

Water Resources and Poverty in Africa: Breaking the Vicious Circle¹

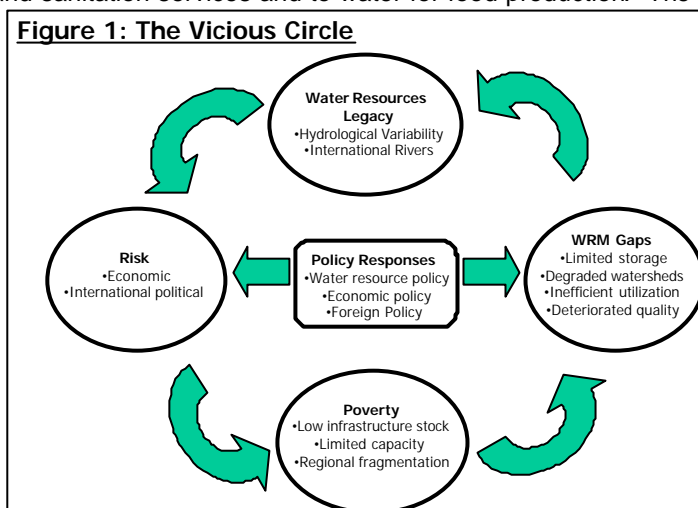
*Inaugural meeting of AMCOW,
Abuja, Nigeria – 30 April 2002*

Your Excellency the President of the Federal Republic of Nigeria, Chief Osegun Obasanjo, Honorable Minister Shagari, Federal Minister of Water Resources, Honourable Ministers of Water and members of the African Ministerial Conference on Water, Excellencies, Ladies and Gentlemen.

We are here to talk about Africa and water, because water is not the rich endowment that it may, at first, appear to be. We are here to talk about why water is such an integral part of the struggle that so many of Africa's nations and peoples face. More importantly, we are here to talk about what Africa can and must do to access and manage water.

We know the statistics that show that a smaller percentage of Africa's people have access to water supply than in any other region of the world. Behind these cold numbers lies great human tragedy. Much of the focus of the policy debate on water and poverty in Africa is, and must be, on ensuring access of the poor to basic and sustainable levels of water supply and sanitation services and to water for food production. The health, productivity, well-being and dignity of hundreds of millions of people depend on access to these services.

Water and poverty in Africa are entwined in many ways. We recognize that *access to water supply* both constrains, and is constrained by, poverty. I will make an additional and much less well recognized case – that Africa's *water resources endowment* seriously constrains economic growth. I will focus on the underlying and extraordinary role that water resources play in Africa's economic performance. I will make the case that poverty in Africa is, in part, a consequence of its unique water resource endowment, which has always been, and remains, a fundamental constraint on the economic performance of African societies and the growth today of African economies.



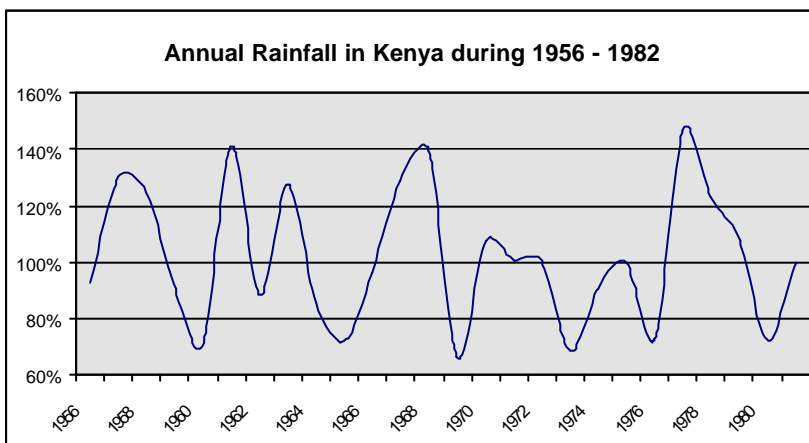
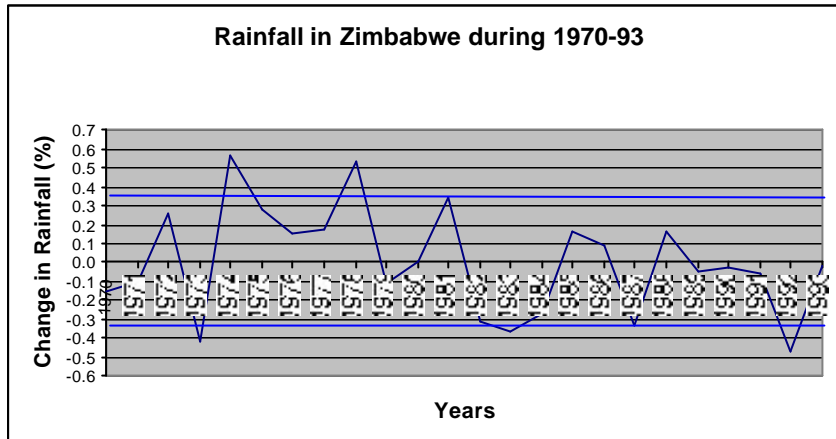
This water endowment forms the starting point for **a vicious circle**, which must be broken if Africa's people are to escape the poverty trap in which they are locked. Let us explore the elements of this vicious circle, and how it can be broken.

The first element of our vicious circle is Africa's **water resources endowment**, which poses an extraordinary challenge and has two principal features, a natural legacy and an historical legacy.

The **natural legacy** is one of extremely high variability of rainfall and river flow, much higher than in more temperate climates. Runoff is only half that of North America and Europe, despite having about the same average rainfall. High rainfall variability also increases the vulnerability of the landscape to erosion and desertification. One highly visible consequence of this variability is frequent droughts and floods.

¹ This presentation was presented by David Grey, Senior Water Advisor of the World Bank at the request of the ARMCOw Chair. The presentation is based on a paper written by David Grey and Claudia Sadoff, Senior Economist.

Diagram: Natural legacy: In this slide we can see rainfall in Zimbabwe, varying one year to the next from from 40% below the mean to 50% above the mean; we can also see droughts in 1983 and 1992



Water has always had a profound influence on the location and production patterns of human settlement in Africa, and the structure and productivity of African economies. To manage hydrological variability, early societies developed coping strategies, such as pastoralism and migration, with people moving in response to water and land pressures. Many of these coping strategies are no longer viable today, although one consequence today of hydrological variability and related landscape vulnerability is increasingly unsustainable rural livelihoods and large scale migration to cities.

The second feature of Africa's water resources endowment is **the historical legacy** of abundant international rivers. Lines drawn on maps in London, Paris, Brussels, Berlin have resulted in African borders that take little account of natural boundaries, such as those of river basins. All countries in the Sub-Saharan African mainland share at least one river basin. There are more transboundary river basins than in any other continent – over 60.

Historical legacy 1: Most of Africa is blue.....

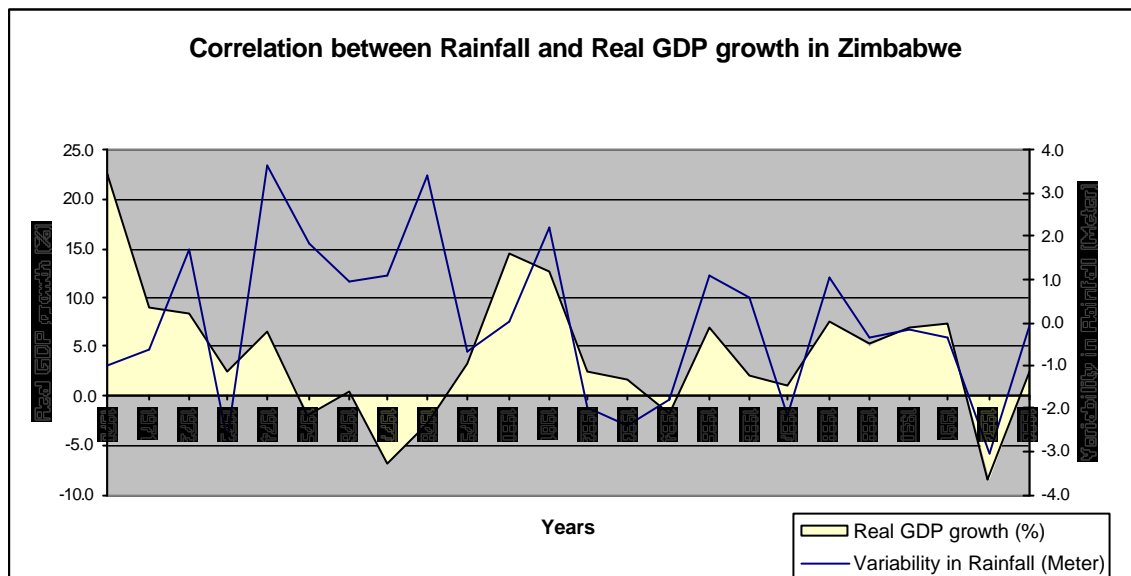
First, there are numerous countries per international river basin (10 share the Nile, and 9 share the Congo and Niger basins) – this identifies which basins face the most complex problems. Second, there are many

international river basins per country (Guinea is the upstream riparian on 14, and Mozambique the downstream riparian on 8 basins) – this identifies which countries face the most complex problems. Some countries appear on both lists, and these are often the poorest countries with the greatest capacity gaps.



The second element of our vicious circle is the significant **economic and political risk** generated by Africa's unique water resources endowment. Africa's economies are still largely agrarian, yet agricultural production is highly susceptible to Africa's natural legacy of extreme hydrological variability and associated landscape vulnerability. This threatens the survival of the subsistence farmer at one level; the

competitiveness of agri-business in a globalizing world at another level; and the structure and performance of national economies, at a third level. The incomes and expenditures of much of Africa's population will depend on agricultural production, amplifying the effects of hydrological variability throughout the economy. Yet it is widely assumed that agriculture will continue to be the dominant economic activity in Africa into the foreseeable future.



In this diagram we see the correlation between rainfall and real GDP growth; except in the period before 1980 – the year of the ZIMCORD conference, the correlation is extraordinary; before 1980, the independence struggle had, not surprisingly, a greater influence on GDP growth than rainfall....

We have all witnessed, at least in the media, catastrophic flood and drought – the endemic and unpredictable consequence of Africa's hydrological variability. The economic impacts can be a significant proportion of GDP and social impacts are incalculable. A quarter of a million lives were lost in the 1968-73 Sahel drought. 20 million people were seriously afflicted by the 1992 drought in Southern Africa, which caused a 45% decline in agricultural production in Zimbabwe. Mozambique suffered severe flooding and cyclone damage in 2000. The 1997- 98 El Nino floods in Kenya caused economic loss estimated to exceed \$1.7bn. These floods in Kenya were immediately followed by the equally costly 1999 – 2000 La Nina drought.

But this economic story hides the human story – the suffering of individual families and communities, as years of labour in land preparation and crop development is withered by drought or washed away by flood. It is no surprise that the average African farmer does not invest for the long term....

The very existence of extreme variability itself creates disincentives for investment and affects the performance and structure of economies, as the unpredictability of rainfall and runoff encourages risk averse behavior in all years, promoting patterns of development that can trap economies in a low-level equilibrium. Thus, even in years of good rains, economic productivity and economic development can be constrained by conditions of hydrological variability.

Political and economic risks are generated at the regional level by Africa's historical legacy of numerous **shared rivers**. A riparian country may be concerned that it cannot predict or control variable river flows, and it may fear the potential harm that can be caused by co-riparian actions. This will lead to tensions, which can undermine broader relations and inhibit economic growth within a basin, by limiting economic cooperation and integration. Regional integration of markets, infrastructure, telecommunications, transport connections, labor flows and financial systems are particularly important for Africa's small, developing economies, whose individual resources and markets often do not provide economies of scale.

In addition, the economic fragmentation that can result from tensions over shared rivers encourages the adoption of economically-inefficient policies that focus on self-sufficiency, rather than on trade and integration. Food and power self-sufficiency seeks to produce, in-country, all the food and power the country needs, even if the cost of doing so is greater than the cost of imports. It is more economically efficient to promote food and power security, which ensures a nation's capacity to secure its food supply either through trade or production – whichever is more cost effective.

In extreme cases, tensions could result in the diversion of strategic resources and of policy focus from economic development to security concerns related to water, and a diversion of financial resources to military preparedness

The third element of our vicious circle is **sustained and widespread poverty** which is aggravated by entirely rational responses to economic and political risks arising from Africa's water resources endowment. Among the many consequences of sustained poverty are that human capacity is limited and institutions are weak, investment capacity is low, and international relations are unstable, with resulting regional economic fragmentation.

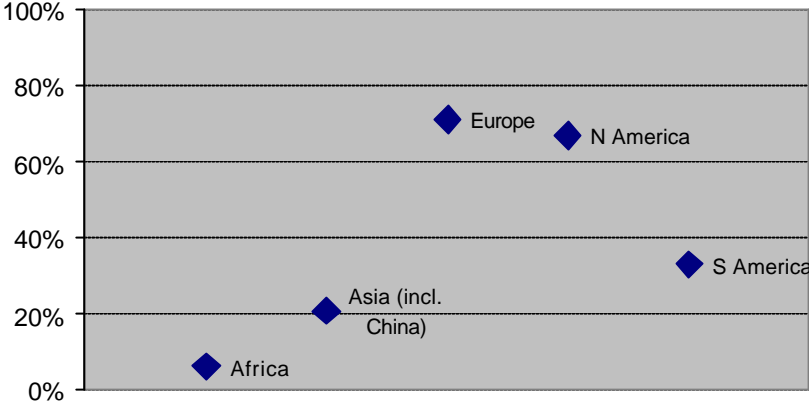
Poverty means that Africa sees very low levels of investment. One striking illustration of this is the low level of investment in hydropower production – which is about 5% of potential, in contrast to the 70% of potential developed in Europe and North America.

Managing Africa's variability will require high levels of skill and investment – much higher, relatively, than in temperate, and generally wealthier, regions. And managing Africa's numerous international rivers needs a particularly, and perhaps uniquely, effective international order, with strong international relations, sound regional institutions and effective mechanisms for sharing benefits. Yet the region's institutions are young and its relations are often strained by conflict. Here is the conundrum: high levels of human and financial capacity and strong institutions are commonly the fruits of economic growth, and most African countries are poor.

The fourth element of our vicious circle is **limited water resources management** at the national and international level, which is compounded by poverty and limited human and financial capacity. In talking about this, let me focus on just two issues - water storage and watershed management.

Africa's infrastructure gap

Africa's infrastructure - hydropower potential tapped



Managing extreme variations in river flows needs **storage**. Very little investment has been made in water storage in Africa relative to any other region of the world. In Ethiopia there are less than 50 m³ per capita in storage. In the USA this figure is over 6,000 m³. Yet hydrological variability in Africa is about three times that of the US – arguably justifying much more storage. Whatever the option for storage chosen, the investment needs are very large.

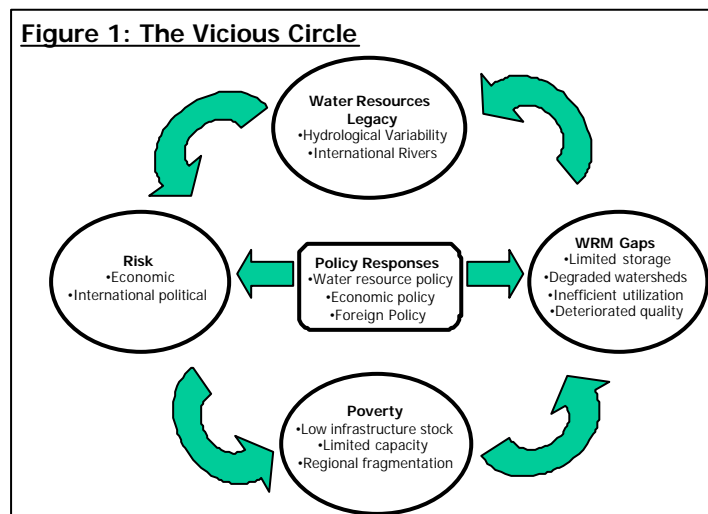
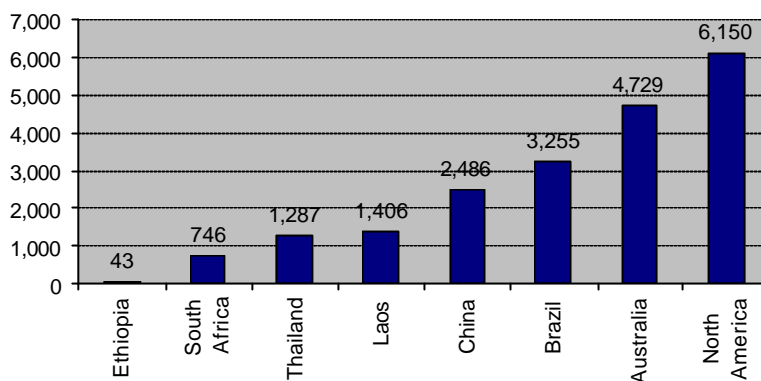
Watershed degradation is a rapidly intensifying problem across much of Africa. As populations and pressures on land grow, the poorest of the poor are forced into more and more marginal lands. In the river floodplains, it is the poor who settle the most vulnerable and risky part of the plain. In river basin headwaters, the poorest settle the most vulnerable

uplands, often with high slopes and thin soils. Forests are cut down, wetlands drained and slopes are cultivated. Soils are eroded, resulting in minimal crop yields and unsustainable livelihoods. More insidiously, groundwater recharge is reduced, river flows become more flashy and downstream flood and drought impacts can be greatly enhanced. Where rivers are shared between nations, watershed degradation is a growing international threat.

In the Fouta Djallon highlands of Guinea, the headwaters of 14 international rivers shared with 14 other states, extreme poverty is resulting in inevitable watershed degradation, with consequent impacts in downstream states. Unintentionally, the settlement of vulnerable watersheds in one country, often by the very poor, can have major impacts on a downstream country – often on the very poor settled in the floodplains there. It is clearly in the interest of all downstream states to promote the economic growth upstream that is needed to ensure sustainable watershed management.

Our vicious circle is now closed, as limited water resources management compounds the impacts of hydrological variability and numerous international rivers, which increase social, political and economic risks, which further sustain poverty, which limits the effectiveness of water resources management, which then aggravates the impacts of the water resources endowment, and so on.

**Africa's infrastructure gap:
Water Storage Per Person (m3)**



But adoption of the right **policy and investment responses** can and must break this vicious circle. These responses are needed simultaneously in each of three main areas: water resource management; economic policy and planning; and foreign policy and international relations.

Effective **Water resources management** policy will provide for the right institutions, regulations and economic tools, promote sound investment, and inspire a new generation of professional and technical staff with knowledge, skills and commitment. The stewardship of Africa's water resources will engage all of society, as everyone has a responsibility to use water wisely, conserving and protecting the

resource for future generations. 'Self-help' is a traditional strength of Africa and will be harnessed, to make managing water 'everybody's business'.

Investments in water storage will be a priority in the coming years, to reduce the impacts of variability. The development of large dams has significant social and environmental impacts, and the challenge is to minimize such impacts through appropriate storage solutions, including watershed and wetland conservation, as well as artificial surface water and groundwater storage. At the same time, non-structural alternatives, such as regulatory and pricing schemes, can help by modifying patterns of water use.

Investments in watershed management will also be a priority, with set-asides, re-afforestation and soil conservation on a large scale in upland areas. In floodplains, land zoning to provide space for inevitable flooding will be preferable to enormously costly (and often eventually unsuccessful) efforts to control floods. Rural people will be recognized as the guardians of the watersheds that feed cities and industries downstream. This will also be recognized in international river basins, where upstream nations are commonly the guardians of the watersheds for downstream nations. Upstream nations may not always need water, but they do need to see the benefits of investment and development.

Sound **economic policy** will ensure development paths that minimize water-related risks and promote water-resilient behavior by farm families, villages, towns, cities, industries and nations. Although water shocks will never be totally eliminated, economic policies will be adopted to help insulate economies from their impacts.

Alternative sustainable livelihoods for large numbers of poor people, scraping a living in vulnerable watersheds, will be found, as the continued development of extensive agriculture – the growth strategy of many countries – almost guarantees continued land and water degradation and deepening poverty.

Agriculture can be intensified through irrigation. And the structure of economies can be diversified beyond agriculture, to generate an increasing share of income and employment from manufacturing and services. Sectoral policies can encourage the production of goods and services that are resilient to water shocks, and the import of those that are vulnerable to water shocks. Investment policies can promote the use of production technologies and processes less dependent on water.

Trade and regional integration can also help insulate economies against the impacts of hydrological variability. Historically, populations moved when land vulnerability and water variability threatened their livelihoods. Rather than moving populations, however, production can be moved in response to resource availability and variability, and then traded. The Southern Africa Power Pool is an excellent example; it provides power interconnection among seven countries, lessening the vulnerability of energy supplies to the hydrological variability faced by each individual country.

Foreign policy will recognize that regional cooperation in the management of international rivers can generate a wide range of benefits. Cooperation will enable better management of ecosystems, providing *benefits to the river*. Efficient, cooperative management and development of shared rivers will yield major *benefits from the river*, in increased food and energy production, for example. Cooperation on an international river will result in the *reduction of costs because of the river*, as tensions between co-riparian states are always present, to a greater or lesser extent, and those tensions generate costs. International rivers will be catalytic agents, as cooperation that yields benefits from the river and reduces costs because of the river can pave the way to much greater cooperation between states, even economic integration among states, generating *benefits beyond the river*.

How can these benefits be shared? The underlying interest of many parties is not the water itself – but the potential benefits derived from the use of water in a river system - not cubic meters but dollars. Focusing on these benefits will broaden the perspective of basin planners. Sharing of benefits may require some sort of redistribution or compensation, and could involve monetary transfers, financing of investments, or the provision of non-related goods and services. The broader the range of benefits under discussion, the more likely a mutually acceptable solution can be found.

Let me now draw some conclusions.

Africa's unique water legacies of hydrological variability and the shared nature of many of its rivers contribute significantly to the prevalence and depth of poverty. Coping with these legacies requires more than just integrated water resources management. Economic policies need to encourage economic diversification and trade, increasing the resilience of Africa's economies to these legacies. Foreign policies need to enable international cooperation on transboundary rivers, creating the opportunity to generate and share substantial benefits. All three of these policy interventions need to be linked to appropriate investments in water management institutions, infrastructure and alternative livelihoods.

And there is very good news. There is a renaissance of integrated water management in Africa, capacity and commitment is growing, and there is a new reform movement, reflected in your debate and in the launch of the African Ministerial Conference on Water. Many countries in Africa have launched water policy review and reform initiatives. Many difficult policy issues are being debated and policy choices are being implemented. In many international river basins, old cooperative efforts and institutions are being revitalized and new ones are being launched.

The African Ministerial Conference on Water and NEPAD, the New Partnership for Africa's Development, provide ideal fora to promote and monitor the integration of water resources policy, economic policy and foreign policy, coupled with appropriate investments, in a proactive and strategic approach to break the vicious circle that Africa's water resources pose. With firm commitment, courage, vision and leadership, Africa's water endowment will be harnessed.

On behalf of the World Bank, I would like to thank the Government of the Federal Republic of Nigeria for hosting the launch of the African Ministerial Conference on Water. Africa is serious about addressing the unprecedented water resources challenge that it faces. The World Bank is serious about supporting Africa in this great task.

Thank you.