for the Uganda Dams Dialogue. The group launched its final report in March 2007 (Muhweezi 2006). The report included the group's recommendations based on three years of work and a scoping report.

However, a major absence from the process was any discussion about the ongoing Bujagali Dam, the country's most controversial proposed dam. According to NAPE, the Dialogue experience improved communication between stakeholders, but limited political commitment and funding are hindering the steering committee from implementing the recommendations (see Gore, Chapter 14 of this volume, for a more detailed discussion of the situation in Uganda).

In Nigeria, the Society for Water and Public Health Protection (SWAPHEP), a local NGO, has spent years motivating government and community stakeholders to come together to discuss the WCD report. In 2005 and 2006, SWAPHEP undertook a series of community workshops to raise awareness of the WCD recommendations and the nation's history of dams. At the same time, the director of SWAPHEP met repeatedly with staff overseeing dams and reservoirs within the national Ministry of Water Resources. In February 2007, years of effort culminated in a national consultative conference on the WCD. But as SWAPHEP's director noted, 'Hopes to take the work forward are trying to stay afloat amongst a lack of funds.'[6] Civil society groups in Ghana, Togo and Senegal are also following suit with WCD processes, unfortunately with similar battles for funding, stakeholder interest and adequate political will.

While all of these efforts have begun to open the dams planning process to civil society, and have raised serious concerns about dams, across much of Africa it is 'business as usual'. Chinese financing is helping to drive Mambila Dam in Nigeria and Bui Dam in Ghana. In Uganda, the World Bank, European Investment Bank (EIB), African Development Bank (AfDB) and other lenders are on board to build the US$799 million Bujagali Dam on the Nile. Only in Togo has the Adjarala Dam been put on hold.

The Southern African Development Community (SADC) also made some efforts to consider the WCD's recommendations and contextualise them within the SADC's planning framework. In 2002, the SADC twice encouraged its member states to hold national consultations on the WCD recommendations, but only South Africa has done so in any comprehensive way. One-time workshops have been held in Namibia, Lesotho, and Zambia, but without substantive follow-up. The SADC reports that it has integrated the WCD into its water policy, but the policy's adequacy has not been validated through any process involving civil society and affected communities. SADC has made little effort to proactively engage civil society in dialogues and project decisions relevant to the SADC regional energy and water planning.

In 2003, the German development agency GTZ, a supporter of WCD implementation in Africa, published *Key Dam Issues in the SADC Region* (Clanahan & Hughes 2003). The report gave a brief comparative overview of SADC policies against the WCD's seven strategic priorities, as a basis for policy recommendations which would improve the decision-making framework in the SADC region. Of the 839 large dams in the SADC region, 539 are in South Africa and 213 in Zimbabwe. The report noted that many dams in southern Africa are reaching an age where maintenance and refurbishment costs will be significant.

The report also noted that there is a dearth of regulation for dam safety in the SADC region, with only South Africa having extensive safety policies.

Since the release of the WCD final report, African NGOs monitoring dam developments, promoting the WCD and advocating for communities affected by past dams have come together to build a regional network. In 2003, they announced the creation of the African Rivers Network (ARN), a semi-formal network for information exchange on the continent. Today, the network is growing and it is the most active regional civil-society network monitoring hydro-power development in Africa. ARN believes that future hydro dams can benefit Africa only after the legacy of past dams is addressed and if the WCD recommendations are followed. ARN is also committed to furthering research on the impacts of dams and alternatives to them, particularly renewable energy options.

Surprisingly, there is agreement between international development agencies and civil society that regulatory frameworks for energy planning in Africa are sorely inadequate. But Africa as a whole has been raised to a level of international crisis, and the gap in hard infrastructure is being tackled with such urgency that development financiers like the World Bank say they cannot wait for changes in the regulatory frameworks.

Sadly, the lessons of the WCD are not being streamlined into African institutions at the same rate as large-scale energy schemes are being planned and built. Those setting the infrastructure agenda are fostering a crisis-like climate about Africa's underdeveloped energy sector, allowing large-scale projects to be fast-tracked without first filling the known gap in regulatory frameworks, a measure which would help steer decision-making towards electricity and energy projects better suited to meet the needs of Africa's poor, rural majority.

The new push for dam development in Africa

In the past, big dams in Africa were promoted and financed primarily by the World Bank. Today, there are many more players and processes promoting large hydro developments, and the World Bank, which had begun to retreat from building big dams in Africa, is back. In this section we look at some of these new influences.

The plan adopted at the 2002 World Summit on Sustainable Development (WSSD) called upon the international community 'to improve access to reliable and affordable energy services for sustainable development sufficient to facilitate the achievement of the Millennium Development Goals (MDGs)…bearing in mind that access to energy facilitates the eradication of poverty' (WSSD 2002: 5). However, the New Partnership for Africa's Development (NEPAD) and the international community lining up behind it have focused a disproportionate amount of their efforts on energy projects for economic growth through industrial development, rather than on a plan for rural energy and development programmes that would directly address the MDGs.

The UK government's Commission for Africa identified the need for a US$50 billion injection into Africa's infrastructure by 2010 and a doubling of funds thereafter, intended to drive a 7 per cent growth rate in GDP. Ironically though, the Commission also said that developed countries 'should avoid funding prestige projects that have so often turned into white elephants in the past' (Commission for Africa 2005: 49).

But white elephants could again be part of Africa's future, as the golden word amongst governmental powers and development financiers wanting to spur Africa's economic growth is infrastructure, and in particular large hydro dams. A potentially massive financial commitment to Africa's infrastructure is becoming a magnet for big hydro-power schemes and their supporting long-distance grid systems envisioned by energy planners for the continent. Decision-making processes are being fast-tracked from the outset in order to keep up with the G8's promises to disburse funds through various facilities, including the creation of the Infrastructure Consortium for Africa (ICA), the EU-Africa Infrastructure Trust Fund, and the Infrastructure Project Preparation Facility (IPPF). The lack of transparent and participatory strategic planning means less oversight and accountability for the electricity sector agenda.

The ICA was born out of the G8's attempt to address Africa's infrastructure gap and provide a platform for collaboration between the private sector, financiers and African governments. Housed under the AfDB, the ICA acts as a broker, partnering projects and donors. Its emphasis is on regional priority projects shortlisted by NEPAD. The ICA's secretariat staff is provided by the AfDB and the governments of the UK and Japan, and its budget is funded by the UK, AfDB, and the Public Private Infrastructure Advisory Facility (housed in the World Bank).[7]

While in some ways the ICA is a tool to help streamline multi-agency collaboration, their agenda continues to be mega-projects, especially mega-dams and transmission lines which support centralised grid energy development. Streamlining collaboration could help support comprehensive project decision-making, but the collaboration is between agencies, not with civil society. The purpose of streamlining is not so much to improve decision-making amongst stakeholders, nor to make decision-makers more accountable, but to accelerate projects which have already received priority status through a process that has marginalised civil-society influence. Although the ICA has recognised that a large financing gap exists in the upstream area of project planning, it is not clear if they will work to make the upstream planning process more inclusive, transparent or accountable.

One year after the G8 conference at Gleneagles in Britain in 2005, the ICA surpassed its own goals by securing funding decisions on 10 regional projects totalling US$700 million, plus 13 studies (US$8 million) and 34 country-level projects (US$1.8 billion), including five NEPAD priority projects. In June 2006, the ICA noted that Africa's vast hydro-power potential was still largely untapped. In

January 2007, the ICA held its third meeting; the government of China and China Exim Bank both participated for the first time, signalling their desire to work with the ICA.

Also as a response to Gleneagles, the EU created the EU Strategy for Africa, under which the EU-Africa Infrastructure Partnership was created as one of the Strategy's pillars. The EU-Africa Infrastructure Trust Fund, launched in April 2007, is the financing instrument of the Partnership. The Fund is housed under the EIB and will channel EU commitments made at Gleneagles to support regional projects. Already the Fund has received €87 million and leveraged €260 million in loans from the EIB. The Félou hydro dam in the Senegal River basin, an identified NEPAD priority project, is receiving EU support through the Fund.

The IPPF evolved from a Canadian into a multi-donor facility after Gleneagles. Like the ICA, the IPPF is housed at the AfDB. By mid-2007, the IPPF was expected to capitalise up to US$30 million and to develop a pipeline of regional projects worth around US$600 million. The Africa Partnership Forum, tasked with monitoring implementation of Gleneagles' commitments, has called for more contributions to the IPPF and has agreed to support the building of technical capacity for project design and development.

The NEPAD strategy, fully supported by the G8's Gleneagles' commitments, continues to be kept well out of the sphere of public influence, while financial commitments line up behind it and official spin twists corporate economic growth into poverty alleviation. Formed in 2001, NEPAD was spun as the African home-grown plan for the continent's development, but was fully immersed in traditional northern views of industrial economic growth. NEPAD has included energy infrastructure at the top of its agenda, most notably via two infrastructure plans: the *Short-Term Action Plan* published in 2002 (NEPAD 2002) and the forthcoming Medium- to Long-Term Strategic Framework currently in preparation. The longer-term strategy is expected to be the primary guide for Africa's infrastructure development for the next 20 years.

Together, these two strategies propose numerous large dams and transmission interconnection projects. By June 2006 funding totalling US$764.3 million was committed for a total of 11 short-term priority projects. A further US$7.1 million was committed to studies designed to advance the implementation of short-term projects. In 2004, UN-Energy/Africa (UNEA) was set up as a UN inter-agency effort to provide streamlined support for NEPAD's energy strategy.[8] Dams prioritised under NEPAD include Mozambique's Mphanda Nkuwa on the Zambezi River, the Grand Inga project on the Congo River in the Democratic Republic of the Congo (DRC), Adjarala Dam in Benin, and the Souapiti and Kaleta dams in Guinea.

NEPAD is also aligned with the six-phase strategy of the African Economic Community (AEC) to create a continental economic bloc by 2028. The AEC was established by treaty under the African Union in 1991 and ratified in 1994. Now in its second phase, the strategy of the AEC is based on the goals of strengthening

regional economic communities and energy sector integration. As part of this, the regional economic communities have been given the task of developing regional power grids and a complementary set of power pools which oversee the development of an electricity market. Power pools have been developed to conduct electricity trading, and regional master plans for each power pool have or are being prepared. All of these power pools require significant funding and technical support to become operational and effective. In January 2007, offers of further support for building the capacity of regional power pools were received from the European Commission, Japan and the USA.

The four power pools in sub-Saharan Africa are:

- the SAPP: includes the 12 countries of the SADC and was established in 1995;
- the East African Power Pool (EAPP): includes at least seven countries from the Common Market for Eastern and Southern Africa, the East African Community, and the Nile Basin Initiative (NBI) and was established in 2005;
- the Central African Power Pool or Pool Energétique d'Afrique Centrale (PEAC): includes 11 countries of the Economic Community of Central African States and was established in 2003;
- the West African Power Pool (WAPP): includes 14 countries in the Economic Community of West African States and was established in 2000.

Numerous hydro dams are being fast-tracked as priority projects under regional power master plans, but neither the process nor the criteria by which these projects were prioritised is clear. Regional power plans in Africa are further removing energy planning from public view and making it increasingly difficult for civil-society groups to monitor and engage in planning processes. These plans generally include national-level priority projects and national-level predictions of demand growth, inputs often developed without public participation or oversight. Regional economic communities are also playing an increasingly important role in project planning and decision-making, and may soon receive borrowing authority for trans-boundary energy projects. The lack of awareness about regional energy development amongst national populations and the growing authority of the regional economic communities are further minimising scrutiny at the national level. Africa is not home to a strong regional or multinational civil society, so regional projects are likely to receive less 'sunshine' than those at a national level.

In April 2002, the SAPP Executive Committee agreed to intensify its efforts to attract energy-intensive users into the SADC region 'to take advantage of low-cost, high-quality and reliable electricity' (SAPP 2002). Like an echo of this strategy, the World Bank's Southern African Power Market (SAPM) programme for the SAPP expects to 'increase the availability and reliability of low cost, environmentally friendly electric energy in the Southern African region, thereby increasing competitiveness of industry and fostering economic growth' (World Bank 2003a: 3). Project documents argue that regional integration will attract

private developers and would save the region at least US$1 billion over 16 years (World Bank 2003a).

The SAPM is anticipated to be a three-phase project worth a total of nearly US$1 billion in Bank and non-Bank financing. Overall goals include: strengthening the capability of the Coordination Centre of the SAPP to promote and manage electricity trade in the region; removing transmission bottlenecks that inhibit trade; and connecting member countries that at present are not connected to the regional grid. According to the SAPP, electricity demand is growing at an average of 3 per cent per year.

The first phase, approved in November 2003, includes rehabilitating the transmission line from Inga in the DRC to the Zambian Copperbelt and a study of a transmission interconnection to Tanzania. The project also includes environmental studies for the future expansion of the DRC power sector. Project co-financing is expected from bilateral donors, including USAID and NORAD. The second phase, approved in June 2007, is support for a transmission connection between Mozambique and Malawi at a cost of US$87.4 million. Phase-three lending will be directed at the governments of Tanzania, Zambia and the DRC and will cost US$220.5 million.

While World Bank documents identified the SAPP's Integrated Regional Power Master Plan as a key document prior to the Bank's first SAPM loan, communication with the Bank concluded that this actually refers to 'a list of priority projects in generation and transmission system expansion to meet the short-, medium- and long-term needs of the growing regional power market… The priority proposed schemes/projects were based on preliminary screening taking into account estimated cost, and status of preparedness, status of financing arrangements'.[9] After using a non-existent study to help justify the World Bank loan in 2003, the Bank and the SAPP are belatedly undertaking a study on regional least-cost generation and transmission, which was expected to be completed by April 2008, which 'would serve as [the] basis of discussion with member utilities for development to meet the demand over the long term in the regional market' (see note 9).

In West Africa, the WAPP is anticipated to be fully operational by 2023. A regional master plan based on national planning and utilities was completed for the WAPP in 2004 with USAID funding, which is also supporting the institutional needs of the WAPP. The master plan projects electricity demand will grow 7.6 per cent per year, from the current 6 500 megawatt (MW) peak demand to over 22 000 MW. Nigeria is set to consume two-thirds of the electricity (Nexant 2004). Priority hydro projects include Felou in Mali, funded by the World Bank and the EIB, Kaleta in Guinea and Sambangalou in Senegal. While only about one in three West Africans has access to electricity, it is not clear whether increasing access to the grid via new connections will be a targeted goal of the WAPP.

In Central Africa, USAID is also financing a study on a regional master plan for power development, and an interconnection feasibility study has been funded by

the AfDB. In East Africa, the EAPP is already developing a master plan. World Bank staff have announced several proposed interconnections cited as key projects for the EAPP: Lake Victoria Transmission Ring, Zambia–Tanzania–Kenya Interconnector, Ethiopia–Kenya Interconnector, and Rusumo Falls Hydropower Project with a backbone transmission network between Tanzania, Rwanda and Burundi. The World Bank-supported Nile Equatorial Lakes Strategic Action Plan was released in early 2007, highlighting Bujagali and Rusomo Falls dams as regional priorities.

Development banks re-engage

The World Bank and EIB, long involved in dam building in Africa, began to retreat from dam financing in the 1990s. This coincided with growing public criticism of dams, the birth of the WCD, and assumptions that the private sector would fill the funding gap. However, seeing large-scale infrastructure projects as their comparative advantage, these multilateral development banks have jumped back into dam financing in Africa, particularly through projects emerging from regional grid plans backed by the World Bank. The Bank launched its re-entry with its 2003 'high-reward/high-risk' water sector strategy (World Bank 2003b).[10] Small-scale projects, though they may better serve the populations in need and meet the Bank's stated goal of poverty reduction, are mostly left to bilateral or other, non-governmental, funders. Dams have the advantage for the banks of moving significant amounts of funding through single projects, projects which have built numerous careers within these institutions.[11] At the time of writing, the Bank was backing Bujagali Dam in Uganda and the rehabilitation of existing dams in the DRC and Nigeria, as well as Felou Dam in Mali and the dam-heavy plans of the NBI.[12]

The AfDB, too, is playing an increasingly important role in regional dam building. Besides housing the ICA secretariat and the IPPF, the AfDB is the lead agency for NEPAD's infrastructure development and houses a NEPAD unit. These multiple initiatives and the AfDB's increased orientation toward infrastructure financing make the AfDB an important institution for civil society to monitor. The AfDB is the *de facto* co-ordinator for Africa's energy priority projects and for measures taken to ensure that the first projects to receive funds will have the maximum positive impact on continental growth opportunities. Along with the World Bank, the AfDB recently approved funding for the Bujagali Dam in Uganda. At the time of writing, the inspection panels of each bank were set to conduct investigations into concerns raised by civil society; this would be the first project investigation to be conducted by the AfDB's inspection panel.

Pension funds have also recently been identified as a source of investment funds for large infrastructure. In July 2007, the AfDB and the Development Bank of Southern Africa (DBSA) launched the Pan-African Infrastructure Development Fund to invest in large-scale infrastructure. The Fund, also a NEPAD initiative, is hoping to raise US$1.2 billion and to leverage US$9–14 billion in projects by 2015.

Ghana's Social Security & National Insurance Trust and South Africa's Public Investment Corporation have both committed to investing. Four private southern African banks have also joined. Other pension funds from as far away as Singapore are considering joining. The Fund is already reviewing nearly 20 projects. The AfDB and DBSA will each have at least 10 per cent shares in the management committee (Benton 2007; Mahlangu 2007).

The Islamic Development Bank has helped finance controversial dams in Africa, including Merowe Dam (Sudan) and Manantali Dam (Mali/Senegal). The Bank recently announced a new US$10 billion Poverty Alleviation Fund for Africa to finance projects targeting the MDGs (Organisation of the Islamic Conference 2007). However, little information about the fund or its projects is publicly available.

Smaller regional development banks in Africa may also begin to play an increasingly important role. The DBSA has played a vital role, especially in protecting South Africa's interests. In addition, the Central African Development Bank is funding a feasibility study of M'emvele Dam in south-west Cameroon.

South Africa's Eskom, the single largest African utility, is arguably the most influential African voice in electricity planning (see Chapters 2 and 3 in this volume for more on Eskom). Eskom's influence is driven by its size, value, and the power-hungry country it serves. Until recently, Eskom has been in charge of all of South Africa's electricity, which accounts for roughly half of the entire continent's electricity consumption. Eskom is helping to drive SADC's energy policy and Westcor's plans to bring power from the DRC and Angola to South Africa (see below, p. 169), and is an anticipated beneficiary of the Mphanda Nkuwa Dam proposed for the Zambezi in Mozambique. Although Eskom took part in the South African WCD Initiative, nothing legally binds the utility to follow the WCD recommendations in its business activities, either in South Africa or abroad.

China dragon slays African rivers

While the World Bank and European governments continue to be important financiers of hydro dams, power pools and sector reform, they are by no means alone. China is the most important player on the African scene today.

Africa's vast bounty of oil and other raw resources has whetted China's industrial appetite, and Africa's population has become a captive consumer of China's cheap imports. Chinese corporations, financial institutions, and the Chinese government have shown a growing strategic interest in Africa, marked in 2005 by US$39 billion in China–Africa trade. One of China's only requirements is that its African partners do not recognise Taiwan. Following the November 2006 Sino-Africa summit held in Beijing, China committed to investing US$5 billion in African infrastructure over the next three years, and launched the China-Africa Development Fund in early 2007 as its vehicle to implement its promised funding. The Fund's first US$1 billion came from the state-owned China Development Bank.

Chinese companies and financiers are already involved in a number of large African dams worth billions of dollars. The controversial Merowe Dam in Sudan, currently under construction, is financed by the China Exim Bank. Tekeze Dam in Ethiopia, also under construction, is financed by China. Chinese financing is being lined up for other proposed controversial hydro dams, including Mphanda Nkuwa Dam in Mozambique, Bui Dam in Ghana, Mambila Dam in Nigeria and Souapiti Dam in Guinea.

Civil society and dam-affected peoples' movements are concerned that China's own poor record on protecting human rights and the environment could mean trouble for African rivers now targeted for Chinese-built large dams.

Rallying the troops: conferences on hydro

In March 2006, the government of South Africa, in close collaboration with the industry lobby group International Hydropower Association (IHA), hosted the African Ministerial Conference on Hydropower and Sustainable Development in Johannesburg. Organisers planned to have only a handful of pre-approved civil-society representatives attending. After months of struggling with conference planners, members of the ARN succeeded in gaining invitations and locating funds to participate in this high-level forum. Civil society managed to gain an additional foothold in the event when they received the opportunity to include a dam-affected person to make a presentation on the social impacts panel. Towards the end of the conference, civil society also had an opportunity to share its position in a statement, which read in part: 'Before new hydropower investments commence, the historical injustices must be addressed. We call upon our governments to share both the cost of breaking the eggs and benefiting from the omelettes equitably, but not to leave the burdens related to dams to the community and all the benefits to others at the cost of the community' (Dumba 2006).

The conference's final action plan included broad statements of civil society inclusion (e.g. 'Ministers commit themselves to involve civil society in all aspects of hydropower development') (African Ministerial Conference 2006: 3) but the plan is ultimately designed to smooth the way for Africa to follow a large hydro-based energy path, with few inroads along the way for civil society. As described by the WCD, by the time a decision is taken to develop a hydro-power project, critical strategic decisions on how best to meet energy needs have already been taken. The action plan in no way speaks to civil society's need to participate at these earlier stages. Given the advanced stage of the region's 'priority lists' of large-dam projects, and the close association with hydro-power interests such as the IHA, it is unlikely that this bedrock WCD strategic priority will be followed. Another key component of the action plan is the creation of an African Hydropower Symposium which would be housed within the African Energy Commission (AFREC) and work closely with the IHA. AFREC was also given secretariat responsibilities for following up the conference action plan.

Another conference relevant to Africa's hydro development was the Second Financing for Development Conference titled 'Infrastructure for Growth – The Energy Challenge', organised by the UN Economic Commission for Africa and the AfDB in May 2007.[13] The conference theme was energy, infrastructure and its contribution to economic growth. Although the conference noted the role of energy in meeting the MDGs, the conference action plan was focused on longer-term national energy planning, the importance of regional infrastructure, and the challenges of ensuring adequate financing, particularly for post-conflict countries. The conference action plan included plans to fast-track current regional initiatives, including the Inga Dam project and regional power pools, to strengthen regional economic communities and NEPAD.

Grand Inga, or Grand illusion?

Many institutions now see a regional energy integration scheme for Africa as a top development priority. At the heart of this vision is the near-mythical bend in the Congo River known as the Inga Rapids. The Inga site, located 150 kilometres upstream of the mouth of the Congo River and about 225 kilometres downstream of Kinshasa, has the greatest hydro-power potential in the world. It has attracted a variety of international partners who are touting the proposed multi-dam Inga hydro-power scheme as the cornerstone of an African power grid, and a solution to Africa's energy woes. Amongst its many supporters are SADC officials, led by Eskom, who see hydro-power from Inga as fundamental to meeting South Africa's growing electricity demand. The World Energy Council and other champions of Inga are spreading a strong media message: Grand Inga will light up Africa, and Africa will thrive.

But critics note a host of problems that make Inga more of a white elephant than a roaring lion. The Inga site is set in one of the most politically volatile and economically corrupt countries of Africa. Its enormous cost would impede trickle-up energy projects for decades to come. Like each regional power plan, Inga is being driven largely by mining and industrial interests, sectors known for their opaque dealings and exploitation of local workers and communities. A transparent framework for natural resource and power export revenues is lacking. No good-faith efforts are being made to consider options which could more effectively meet the MDGs and resolve the outstanding social and environmental issues related to the existing Inga 1 and 2 dams. The planning of the grid scheme itself lacks transparency, public participation and democratic decision-making. Current plans lack an equally well-funded distribution network, an indication of the plans' benefits to energy-intensive industry and urban centres. There are even enthusiastic, though perhaps unrealistic, discussions about power exports to Europe and the Middle East.

The Inga projects include three stages of power supply which would support existing and planned regional transmission grids: rehabilitation of the existing

dams Inga 1 and 2, construction of Inga 3 (3 500 MW), and construction of Grand Inga (44 000 MW). As planned, Inga would eventually connect directly to all four sub-Saharan power grids.

Inga 1 (351 MW) was built in 1972 and Inga 2 (1 424 MW) was built in 1982, both with Italian support. Analysis of the then proposed dams found that they were not economically feasible, even taking into account the plan to attract the aluminium industry as an anchor customer. But then-president Mobutu went ahead and built the pair of white elephants anyway, disregarding the economic analysis prepared by French consultants, and consistently neglecting maintenance requirements. It is estimated that the Inga 1 and 2 dams alone are responsible for over half of the DRC's external debt.

Although the Inga 1 and 2 dams are not particularly old, they are currently undergoing a second, intensive rehabilitation effort. Poor maintenance, and significant siltation of the shared canal and reservoir, have left the two dams operating at only 30 per cent capacity. One would think that the bursting population of nearby Kinshasa would be devastated by this. But even at 30 per cent the dams still export power to mining activities in southern DRC, the Zambian Copperbelt and South Africa rather than satisfying the needs of Kinshasa's more than 5 million urban residents now without electricity.

In 2005, MagEnergy, a subsidiary of Canadian-based MagIndustries, signed its own agreement with Société Nationale d'Electricité (SNEL, the state-owned electricity utility in the DRC) to rehabilitate four of the eight turbines at Inga 2 through an undisclosed power purchase and partial privatisation agreement. The rehabilitation is anticipated to cost US$100 million. MagAlloy, also a subsidiary of MagIndustries, plans to build a potash plant and magnesium smelter at nearby towns Kouilou and Point Noire, respectively. Agreements have already been made to build a 200 kilometre transmission line from the dam to the smelter, which will receive a guaranteed 120 MW from the rehabilitated Inga 2 Dam. A Special Purpose Vehicle, of which MagEnergy owns 70 per cent and South Africa's Industrial Development Corporation 15 per cent, was created to conduct the work and sell the electricity afterwards. The EIB is supporting MagEnergy's portion with a US$16 million loan. MagIndustries has also raised US$20 million for its investment through private placement of shares.

Some of the Italian companies benefiting from contracts in Inga rehabilitation include the Tosi group, which will repair and provide maintenance for MagEnergy of one of Inga 2's eight turbines. French engineering consultants Ingerop were contracted by MagEnergy to conduct a feasibility study on its Inga rehabilitation programme. MagEnergy has also signed a contract with SNEL to build a 300 MW hydro dam at Busanga on the Lualaba River in Katanga which would provide more power to copper and cobalt mines in Kolwezi.

In May 2007, the World Bank approved the Regional and Domestic Power Markets Development Project which included rehabilitation of Inga 1 and 2, and

construction of a second high-voltage line from Inga to Kinshasa in order to take pressure off the existing line which is regularly overloaded. While Bank documents identify 'enormous unmet demand' in the DRC as a primary project rationale (World Bank 2005), the loan only included an additional 50 000 connections in Kinshasa, less than 1 per cent of the city's population (only about 6 per cent of whom have electricity access). The loan also includes support for the unbundling and privatisation of SNEL, as well as efforts towards further developments at Inga.

The programme will finance rehabilitation of turbines and water supply for the Inga 1 and 2 dams worth US$200 million. The operation will enable the dams to generate 1 350 MW – their maximum capacity – compared to current production of just 700 MW. Three hydro-power plants near Katanga that feed into the Inga-Zambia transmission line will also receive US$17 million worth of rehabilitation.

Rehabilitation of Inga 1 and 2 is only a first phase of current Inga developments. Developing the 3 500 MW Inga 3 Dam is the goal of Westcor, an entity created in 2004 through an agreement signed by the utility companies of five African countries – Eskom in South Africa, Empresa Naçional de Electricidade in Angola, SNEL in the DRC, NamPower in Namibia, and Botswana Power Corporation in Botswana. Westcor, also a NEPAD priority project, is now a registered consortium company in Botswana. In order to more directly connect South Africa – the dominant market for Inga development – to Inga 3, Westcor would build two 3 000 kilometre high-voltage transmission lines through Angola. Westcor is also considering up to nine hydro-power dams in Angola's Cuanza basin (a total of 6 700 MW) as well as hydro dams on the Lower Cunene River in Namibia. These five utilities would be the direct customers of Westcor, and industrial customers would buy from the utilities.

These projects are planned to be constructed by Westcor under a Build, Own, Operate agreement. Each of the five utilities has an equal stake in the company and contributed an initial US$100 000 to fund feasibility studies. According to Westcor, the projects are geared towards fulfilling projected energy needs in the five participating countries, including newly attracted energy-intensive industries.

An initial feasibility study was conducted by Electricité de France. SNC-Lavalin was conducting an updated feasibility study and environmental and social assessment funded through the Canadian International Development Agency (CIDA). However, the study has been stalled due to 'political instability'.[14] The total cost for Inga 3, including converter stations and transmission lines, is expected to easily exceed US$5 billion.

While initial funding has come from the five utilities, Westcor is attempting to raise additional funds through the World Bank, EIB and private sources. Attempts are also being made to make Westcor a publicly traded company in order to increase financing. The Westcor project is one of NEPAD's and the SADC's highest priorities and is being promoted by Eskom and the South African government. Westcor has reportedly approached the AfDB and the DBSA to fund the $10 million feasibility studies, which are expected to be completed by 2009.

However, Westcor's Inga 3 proposal is a drop in the bucket compared to Grand Inga, also known as Inga 4. By damming the Congo River, flooding the adjacent Bundi Valley, and using a series of 52 turbines and multiple dams over the Inga Rapids, Grand Inga would produce up to 44 000 MW of electricity, over twice the capacity of the infamous Three Gorges Dam in China. While feasibility studies and financing for Grand Inga are just beginning, proponents of this mega-project are broadcasting the claim that it will 'light up Africa', even having power left over to export to Europe. With an ever-increasing price tag – its 2005 cost of US$50 billion was upgraded in 2007 to US$80 billion – concerns are growing that foreign and industrial interests will gain vast economic benefits from the project, with only cursory attention given to easing the electricity needs of Africa's poor.

In October 2006 an international forum was held to woo foreign investors for the Inga 3 and Grand Inga schemes. The AfDB, which provided financial and logistical support for the forum, refused to provide assistance to concerned civil-society groups seeking to participate. The forum was a follow-up to a similar national-level forum organised by the government of the DRC that was held in March 2006 in Kinshasa. No civil-society representatives were included in that AfDB-supported meeting either.

In March 2007, the World Energy Council held a two-day meeting in Gaborone, Botswana, to discuss the way forward for Grand Inga. Event organisers issued reluctant, but still unfunded, invitations to civil society to participate. In both cases, NGOs had to scramble to raise funds for a handful of participants, including representatives of the local community that has long suffered the social and environmental impacts believed to have resulted from Inga 1 and 2, and is now seeking recourse and rehabilitation. Upon returning to the Inga region after the meeting, one community representative was harassed by officials, an experience indicating an atmosphere of tension and suppression of local activism.

The AfDB is preparing to support a feasibility study on further development of the Inga hydro-power site. The study, which may include consideration of both Inga 3 and Grand Inga, would include an environmental and social impact assessment. A draft Terms of Reference for the study indicated that various ownership scenarios would be explored, but private development underlies all plans.[15]

In February 2006, Australian-based BHP Billiton signed a Memorandum of Understanding with the DRC's energy minister to build a US$2.5 billion aluminium smelter, dependent on additional development of Inga and nearby construction of a deep-water port. An agreement is expected to be signed with SNEL that will include construction of a transmission network specifically for BHP.

The Chinese government has also shown keen interest in the Inga projects and financing through the China Exim Bank would not be unrealistic. Chinese-based SinoHydro, which regularly benefits from China Exim Bank contracts, has had discussions with DRC authorities and has worked on the maintenance of the existing Inga dams since 2004.

Developing hydro-power at Inga will only be effective if accompanied by an equally grand scheme to link the Inga dams by high-voltage transmission lines to each regional power pool. A proposed 1 400 kilometre line to Nigeria, connecting the PEAC and the WAPP, is being proposed, as well as a 5 300 kilometre line to Egypt. In southern Africa, the 3 676 kilometre line known as the East Corridor (between the DRC and South Africa, via Zambia, Zimbabwe and Botswana) has already been partially upgraded with World Bank funding. The West Corridor is part of Westcor's plan to build a line between the DRC and South Africa, via Angola and Namibia.

These transmission lines are anticipated to connect to faraway industrial and urban centres without providing the distribution networks needed to electrify communities along the way.

A way forward

Africa clearly needs energy development. But the type and scale of energy development needed to help poor rural communities is considerably different to what is generally being planned for the continent. Generating rural incomes and reducing child mortality caused by respiratory illness are just two examples of the high rewards which can be attained through low-risk strategies to reduce poverty from improved access to modern energy services.

However, the numerous financiers and other influential actors lining up behind Africa's infrastructure are building momentum for a strategy which seems all but unstoppable. This momentum hinders the ability of civil society to question the choices being made for Africa's energy future, or to influence project decisions on issues such as compensation for affected communities, benefit sharing, ecosystem trade-offs and project operation.

The WCD came about precisely because large dams had repeatedly devastated communities and not brought the development benefits they had promised. The WCD is not meant to be mere window dressing for big dam projects. Rather, it provides the nuts and bolts for effecting positive change and sustainable outcomes in the development planning process. African governments and their development partners which turn away from the WCD, or use a piecemeal approach to choosing those of its recommendations which best suit a particular dam project, are missing a genuine opportunity for development in their countries.

Those advising on the MDGs and the WCD agree on the need to make decision-making more participatory and pro-poor. The interim report of the MDG task force lists six 'clusters' of core MDG policy priorities with important overlaps with the WCD's recommendations. The task force's priorities include 'a rights-based approach to poverty-reduction, one in which historically excluded or disempowered groups are given a greater emphasis in policy-making and a greater voice in decision-making' (Millennium Project Task Force on Poverty and

Economic Development 2004: 34). Other policy priorities include 'increased public investment in basic human needs' such as water and sanitation, promotion of rural development through raising yields on small farms on marginal lands, biodiversity preservation and watershed management (Millennium Project Task Force on Poverty and Economic Development 2004: 34).

The WCD's final report (WCD 2000) recommends a public process to thoroughly assess needs, and the best options for meeting those needs, before prioritising any single project. Unlike the approach an engineer might take, a participatory process to identify needs and choose 'best options' looks not only at technical feasibility, but also considers social impacts such as specific rural needs that need to be addressed using local resources, and stimulating the local economy by creating skilled jobs. Too many poorly planned large dams have already failed to fulfil their goals, and Africa cannot afford any more development setbacks. Without a proper planning process, such as that outlined by the WCD, new dams are likely to be built based on skewed priorities that will continue to leave Africa's majority behind.

An important key to the WCD is that *strategic planning* done upstream from project decisions must balance energy needs for industrial and human development. When large infrastructure projects make it to the top of the priority list (based on an open and participatory needs assessment and inventory-of-options process), then following the WCD'S recommendations as best practice to ensure minimal impacts, sharing of benefits, and other key elements for sustainable development is critical.

Below are some of the recommendations embedded in the WCD report that are especially important for Africa's energy development path.

1. Prioritise modern energy services to meet the MDGs and directly alleviate poverty.

Prioritising energy for the MDGs means a balance must be struck between energy development in centralised grid planning, which primarily benefits industrial development, and modern energy services for Africa's rural and urban poor. Many countries now have rural energy agencies but their budgets are relatively small in contrast to the budgets afforded to large-scale, centralised projects. International financiers in particular must shift their approach to energy financing to focus on the most low-risk strategies to achieve poverty alleviation.

In 2002, Greenpeace and the Intermediate Technology Development Group (now Practical Action) prepared a thoughtful, pro-poor energy plan for the WSSD which could electrify the homes of 1.6 billion people in 10 years at a total cost of US$90 billion, and significantly help to meet the MDGs (ITDG et al. 2002). Key recommendations included:

- International financial institutions (such as the World Bank) immediately target 20 per cent of energy sector lending and support towards renewable energy development and energy efficiency programmes.

- Subsidies to conventional energy sources are phased out within 10 years, with a transition plan and flexible time frames to avoid undue hardships for developing-country economies overly reliant upon conventional energy sources and exports.
- The necessary finance and infrastructure are made available to create systems and networks to deliver seed capital, institutional support and capacity-building, to support and facilitate the creation of sustainable energy markets of the developing world.
- Aid is targeted towards halving the number of deaths from indoor air pollution from cooking stoves by 2015, by increasing support for clean cooking strategies.

While separate processes may be appropriate for assessing rural and urban needs, those who want to bring development to Africa must work to ensure that project financing is more clearly targeted towards rural development needs and not diverted for mega-projects.

2. Support energy development that helps African nations adapt to climate change.

Diversifying away from over-dependence on hydro-power is key to increasing the resilience of African economies to climate change. Climate change models predict severe declines in the flows of several major African rivers, changes which are already devastating hydro production across the continent. The economic impacts of hydro-vulnerability will be felt both in the costs of power cuts for industrial output, and the cost of wasted investments in non-performing dams. Energy development for Africa in a changing climate will require a greater emphasis on small-scale, decentralised supply, and diversity in the type of supply. Adopting 'no-regrets' measures – strategies that move Africa towards sustainable development goals whether or not climate change proves as destructive as is predicted – would lead to improvements in water management and poverty reduction as well as reduced vulnerability to climate change.

Because climate change will also bring about new and unknown risks and possibly catastrophic shocks, improved governance and increased transparency will also be key to good decision-making. 'For climate change adaptation to be effective, empowering civil society to participate in the assessment process, including identifying and implementing adaptation activities is especially important,' according to a report by major international financial institutions (Abeygunawardena et al. 2004: 25).

In March 2007, Achim Steiner, Executive Director of UNEP, said the rush to build more large dams and fossil fuel plants in Africa would 'lock in' the rural majority to decades without power, and called for more renewables to meet local needs: 'We should not live with the dream of a trickle-down of energy supply [to villages] in 20 to 30 years time…Africa should not follow the technological path the rest of the world is willing to give it access to' (Wallace 2007).

National governments should create renewables targets. As UNEA points out, 'the potential [for renewables] is very large, but there are few African countries with comprehensive legislation to link liberalisation of national utilities with increase of renewable energy from local and national resources. In many countries, there are no national targets specifically to increase renewable energy' (UNEA 2005: 16). South Africa is the most notable exception; the government has set a target of 10 000 terawatt-hours (approximately 5 per cent) of electricity to be obtained from new renewable sources by 2013, which would include approximately 1 667 MW of new supply from renewable sources, and excludes large hydro from the definition. However, South Africa's state utility, Eskom, has included large hydro in its definition of renewables (for more on renewables see McDaid, Chapter 7 in this volume).

UNEA also notes the importance of co-ordinated policies and investments to build a sustainable renewable energy sector:

> Renewable energy policies and markets are only successful if underpinned by substantial effort in training personnel and setting technical standards. The present success of renewable energy in Europe has occurred after 25 years of sustained support in research, development, demonstration and education by the European Commission. Without such background support, countless renewable energy projects have foundered due to public misunderstanding, poor design, unsatisfactory installation, lack of maintenance, lack of spare parts and consumer misunderstanding. Only governments, working with interest groups and trade associations, can give the comprehensive support needed to initiate and maintain such new technologies. (UNEA 2005: 19)

Africans are already finding ways to bring improved energy services to their communities. Building on Africa's successes in providing decentralised energy, training a new generation of decentralised energy technicians, and listening to average African citizens to learn what their true energy needs are, will yield the best results for all concerned.

3. Strengthen the role of civil society and the protection of rights for affected communities and consumers.

Affected communities, consumers, civil society and the public in general too often bear the burden of inadequate mitigation and other negative outcomes caused by large dams. Legally binding agreements supported by a strong, independent legal system are vital to protecting the interests of those otherwise left vulnerable to project developers. When a decision is taken to construct a dam, all project sponsors' commitments to resettlement, compensation and social investment for persons and communities affected by the project should be made legally binding, and payments and relocation should be satisfactorily completed prior to project construction. An independent mechanism for handling grievances of, and providing legal recourse to, members of the affected communities should be

established before construction begins and should operate for the duration of the project.

Monitoring a project's social and environmental commitments, including changes in social and environmental impacts, must continue throughout the lifespan of the dam's operation, and mechanisms should be in place for communities to be involved with evaluations and raise concerns about changing impacts which need to be mitigated.

Judicial systems in many African countries are currently too weak to provide any significant protection of the rights of affected communities or to deal with concerns raised by civil society. Emphasis on strengthening the independence and due diligence of legal institutions should continue.

The public, too, needs to be protected from decisions to develop unfavourable projects, especially closed-door deals for large hydro dams. Such non-transparent contracts foster corruption and have a history of leading to inequitable sharing of risk, with ratepayers and taxpayers too often shouldering disproportionate risk relative to the project developers. In order to reduce corruption and the building of unfavourable projects, official planning processes must open up and allow for public accountability. Affected communities and civil-society groups should be invited to play an important role in planning before choices of specific projects are made.

4. Support rural economies and local, technical sectors for sustainable economic development models.

Energy development that invests in a local energy sector and creates skilled jobs for Africans should be prioritised. Decentralised, renewable technologies such as wind, micro-hydro and solar power specifically allow for higher rates of job creation and technology transfer. For example, a 2003 report commissioned by South Africa's Sustainable Energy and Climate Change Project conservatively estimated that if South Africa set a target of generating 15 per cent of its energy from renewable sources by 2020, it would create 36 373 new jobs in the country's energy sector – more than the total employment of the national energy utility, Eskom (Agama Energy 2003).

Supporting modern energy services to meet the MDGs can also create jobs and increase productivity in rural jobs. Decentralised, renewable efforts should be accompanied by the creation of local, technical jobs to maintain systems.

Notes

1 Personal observation by Terri Hathaway, who was in attendance at the conference and witnessed the speech and response.

2 The final report of the WCD was based on arguably the most extensive body of research on the impacts of large dams yet produced, including public hearings held around the world. This documentation, known as the WCD Knowledge Base, was generated between 1998 and 2000 on behalf of the Commission and is archived at www.dams.org. Prior to the WCD, the foremost overview of the impacts of large dams was Patrick McCully's *Silenced Rivers: The Ecology and Politics of Large Dams*, originally released in 1996 and updated and republished in 2001 after the release of the WCD's final report.

3 In many places, erosion caused by deforestation and unmitigated natural erosion are exacerbating flood episodes by hindering ground absorption and causing increased run-off.

4 Ghana's major energy plants are: Akosombo Dam, 1 020 megawatts (MW); Kypong Dam, 160 MW; Takoradi Thermal plant, 550 MW; and Tana Diesel plant, 30 MW (Volta River Authority 2006). As of 2000, only 45 per cent of the Ghanaian population had access to electricity (IEA 2002).

5 All documentation for contributions to the WCD Knowledge Base is available at www.dams.org.

6 Hope Ogbeide, Director, Society for Water and Public Health Protection, personal communication, 5 February 2007

7 The AfDB is a regional development bank and was established in 1964 (operational in 1967); non-African countries were added to the membership beginning in 1982. There are currently 53 African and 24 non-African member countries. African members collectively hold 60 per cent financial control and non-African members 40 per cent.

8 UNEA includes UNIDO, UNDP, UN-Habitat, UNECA and UNEP.

9 Samuel O'Brien-Kumi, Task Team Leader for the Southern African Power Market Programme, World Bank, personal communication, 12 September 2006

10 The World Bank's 2003 *Water Resources Sector Strategy* states, 'To be a more effective partner, the World Bank will re-engage with high-reward/high-risk hydraulic infrastructure, using a more effective business model' (World Bank 2003b: viii).

11 The Bank's strategy further states, 'Task managers leading risky projects will not be "on their own", but will have consistent support from regional and corporate management, and will get recognition for this difficult work' (World Bank 2003b: 54).

12 The Bank's strategy attempts to justify the forthcoming dams of the NBI as follows: 'While the overarching goals of the NBI are conflict prevention, poverty alleviation and environmental management – not simply the construction of major water infrastructure – the mutually-agreed projects of the NBI will deliver the most apparent and immediate development impacts of this complex Initiative. Should it be difficult for the World Bank to provide this support, for example due to the reputational risks of financing major infrastructure in the Nile Basin, the resulting disengagement of the World Bank could undermine the NBI process…It is essential that when the World Bank commits to long-term, high-reward/high-risk undertakings like the NBI, it has a clear institutional mandate to fulfill the range of functions – both in terms of policy and investment support – required by such a commitment' (World Bank 2003b: 83).

13 See http://www.financingfordevelopment.org/ for details.

14 Personal communication from Grainne Ryder, Policy Director of Probe International, referring to her communication with CIDA staff.

15 At the time of writing, the conference proceedings were not yet publicly available.

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