Can the Nile States Dam Their Way to Cooperation?

IRN Backgrounder on the Nile Basin Initiative

by Lori Pottinger
International Rivers Network
Berkeley, California
www.irn.org
Email: lori@irn.org

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"One day, every last drop of water which drains into the whole valley of the Nile… shall be equally and amicably divided among the river people, and the Nile itself … shall perish gloriously and never reach the sea." -***Winston Churchill, 1908***

Introduction

The Nile Basin – home to 160 million people in 10 countries, four of which are "water scarce" – has for years been a global hotspot for potential conflict over water resources. Water experts believe there is not enough water in the river to meet the various irrigation goals of the Nile basin nations. In addition to unrealistic ambitions for irrigation schemes in the basin, many large hydropower dams also being considered for the Nile. All these competing projects combined with a dose of climate change could send the region's already over-tapped water resources to the brink of disaster, leave economies weaker rather than stronger, and do little to reduce ongoing conflict over the Nile.

The Nile Basin Initiative (NBI) was established to address the region's brewing water conflict, as well as reduce poverty and promote economic integration. The proposed program has many positive aspects, and has the potential to reduce a number of problems in the basin. However, the NBI is expected to rely quite heavily on constructing large-scale irrigation and hydropower dams to promote economic cooperation. The worldwide record of large dams, as documented by the World Commission on Dams (WCD), reveals that poorly planned large dams are as likely to exacerbate problems of poverty, water inequity and environmental degradation, as solve them (see box, page 6). Will the NBI follow the recommendations of the WCD in planning for the basin's water and energy needs? Or will it follow a "business as usual" approach and build dams out of expediency rather than need?

This paper provides background on the NBI and its emphasis on the development of large dams to foster cooperation.

The River Basin

The 6,700-km-long Nile is the world's longest river. The river has two major sources: from Lake Victoria, the White Nile flows through Uganda and into Sudan, where it meets the Blue Nile at Khartoum, which rises in the Ethiopian highlands. From the confluence of the White and Blue Nile, the river continues to flow northward into arid Egypt and on to the Mediterranean Sea. The Nile Basin covers an area of around three million square kilometers, or nearly 10% of the landmass of the African continent.

The Nile River basin contains all or part of the territory of ten countries – Burundi, Democratic Republic of Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania and Uganda. Violent conflict in and between many of the Nile basin nations has troubled the region for decades. Four of the Nile countries are among the world's poorest nations. These countries have a collective population of approximately 300 million (more than half of whom live within the river basin proper). Within the next 25 years, the population within the basin is expected to

double, increasing demand for (and potential conflict over) water resources.

Egypt's Contentious Water Treaty

The Nile Basin states are unique, in that the arid downstream countries depend on the Nile for virtually all their water needs, while the upstream states have virtually been denied its use. The Nile has been the source of much friction since a 1959 agreement between Egypt and Sudan, under which Egypt holds the rights to 87% of the Nile's waters, with Sudan holding the remaining 13%. The treaty helped smooth the way for Egypt to build the Aswan High Dam, which inundated 6,500 square kilometers in Sudan. The 1959 treaty effectively bought Sudan's approval for the dam by greatly increasing the amount of water under its control, and allowing it to undertake a series of Nile development projects.

At the time of this agreement, most other Nile basin states were still British colonies and their interests were "represented" by the colonial power. Ethiopia – where an estimated 85% of the Nile's annual discharge originates – was not party to the agreement and has contested it ever since.

Currently, Ethiopia uses only 1% of the river's flow, but after years of conflict, it now has the political stability to begin tapping the Nile for irrigation and hydropower. It has begun to update a 1964 plan by the US Bureau of Reclamation, which proposed 33 irrigation and hydropower projects for the Blue Nile. All together, the dams and irrigation works envisioned under this plan would decrease the flow of the Nile by 4-8 billion cubic meters a year.[1] In addition, it has been reported that Ethiopia is building numerous small irrigation dams, which combined can also seriously reduce the river's flow.

In recent years, Kenya, Uganda and Tanzania have also expressed their desire for a more equitable agreement over use of the Nile's waters, and have even asked for compensation from Egypt for its constraints on their development.[2] In 2003, Kenya threatened to pull out of the treaty, which Egypt's Minister for Water Resources and Natural Resources called "an act of war."[3] At this writing, the two nations were trying to work out their differences.

Despite the obvious inequities, agreement over solutions may be hard to come by. Egypt is an extremely dry place; 86% of its land is classified as very arid, and the rest as arid. The nation's population is growing faster than its ability to produce food, and the threat of climate change could worsen the situation. Pollution is also lowering the quality of the Nile's waters. Given all these factors, Egypt has aggressively resisted allowing upstream nations to divert more water. In March 2004, it was reported that Egypt is "urging thirsty upstream nations to do a better job of conserving and distributing their own abundant rains."[4]

The Nile Basin Initiative

Established in 1999, the Nile Basin Initiative – jointly developed by the World Bank, United Nations Development Programme (UNDP), and Canadian International Development Agency (CIDA) – was devised to help reduce tensions and create a framework for equitable sharing and "cooperative development" of Nile water resources. The NBI also serves as the funding conduit for financial institutions interested in the region. At this writing, it had the support of 16 donors, including Canada, Denmark, Finland, Germany, Italy, Japan, the Netherlands, Norway, Sweden, the UK, the US, the African Development Bank, FAO, Global Environment Facility (GEF), UNDP and the World Bank, with strong interest from France and the European Union.[5] According to the NBI official website, "the Nile holds significant opportunities for 'win-win' development that could enhance food production, energy availability, transportation, industrial development, environmental conservation, and other related development activities in the region."

The NBI's ambitious program includes projects in fisheries, watershed management, desertification control, flood management, pollution reduction, water-use efficiency and waterborne disease control. Such projects have great potential to improve cooperation among

the basin states, as well as improve the lives of the region's residents.

There appears to be equal amounts of hope and skepticism about the NBI effort. In a recent article on the NBI, the Kenyan business magazine the *Financial Standard* stated: "Despite the optimism and the high level of donor funding, the programme faces major risks ranging from conflict, lack of institutional and human capacity and commitment of the Nile Basin countries. According to the master project appraisal document, seven of the 10 participating countries are, or have recently been, involved in internal or external conflict … Nile Basin countries are currently facing political uncertainty, extreme poverty, and vulnerability to climatic variation, disease, and other painful challenges. Such conditions are not conducive to implementing a complex programme aimed at building an enabling environment on a regional basis."

The NBI is promoting both large-scale irrigation and hydropower plans (including a regional electricity grid, or "Power Trade Project") as part of its "shared vision." The NBI's Power Trade Project has stated that there is a "need for about 12,000 MW of new capacity to be installed every five years" in the region. The project's work will include "a blue chip study on public-private partnership models for financing hydropower projects."[6] The large-dam industry is gleeful about the prospect of a dam-building boom on the Nile. "There are promising signs that by mid-decade the Nile Basin Initiative could provide a launchpad for a multi-billion-dollar raft of projects," states an article in African Energy (October 2003).

The NBI includes regional development programs for the Northern region (called the NELSAP program), and the Eastern region (the ENSAP program). The hydropower program of NELSAP currently consists of a 80-100 MW hydropower project at Rusumo Falls on Rwanda's Kagera River, and a ranking and feasibility study of all hydropower projects larger than 50 MW proposed for the Northern region. ENSAP's first project is actually a cluster of projects called the Integrated Development of the Eastern Nile project (IDEN). Hydropower projects under IDEN include the Baro-Akobo Multipurpose Water Resources Development Sub-Project, and the Eastern Nile Power Trade Investment Program. Other projects proposed by member governments for inclusion under IDEN include a hydropower and flood control project in Egypt; 45 projects in Ethiopia (including 12 hydropower and eight irrigation projects), and six projects from Sudan (including two hydropower projects).

Numerous other dams on the Nile have been proposed separate from the NBI – for example, Uganda's Bujagali and Karuma hydropower dam projects, Ethiopia's Tekeze and Geba dams, and Sudan's Merowe and Kajbar Dam, to name just a few. The Ugandan government has stated that its portion of the Nile has more than 2,000 megawatts of potential hydropower capacity, and has expressed great interest in developing hydropower projects both for domestic use and export. The region's real powerhouse, Ethiopia, has an estimated 45,000 megawatts of "economically feasible" hydropower potential, according to dam industry journals.

The NBI's proposal for a regional grid through which power from dams can be sold is no doubt influencing decision-making on some of these projects. But if nations take a unilateral approach to building dams with the hope of tying into a regional grid, the planning process will certainly become more complicated. As one World Bank expert on the NBI said, "We cannot pretend this doesn't have an impact. Merowe, for example, would install some 1,000 megawatts of regional generation capacity that will reduce the need for additional regional generation capacity. However, Ethiopia is also proceeding with several hydro feasibility studies with full NBI support."

The World Bank's Role

The World Bank – the largest international lender for water projects – is an enthusiastic backer of the NBI, and is especially interested in its potential for big construction projects such as large dams. The Bank has recently renewed its commitment to large dams, after years of

declining investment for these often controversial projects. The NBI program is the perfect opportunity to use "regional cooperation" goals as cover to get back into dam building in a big way.

Notes from a Bank internal meeting on the NBI state: "…major opportunities exist for win/win gains from cooperative development. There is a very large potential for hydropower development, which has barely been exploited to date. This is also the case for water storage and irrigation… The NBI offers a shared program for addressing this situation."[7] A Bank background report on the NBI makes it clear that the Bank considers dam-development projects under the NBI as a way to restore faith among borrowing nations that it is willing to build large, controversial projects: "World Bank support for developing hydraulic infrastructure (including potentially controversial works such as dams) and for mobilizing public and private finance for this is critical … The Bank's reputation as a prominent development player, able to engage seriously in truly difficult development projects, should be upheld."[8]

The Bank has publicly promised US$2 billion to finance projects under the NBI, according to an article in the *Financial Times*.[9] The first eight projects are expected to be "rolled out in 2003," according to the Bank, with financing for "concrete infrastructure projects beginning in FY 05."[10]

The World Bank states that its work on NBI "represents a demonstration of the water sector strategy in practice" with its emphasis on building "high risk/high reward" dams. The strategy calls on the Bank to support hydropower "ensuring, of course, that this is the most appropriate option and that good environmental and social practices are followed."[11] But the Bank has repeatedly supported dam projects that are not the best option and do not follow good practices. More recently, the institution has made it clear it will not incorporate the recommendations of the World Commission on Dams (WCD) into its own policies. Despite the Bank's stated commitment to follow the "strategic priorities" of the WCD, there is concern that the institution will continue to overstate the benefits of and downplay the costs of large dams, and ignore better alternatives to them.

A recent NGO report on the Bank's new "high risk/high reward" strategy notes that this shift in strategy "compounds the mistakes of the past with high costs to the environment and to poor communities." It asks: "Who will bear the risks and who is likely to reap the rewards of a high-risk strategy? Typically, such project benefits accrue to private investors, equipment suppliers, the state, and in the case of infrastructure services, to industrial, urban and rich rural consumers. The costs are typically borne by poor rural communities, and most of all by vulnerable groups – women, children, landless peoples and indigenous communities … Most of the players involved in World Bank projects are insured against risks. Poor, project-affected people, who are the most vulnerable group socially and economically, do not receive such guarantees."[12] It further notes that "the high-risk projects that the Bank has recently promoted resulted in stalemate rather than improved service delivery for governments and communities." The report calls on the World Bank to cease funding large dams until it incorporates the WCD's recommendations into its safeguard policies.

Citizen and NGO Involvement in the NBI

The WCD emphasizes the importance of transparency and public participation throughout the decision-making process for water and energy projects. But the NBI has gotten mixed reviews thus far for its approach to citizen participation. While it has incorporated concepts of openness and public participation into its mandate, citizens and NGOs have not yet been given meaningful roles in the process of deciding how development projects are chosen and how they proceed. "Critics of the NBI have argued that the initiative has been a closed affair in which only the states involved and the World Bank have had input into decision making, largely ignoring the voices of ordinary people whose livelihoods depend on use of the Nile basin's resources," according to an article by the UN news service IRIN. Elizabeth Birabwa, a

writer on environmental issues, told IRIN there was hardly any information flowing between the NBI secretariat and the media, because the language used by the secretariat was "too technical and distanced from us." She continued, "Few journalists know what is happening as far as the Nile is concerned. If you go there, they just give you the colonial treaties and some difficult-to-understand documents. We are hitting a wall."[13]

A paper by Ugandan academics, submitted to the Third World Water Forum in Japan, states, "NBI is no doubt a top-down arrangement that is a partnership between the [East African] governments, donor institutions and the governments of the West… NBI may be said to be a conduit for huge infrastructure developments rather than a new strategy in development in the Nile Basin."[14] The paper further states that "NGOs [are] being used for 'window dressing' only [in the NBI] … What is important is the quality of citizen involvement in decision-making, but given the nature and content of both NEPAD[15] and NBI, it is clear current development strategies in Africa in general and the Nile Basin in particular are unaccommodative to genuine citizen

A Primer on the WCD

Excerpted from Citizens' Guide to the World Commission on Dams, published by IRN.

What were the WCD's main findings?

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." Applying a "balance-sheet" approach to assess the costs and benefits of large dams that trades off one group's loss with another's gain is seen as unacceptable, particularly given existing commitments to human rights and sustainable development. The WCD's final report provides ample evidence that large dams have failed to produce as much electricity, provide as much water, or control as much flood damage as their supporters originally predicted. In addition, these projects regularly suffer major cost overruns and time delays. Furthermore, the report found that:

- Large dams have forced 40-80 million people from their homes and lands, with impacts including extreme economic hardship, community disintegration, and an increase in mental and physical health problems. Indigenous, tribal, and peasant communities have suffered disproportionately. People living downstream of dams have also suffered from water-borne diseases and the loss of natural resources upon which their livelihoods depended.
- Large dams cause great environmental damage, including the extinction of many fish and other aquatic species, huge losses of forest, wetlands and farmland.
- The benefits of large dams have largely gone to the rich while the poor have borne the costs.

What were the WCD's recommendations?

The Commission provides a new framework for decision-making on water and energy projects based on recognising the rights of, and assessing the risks to, all stakeholders. Those who would be adversely affected should participate in the planning and decision-making process and have a share in project benefits. The Commission's main recommendations include the following:

- No dam should be built without the "demonstrable acceptance "of the affected people, and without the free, prior and informed consent of affected indigenous and tribal peoples.
- Comprehensive and participatory assessments of people's water and energy needs, and different options for meeting these needs, should be developed before proceeding with any project.
- Priority should be given to maximising the efficiency of existing water and energy systems before building any new projects.
- Periodic participatory reviews should be done for existing dams to assess such issues as dam safety, and possible decommissioning.
- Mechanisms should be developed to provide reparations, or retroactive compensation, for those who are suffering from existing dams, and to restore damaged ecosystems.

Visit the WCD's own website for more information: www.dams.org

participation." The authors recommend a rethinking of citizen participation on the NBI and NEPAD "so that the citizens for whom development is said to be 'done' are brought to the center rather that being pushed to the periphery of the development process."

Because of such criticism, the IUCN has formed a parallel initiative that it believes will allow better participation in the NBI process. The Nile International Discourse Desk[16] is a loose coalition of non-governmental organizations and civil society groups, hosted by the IUCN. It has begun to establish national discourses on the NBI, and has an office in Uganda. It is too early to say whether this initiative will be able to overcome the divisions between the governmental bodies and multilateral funding agencies behind the NBI and those citizens in the region who wish to be more fully engaged in decision-making about development in the Basin.

Will Dams Lead to Cooperation?

While many of the NBI proposals are expected to truly promote cooperation among the various states, building large dams could prove a poor choice for reducing friction, given the current tensions over the use of the Nile and the nature of the water problems in the region. In fact, if the NBI sets off a poorly planned dam-building boom, tensions are likely to increase. The NBI faces many serious water-related issues, including unfair allocation of the Nile's waters; the impacts of climate change, water-borne diseases and other health issues; the widespread lack of access to drinking water, irrigation water and sanitation; flooding, and the over-subscription of the region's rivers by planned development schemes, to name just a few. Although large dams could possibly improve some aspects of the region's water situation, they are likely to worsen the most intractable problems facing the Nile basin. For example, relying on large hydro for more of the region's power will only increase its vulnerability to climate change. When a serious drought strikes, a hydro-dependent country has to cope with not just water shortages and reduced agricultural production, but also cutbacks in industrial output due to energy shortages. Already, most of the NBI's member states are dangerously hydro-dependent, including Burundi (98.4% of its electricity comes from hydropower), the Democratic Republic of Congo (99.7%), Ethiopia (94.2%), Kenya (73.9%), Rwanda (97.6%), Sudan (70.6%), Tanzania (86.2%), and Uganda (99.6%)[17] Climate change experts believe that dry parts of Africa will see reductions in precipitation. In the Nile basin, according to the Intergovernmental Panel on Climate Change, there has been "a reduction in runoff of 20% between 1972 and 1987, corresponding to a general decrease in precipitation in the tributary basins calculated… In recent years there have been significant interruptions in hydropower generation as a result of severe droughts."[18]

The World Bank appears to be convinced that the proposed system of linked grids and more hydropower dams will reduce the region's risks in the energy sector. "Africa has an extremely volatile climate and it needs reliable power," said David Grey, a World Bank water specialist who is a key player in the Bank's work on the NBI. "The Nile [power] pool is thus a survival requisite."[19] Ironically, Grey cites the example of a hydropower project on the Shire River in Malawi, which "faces extinction" because the river is drying up, as justification for more power pooling in Africa, rather than as a reason to move away from hydropower. While it is true that linked grids can reduce some risks and allow power-sharing, their effectiveness is reduced if they are accompanied by increased reliance on hydropower. The fact is that increasing hydropower dependency will worsen the risks of climate change. Hydro-dependent countries will need serious efforts to improve the efficiency and diversification of their energy supply, especially by developing new renewable sources – not just an interconnected grid.

Many observers believe the inequity of water allocation in the basin will prove particularly sticky for the NBI. An article published by the UN notes the high stakes involved, and the weakness of the approach being taken by NBI to resolve this contentious issue: "It is no secret that the unwritten but real strategy of NBI is to secure the consensus of all the riparian countries on the less controversial issues by postponing the key but difficult issues of the Nile to a future date or for succeeding generations. There is no disagreement on the fact that the projects under NBI essentially have confidence-building as their main objective. Questions, therefore, arise on whether these 'confidence-building' measures stand a chance to improve the chronic state of mutual mistrust and suspicion that have characterized the development of the Nile

A Sampling of Dams Proposed for the Nile

None of the dams described below are currently part of the official NBI roster of projects, yet they will certainly have an impact on the health of the Nile and the people who depend upon it – impacts that will be compounded by the additional dams proposed under the NBI. These dams are expected to worsen existing social and environmental problems in the Nile Basin, undercut the power of the NBI to come up with sustainable solutions for the region's water and power needs, and increase the region's vulnerability to climate change.

Sudan: The Sudanese government, with the assistance of China and Arab development banks, is moving forward on two large dams on the Nile to supply electricity to Khartoum. These dams, Kajbar (300 megawatts) and Merowe (1,000 MW), would have serious social, environmental and cultural impacts. Both projects have reportedly led to human rights abuses of those who speak out against the project. Merowe will displace approximately 50,000 people, and flood agricultural land and cultural heritage sites. The reservoir is expected to have evaporative losses of approximately 2 BCM/yr. Already, as the resettlement program begins, communities have voiced concerns about poor compensation and resettlement procedures. Kajbar Dam has prompted much protest. The main group representing affected people, the Nubian Alliance, says the Nubian people have been resettled four times in the 20th century, and Kajbar would force them to relocate for a fifth time. Some 60,000 Nubian people live in the area. Local people have staged rallies and sit-ins and vowed not to leave their lands.

Ethiopia: At 185 meters, the Tekeze Dam, now under construction, would be one of the tallest dams in Africa. It is estimated to cost US$224 million, and will generate 300 megawatts, primarily for export to neighboring countries. The dam is being built by a Chinese construction firm that has been responsible for much of the work on China's massive Three Gorges Dam. Ethiopia has reportedly neglected to formally consult with downstream Sudan and Egypt on the scheme, a decision which could further strain relations between the countries.

More generally, the national hydropower agency has stated that Ethiopia has 102 "favorable sites for Large Scale Hydropower Development Schemes" which it would like to develop. Studies reveal that the Blue Nile has a power potential of 172 billion kilowatt-hours – twice the combined national hydroelectric output of both Sudan and Egypt.

Uganda: The Ugandan government has plans for up to six dams on the White Nile. The most advanced is the 200-MW Bujagali Dam, on hold since mid-2002. The project has been marred by corruption, lack of transparency, and misleading economic analysis by its main sponsor, the World Bank. At this writing, the government was intent on finding a new investor since the pull-out of the US-based AES. There are better alternatives to this costly dam project, including geothermal (which could be developed more cheaply than Bujagali). Local and international groups have been lobbying for a full and fair review of the various energy options available to Uganda for years. But the project's backer have subverted efforts to analyze non-hydropower options. The World Bank took extraordinary steps to keep Bujagali on the top of the list: it actually manipulated data to justify Bujagali as the "least-cost" option for Uganda after its consultants pointed to other projects as cheaper; hired a dam-building firm to produce an "energy alternatives" report that analyzed primarily only hydropower projects, and has consistently dismissed (without justification) the promising option of geothermal power. The Bank was also misleading in its analysis that showed Bujagali as "least-cost," and as a result, Uganda will be faced with $20-40 million in excessive payments each year if the dam moves forward.

Waters. Would NBI help the riparian States address the unjust status quo prevailing over the Nile? More specifically, would Egypt be ready to settle for a lesser flow of the Nile Waters in favour of these being used by countries like Ethiopia? Would Ethiopia be able to pursue its development agenda without significantly reducing the flow of the Nile Waters?"[20] If NBI cannot answer these questions in the affirmative, the author states, it could lead to "more mistrust and suspicion among the riparian States, frustration on the part of the facilitators, and a full-fledged unilateralism."

If the NBI *does* lead to fewer, better-planned, more equitable river-development projects than are currently envisioned, and to intelligent "adaptation" plans that do not increase the region's vulnerability to climate change, it could indeed lead to more sustainable use of the Nile. But this seems rather optimistic given the NBI's current plans to use large development projects as incentive to cooperate, its lack of authority to prevent projects from being developed outside its auspices, and the "top down" nature of its planning process.

Finding the Best Option

Comprehensive needs and options assessments may conclude that some new dams are necessary in the Nile Basin. The key will be to use an open, transparent, thorough review process as recommended by the WCD to determine the best way to meet water and energy needs. The WCD report notes, "Given concerns about a number of barriers that have led to limited assessment of options in the past, it is not enough simply to identify the technologies and policies that can satisfy water and energy needs. It is also necessary to identify the obstacles that prevent the more widespread adoption and use of various options."

While the World Bank – the NBI's key backer and a major strategic player in the development side of its program – has professed its acceptance of the WCD's "core values" and "strategic priorities," it has indicated it will stay away from the stricter and more detailed WCD guidelines. While the Bank has begun to acknowledge the importance of options assessments in planning for water and energy projects – a key recommendation of the WCD –it has not yet demonstrated that it will actually follow up with comprehensive options assessments.

A new World Bank "sourcebook" on the topic, *Stakeholder Involvement in Options Assessment: Promoting Dialogue in Meeting Water and Energy Needs*, states that: "all reasonable options need to be investigated before a decision is made to proceed with a dam, and … those likely to be affected by such decisions should be encouraged to participate actively in the making of the decisions." The credibility of the sourcebook and the Bank's commitment to participation and transparency is called into question by the inclusion of Uganda's Bujagali project as a case study representing good participatory options assessment process. No mention is made of the fact that planning for Bujagali has been mired in corruption, secrecy, repeated attempts by government and World Bank officials to discredit project critics, and an options assessment process which fully reviewed only large hydro projects and largely ignored apparently cheaper and quicker to implement options such as geothermal power.

A 2002 report on power options for the North Nile area, prepared for the World Bank[21], purports to describe how options assessments could work for some NBI projects, but clearly indicates that hydropower is already a favored choice for electricity. The NELSAP grid project is referred to as the "Hydropower Development and Transmission Interconnection Program." The report notes that "The Bank has proposed to the NELSAP countries that in order to successfully move an investment program of this nature towards implementation it is necessary to first carry out a comprehensive power options analysis in the NEL-region … The analysis would include a ranking study of a broad set of power development opportunities such as hydropower development and possibly alternative energy sources such as small hydro power plants, geothermal, coal, natural gas, wind, solar, biomass gasification, and fuel cells." The report further indicates that such "options assessments" can be used to get local

buy-in on hydropower plans: "Regional and national power development strategies are particularly important for investors who are considering hydropower projects. Investors favour low-risk projects, which are not capital intensive, with short construction times and quick return on investment. In these respects, most hydropower projects are at a disadvantage when compared to fossil-fuelled thermal plants, and particularly to gas fired combined cycle plants. Investors would thus consider hydropower projects only in regions and countries where there is a power development strategy that strongly supports hydropower development. Such a strategy would have to be developed in concert with industry and civil society so that it truly reflects a general consensus and avoids the re-questioning of power generation options at the onset of projects."

A report on the NBI's Power Trade Project states that it will undertake a comprehensive basin-wide power study, which "will seek to follow best practices in options analysis, including extensive stakeholder investment and multi-criteria options assessments."[22] But again, it is not clear if there will be a sincere effort to fairly evaluate options other than large dams.

The Nile Basin states could take another path, one that would protect the Nile River ecosystem from further long-term harm, and provide needed energy and water supply that is better protected against the vagaries of climate change. A clear process for evaluating the various options is critical to ensure that decisions are fully informed, fairly reached and balanced by citizens' voices as well as those who hold the purse-strings.

Alternatives to Dams

The Nile Basin has a number of good alternatives to large dams for meeting at least some of its energy and water needs, and indeed a few countries have already begun to develop them to varying degrees. Alternative technologies will be part of the NBI's plans, but the emphasis on large dams will reduce the funds available for renewable energy options and decentralized, lower-tech solutions to water supply. The Kenya-based *Financial Standard* has reported that funding for NBI projects from European nations will include "water harvesting, community-managed irrigation and public-managed irrigation… and community land and water conservation. They will also engage the communities in environmental education and public awareness as well as in wetland and biodiversity conservation." The funds now being devoted to all of these programs will be much less than what it costs to build a single large dam.[23]

The region has the potential to meet much more of its power needs with renewable energy. Egypt is the farthest along in establishing renewables in its energy mix, and has become the largest wind-generating country in the region. It intends to install 600 megawatts of wind by 2005. Egypt also has very high potential for solar power. The nation already produces domestic solar water heaters, and is considering solar thermal for industrial applications as well, according to Egypt's Ministry of Electricity & Energy New and Renewable Energy Authority. The agency notes that the potential for grid-connected solar-thermal towers in Egypt "is tremendous and far exceeds all practical expectations for implementation."[24] The Authority states that the government hopes to build up to 750MW of hybrid solar-thermal/fossil fuel power plants by the year 2010. Egypt also has an energy conservation plan.

Eritrea, too, has very good wind and solar power potential. Uganda has an estimated 450 megawatts of geothermal reserves that could probably be developed more cheaply than large hydropower dams. Kenya is currently generating about 60 MW of electricity from its geothermal reserves, and plans to draw another 576 MW by 2019. Its geothermal potential is estimated at 2,000-3,000 MW.[25] Recently, the head of the national utility KenGen told the *Financial News* that it will re-focus on geothermal power as its least-cost base load supplier, rather than hydropower. Ethiopia is thought to have some of the region's best geothermal reserves, which have been estimated at 4,000MW. Eritrea and Tanzania also have good geothermal reserves.

In addition to the potential for renewables, Egypt and Ethiopia both have large natural gas reserves. The Egyptian government has estimated that its natural gas reserves are large enough to last 100 years.

In addition to alternative energy supply, there are also alternatives to large regional grids. While centralized grids do have advantages (such as encouraging energy sharing when some areas are experiencing shortages, and allowing energy sales across large areas), they also have drawbacks. For example, they are usually too costly to be used to electrify poor, rural areas. When breakdowns occur, they can affect large areas, as recent experience in the US and Europe have shown. Long transmission lines lose energy over long distances, and therefore are more inefficient. Decentralized supply projects that are locally controlled have numerous advantages: they are less prone to sabotage, can be built more cheaply and quickly, are better suited to rural electrification, and can be brought online as needed. For the millions of people in the Nile Basin without electricity, decentralized energy supply (also known as "distributed generation") is a more practical alternative than large grids powered by large supply projects.

As for water supply, large-scale intensive irrigation projects in desert climates have many major drawbacks, and are often not sustainable in the long-term. The WCD notes, "Large irrigation dams in the WCD Knowledge Base have typically fallen short of physical targets, failed to recover their costs, and been less profitable than expected." Evaporation of huge amounts of water, the salinization and water-logging of agricultural lands, the displacement of poor farmers and the landless, an increase in the gap between the haves and have-nots – all are common problems with large irrigation schemes. Ironically, local food security is often not improved by such projects.

There are ways to increase agricultural productivity and food and water security for arid, drought-prone regions that do not involve large dams. In fact, large dams are likely to increase economic (and water) inequities in the region's agriculture sector, and will do little to improve the lot of small-holders and the poor. Decentralized, community-driven, low-tech solutions are more likely to address the needs of the basin's rural poor, and at a lower cost than large-scale projects. For example, India's highly successful rainwater harvesting movement offers ample proof that small, locally built rainwater harvesting devices offer both rural and urban areas an affordable, easily transferred model for collecting and storing water[26]. Ethiopian farmers have begun to explore such decentralized, low-impact water supply options, with great success. By using water conservation strategies such as improving soils with compost, planting trees, and building rainwater-harvesting structures, Ethiopian farmers have been able to survive droughts that previously would have induced famine in their communities[27].

The World Bank espouses the benefits of such community-driven development projects, and notes that they can make poverty alleviation programs more responsive to the demands of the poor and build social capital. At the same time, it is leading the way for the NBI to rely heavily on large "high risk/high reward" schemes such as large dams, an approach which is sure to sidetrack the growth of small, community-led schemes.

Another option is to improve efficiency in water and energy use, through techniques known collectively as "demand side management." Even in countries with limited developed water and energy supply, there is usually room for efficiency improvements. Urban areas in the Nile Basin are plagued with leaky pipes, clogged canals, inefficient transmission lines, energy-hogging air conditioners and other examples of waste that could be addressed through conservation and efficiency programs. For example, Egypt's Ministry of Electricity & Energy New and Renewable Energy Authority states that in Egypt, "studies have proven that about 20-30% of the industrial energy consumption is wasted due to low maintenance, inefficient processes and waste heat."[28]

Irrigation schemes are particularly wasteful in many parts of the Nile region. The World Bank notes that in the Middle East and North Africa,

most fresh water is used for low-value agriculture. "To ensure that water is used more efficiently, attention must be focused on reducing subsidies and encouraging new agricultural technologies, such as drip irrigation, and improving municipal water supply systems. To reduce pollution, the reuse of treated wastewater and drainage water, particularly in agriculture, can release freshwater for human consumption."[29]

Conclusion

The NBI has an admirable ultimate goal: to provide a peaceful means to reduce conflict in the Nile Basin. It certainly will not be an overnight success, and must be given time for its programs and plans to be fleshed out and tested. But that said, its current direction is of concern. Like its Africa-wide counterpart NEPAD, the NBI may be trying to accomplish too much, while relying too heavily on luring large development schemes to the region as a panacea for entrenched problems such as poverty.

The NBI would have a much greater chance of success if it did not repeat the mistakes of the past era of unconstrained dam-building, and if, in the end, it left a healthier Nile River – and Nile River communities – as a legacy. To lay the groundwork for such an outcome, the NBI would benefit from embracing the lessons of the World Commission on Dams. As a first step, the NBI could follow the example of various countries (including South Africa) which have set up inclusive "multi-stakeholder processes" on the WCD, to discuss how best to incorporate the findings into planning processes in the basin. Similarly, workshops to explain the WCD would be useful for the civil society groups involved with the IUCN Nile Discourse Desk. Such programs could take advantage of the Nairobi location of the Dams and Development Project, a UNEP-sponsored group that is the follow-up program to the WCD.

By taking these steps before making concrete plans to build numerous dams on the Nile, the NBI is more likely to find true "win/win" solutions to some of the seemingly intractable problems affecting the people of the Nile.

CONTACTS

The Nile Basin Initiative Secretariat
P.O.Box 192
Entebbe
Uganda
Phone: +256 (41) 321 329 / 321 424
Fax: +256 (41) 320 971
E-mail: nbisec@nilesec.org
http://www.nilebasin.org/

Nile Basin Discourse Desk
Circular Road Plot 56
P.O.Box. 852
Entebbe, Uganda

Phone:- +256 (0)41 322 433
Fax:- +256 (0)41 322 432
Email: facilitator@nilediscourse.org
Web: http://www.nilediscourse.org/desk.htm

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