

POLICY BRIEF

LOWY INSTITUTE
FOR INTERNATIONAL POLICY

DECEMBER 2008

JOEL NEGIN
jnegin@health.usyd.edu.au

and

GLENN DENNING
g.denning@cgiar.org

SHARED CHALLENGES AND SOLUTIONS: AUSTRALIA'S UNIQUE CONTRIBUTION TO THE FUTURE OF AFRICAN DEVELOPMENT

WHAT IS THE PROBLEM?

As part of its commitment to increase spending on overseas development assistance, the Australian government has announced a substantial re-engagement with Africa. Despite the anticipated increase in funding, Australia will continue to be a small player in Africa's crowded development community. How can Australia ensure that its engagement is as meaningful and effective as possible?

WHAT SHOULD BE DONE?

Australia should leverage areas of shared challenges between Australia and Africa where Australia's experience and expertise enable it to make strategic and mutually beneficial contributions. Specifically, Australia should focus its African development program on practical and sustainable solutions in agriculture and renewable energy. These are acknowledged priorities for African development that are relatively ignored by other donors and are sectors in which Australia has demonstrated scientific and technical leadership.

Australia should allocate 60% of its African development funds for sustainable agriculture, 25% for renewable energy activities and 15% for other activities such as priority health interventions. Australia should concentrate on a relatively small group of countries based on levels of need and their political will to implement reform: Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania and Uganda.



LOWY INSTITUTE FOR
INTERNATIONAL POLICY
31 Blich Street
Sydney NSW 2000
Tel: +61 2 8238 9000
Fax: +612 8238 9005
www.lowyinstitute.org

The Lowy Institute for International Policy is an independent international policy think tank based in Sydney, Australia. Its mandate ranges across all the dimensions of international policy debate in Australia — economic, political and strategic — and it is not limited to a particular geographic region. Its two core tasks are to:

- produce distinctive research and fresh policy options for Australia’s international policy and to contribute to the wider international debate.
- promote discussion of Australia’s role in the world by providing an accessible and high quality forum for discussion of Australian international relations through debates, seminars, lectures, dialogues and conferences.

Lowy Institute Policy Briefs are designed to address a particular, current policy issue and to suggest solutions. They are deliberately prescriptive, specifically addressing two questions: What is the problem? What should be done?

The views expressed in this paper are entirely the authors’ own and not those of the Lowy Institute for International Policy.

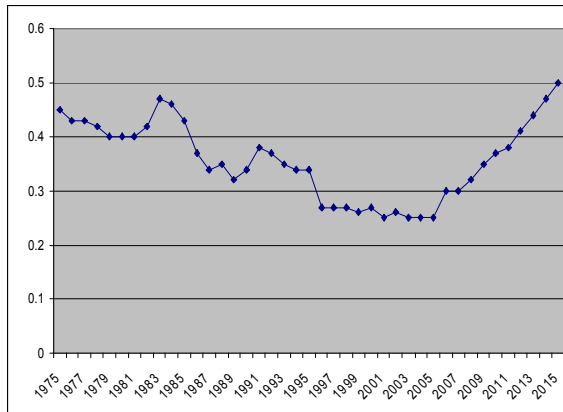
POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

The policy context

The new Australian government has made a significant commitment to increasing its overseas development assistance (ODA) from 0.3% of gross national income (GNI) in the 2007-08 budget to 0.5% of GNI by 2015/16. This represents a return to the levels last seen in the 1970s that were eroded over the 1990s and early 2000s (Figure 1). Depending on the projected economic growth rate, some estimates foresee a tripling of ODA from the mid-2000s to 2015/16.

Figure 1. Australian ODA as % of Gross National Income¹



With the increase in development assistance, Australia has put the internationally agreed Millennium Development Goals (MDGs) (see Box 1) at the centre of its development assistance platform. This represents a significant change from the previous government, whose support for the MDGs and multilateral efforts was lukewarm at best, and which largely focused on governance issues in its development program.² Prime Minister Kevin Rudd and the Parliamentary Secretary for International Development Assistance, Bob

McMullan, have both declared that the MDGs are the central principle of Australian aid. While meeting with British Prime Minister Gordon Brown in April 2008, Rudd affirmed his commitment to address the ‘challenges of global poverty in terms of the Millennium Development Goals.’³ This call has been endorsed by senior policy-makers across the country in the 2020 Summit Report, which noted that Australia will focus ‘its aid program on poverty reduction and the achievement of mutually defined development goals, such as the Millennium Development Goals... through sustainable business, academic, community and government linkages.’⁴

Box 1: The Millennium Development Goals

- Goal 1: Eradicate extreme poverty and hunger
- Goal 2: Achieve universal primary education
- Goal 3: Promote gender equality and empower women
- Goal 4: Reduce child mortality
- Goal 5: Improve maternal health
- Goal 6: Combat HIV/AIDS, malaria and other diseases
- Goal 7: Ensure environmental sustainability
- Goal 8: Develop a Global Partnership for Development

Why should Australia re-engage with Africa?

As a component of the increased amount of development aid and the Government’s commitment to the MDGs, Mr. McMullan has stated that AusAID will be re-engaging with

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

Africa. Re-engagement with Africa does not at first glance seem to be of high priority to Australia as it increases its aid profile. A more thorough analysis, however, suggests a number of reasons that make engagement with sub-Saharan Africa appropriate for Australian aid and for Australia more generally.

First of all, the new Australian government has clearly stated its commitment to the MDGs as the central pillar of its aid efforts: Rudd and McMullan have on numerous occasions framed Australia's primary ODA goal as progress against the MDGs. The majority of the countries in Sub-Saharan Africa are not on track to meet the MDGs agreed by 189 nations in 2000 by the target date of 2015.

According to recent estimates, 387 million Africans are living below the internationally accepted poverty line of US\$1.25 (A\$1.93).⁵ This represents approximately 50% of Africans – a figure essentially unchanged since 1981. In contrast, 18% of those living in East Asia and the Pacific live under the poverty line – down from 79% in 1981.⁵ While there remain large numbers of people in Asia in poverty, the scale of extreme poverty in Africa is striking. Moreover, while Asian countries continue to make progress in reducing poverty, many African countries are unlikely to meet the MDGs and will not be able to pull their people out of poverty despite solid economic growth in some states.

It is the case that global aid flows to Africa have increased markedly: aid to Africa reached US\$43.4 billion (A\$67.0 billion) in 2006. Most of the increases in aid flows are due to debt relief, however, rather than substantial

increases in aid.⁶ At the 2005 Gleneagles Summit, G8 nations committed to double ODA by 2010. Initially interpreted as an extra US\$25 billion (A\$38.6 billion) annually, the donors (actually the G7⁷) revised this commitment to an extra US\$21.8 billion (A\$33.7 billion). Three years later, only US\$3 billion (A\$4.6 billion) (14%) of that increase was delivered.⁸ Given Africa's struggles in meeting the MDGs, it is entirely appropriate for Australia to contribute to African development.

A more pragmatic rationale emerged from a recent Lowy Institute Paper, *Into Africa*, that noted that Australian resource sector and related services investment in sub-Saharan Africa topped A\$20 billion in 2008.⁹ The A\$20 billion figure represents a massive investment by Australia's private sector and warrants a consideration of corresponding investment in the social sector. Viewed through this lens, Australian aid's re-engagement with Africa is part of a larger national strategy responding to global trends and opportunities. ODA can raise the positive profile of Australia in the countries where Australian private sector investors are active.

Another reason for the re-engagement noted by Mr McMullan at a recent talk is the framing of Australia as an Indian Ocean country rather than solely as a Pacific Ocean nation.¹⁰ As Western Australia grows economically, a deeper engagement with countries sharing the Indian Ocean – those of East and Southern Africa – has a growing economic logic. To put this point of view into appropriate perspective, it is worth noting that the distance between Melbourne and Hanoi (7,723km) is almost the

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

same as that between Perth and Durban, South Africa (7,873km). Similarly, Melbourne to Beijing is 9,127km – more than the distance between Perth and Nairobi (8,904km).

There are also an increasing number of people in Australia of African descent, bringing with them potentially valuable cultural, social and economic ties to the region. The 2006 census reveals that there are more than 100,000 South African-born people in Australia along with more than 20,000 Zimbabweans, 19,000 Sudanese, 18,000 from Mauritius and almost 10,000 Kenyans. In 2005-06 permanent settler arrivals to Australia included 4,000 South Africans and 3,800 Sudanese, constituting the sixth and seventh largest sources of migrants respectively.¹¹ African Think Tank, an organisation devoted to assisting refugee communities in settling in Victoria, notes that there are approximately 53,000 African-born people living in Victoria.¹² Africa contributes significantly to Australia's skilled workforce. Based on the 2006 census, there are just under 3,000 medical doctors and over 4,100 nurses working in Australia who are African-born.¹³ This represents 5.4% of medical doctors working in Australia. Given that only 1.5% of all working people in Australia are African-born, the over-representation in skilled positions is remarkable.

A further reason for re-engagement with Africa might be Australia's desire to be seen as what the Prime Minister called a 'middle power'¹⁴ as well as the efforts to secure a United Nations Security Council seat in 2013. If Australia's aid is significantly increased, effective and identified as uniquely Australian, it could have an important impact on relations and

Australia's image in Africa, although it is unlikely that an increase in development assistance to Africa will actually sway a huge block of African United Nations General Assembly votes Australia's way.

A final reason for re-engagement with Africa is perhaps the most significant. Engagement in Africa allows AusAID and Australia to be innovators. In the Pacific, where Australia is usually the biggest donor, it is often seen as a behemoth and bully. In contrast to this, in Africa, Australia will necessarily be a small player in terms of ODA volume. As such, Australia has an opportunity to focus on interesting, but important, new areas that are not addressed by the larger, established donors and institutions. This represents an opportunity for Australia to show its creativity and innovation, its lack of institutional and historical biases, and to work with African partners to find new solutions to long-standing problems and devise new models to face future challenges. This flexibility can serve Australia's overall aid program by instilling more dynamism and creativity into AusAID and other aid mechanisms. Lessons derived from these creative models can be adapted and used in the Pacific and Southeast Asia where appropriate.

The re-engagement with Africa on a relatively modest scale is a real opportunity for Australia and represents a meaningful policy shift to a new global perspective and even a new understanding of Australia's own identity as a land of immigrants from around the world, as an Indian Ocean nation, and as a 'middle power.'

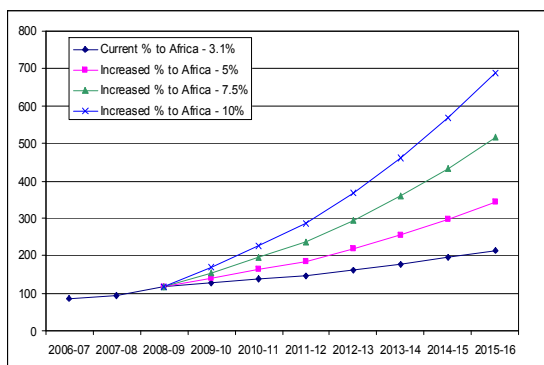
POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

Increased Australian ODA to Africa

The commitment to a re-engagement with Africa comes at a time when Australia is providing only approximately 3.1% of its ODA to Africa or A\$116 million in the 2008-09 budget. Initial comments suggest that this percentage is likely to increase gradually. Given the increases in total ODA noted above, even if the percentage allocated to Africa remains at 3.1%, this will represent an increase from A\$95 million in 2007-2008 to approximately A\$213 million by 2015-16 (assuming 2.5% annual GNI growth). Given the variety of reasons for a substantive re-engagement with Africa outlined in the previous section, Australia should consider significantly increasing the percentage of ODA allocated to Africa. A number of scenarios are presented in Figure 2. If the percentage allocated to Africa were to increase to 5% of ODA, by the 2015/16 budget, the amount might be as much as A\$343 million. A 7.5% of ODA allocation might lead to more than A\$500 million provided to Africa and the 10% allocation, just under A\$700 million.

Figure 2. Value of AusAID ODA to Africa: Current Trend and Possible Increased Trends in Australian dollars million¹⁵



This doubling or tripling of ODA represents a significant new commitment to Africa and as such warrants a vigorous debate in the Australian policy arena.

Australia’s comparative advantage in Africa

The previous government’s Africa strategy emphasised good governance and the ‘delivery of basic services’ focusing on HIV/AIDS and malaria – areas in which the combined force of the global community is already active and in which Australian assistance would have a limited impact.¹⁶ The opportunity for creativity and innovation, coupled with the relatively modest amounts of Australian aid being directed to Africa in the context of an already-crowded development, suggests that Australia should select a small number of areas where it can make a unique but significant contribution. There is no great value in Australia’s using this policy opportunity to duplicate efforts being undertaken by other donors or to develop projects for which Australia has no unique strength. Nor would it make sense in terms of its political objectives to contribute small but largely anonymous donations to larger programs. Australia needs to select areas where it can have a substantial impact, build a new and needed evidence base for African governments and donors, and harness Australia’s own unique history, geography and capacities.

With this in mind, we propose two primary policy areas on which Australia should focus: sustainable agriculture and renewable energy.

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

Policy area #1: Sustainable agriculture in an environment of climate change

African agriculture in a global context

Agricultural productivity improvement is fundamental to achieving the MDGs in Africa. Agriculture underpins the achievement of both food security and economic growth. The most compelling evidence of agriculture-led poverty reduction comes from Asia. During the past three decades, Asia experienced unprecedented economic growth and structural transformation, with Australian aid and private investment contributing to this advance. Poverty declined from 50% in the 1970s to 18% in 2004, while hunger declined from 30% to 16% over the same period. These successes are attributed largely to improved agricultural productivity as a consequence of technological change and market liberalisation.¹⁷ Increased income generated through increased agricultural productivity was invested in schooling and the development of non-farm rural enterprises, opening important new opportunities for employment and higher incomes in rural areas.¹⁸

In contrast with Asia, agricultural productivity growth in Africa during the past 40 years has not kept pace with population. Cereal yields in Africa have stagnated at about 1.0 metric ton per hectare over this period, while in East Asia cereal yields increased more than four-fold. The per capita growth rate of agricultural gross domestic product (GDP) in Africa was negative during the 1980s and 1990s, though improvements have been achieved since 2000. Production growth of the major African food crops (maize and root crops) was based almost entirely on extending the cultivated area, with

only minor contributions from growth in yield per hectare. Poor infrastructure, high transport costs, inadequate institutional support (credit and extension), political instability, diverse agro-ecological complexities, the limited availability of suitable high-yielding varieties, and low fertiliser use have all contributed to low agricultural productivity growth in Africa.¹⁹

With an improved understanding of Africa's unique challenges and potential, a more positive outlook has emerged in recent years. On 5 July 2004, a group of African Heads of State and Government, ministers, scientists, and development specialists met at the United Nations Conference Centre in Addis Ababa, Ethiopia, to work towards cutting hunger by half before 2015.²⁰ The highlight of the event, co-convened by the Government of Ethiopia and the United Nations Millennium Project, was a call by then UN Secretary General Kofi Annan for a 'uniquely African Green Revolution':

*'Let us all do our part to help Africa's farmers and their families take the first steps out of chronic poverty and to help societies to make a decisive move towards balanced and sustainable development. Let us generate a uniquely African Green Revolution.'*²¹

The World Bank's World Development Report (WDR) 2008 called for greater investment in agriculture in developing countries.²² The WDR 2008 recognised that agriculture has been neglected by governments and donors over the past 20 years, despite the finding that GDP growth originating in agriculture is four

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

times more effective in reducing poverty than GDP growth originating outside the sector. The Report warned that the sector ‘must be placed at the center of the development agenda if the goals of halving extreme poverty and hunger by 2015 are to be realized.’ In launching the WDR 2008, the World Bank Chief Economist, Francois Bourguignon, declared:

‘The challenge is to sustain and expand agriculture’s unique poverty-reducing power, especially in Sub-Saharan Africa and South Asia where the number of rural poor people is still rising and will continue to exceed the number of urban poor for at least another 30 years.’²³

The World Bank has pledged to double to US\$800 million (A\$1.24 billion) its annual lending to Africa. In response to the global food crisis, the Bank has established a US\$1.2 billion (A\$1.85 billion) rapid financing facility. Significantly, Australia was the first bilateral donor to contribute to that facility with a commitment of A\$50 million. This timely contribution has attracted attention in recent international meetings on the crisis and has earned praise from the World Bank President, Robert Zoellick.²⁴

Recent initiatives to promote sustainable agriculture in Africa

The revitalisation of smallholder agriculture in Africa is being accelerated by two important continent-wide initiatives: the Alliance for an African Green Revolution (AGRA) and the Millennium Villages Project. AGRA was established in September 2006 by the

Rockefeller Foundation and the Bill and Melinda Gates Foundation and aims to spur rapid rural economic growth through multi-partner investments across the agriculture value chain.²⁵ Chaired by Kofi Annan, AGRA’s initial investments are in support of better seed systems, improved soil health and improved smallholder access to water and markets.

Building on the conclusions of the UN Millennium Project,²⁶ the Millennium Villages Project is using targeted public-sector investments that raise rural productivity and lead to increased private sector savings and investments.²⁷ Like AGRA, the Millennium Villages Project also places agricultural productivity improvement at the core of its agenda, but simultaneously invests in health, education, family planning, environment, and infrastructure. With financial support from the Government of Japan, through the United Nations Trust Fund for Human Security, and individual and corporate philanthropic contributions through Millennium Promise,²⁸ the MVP has expanded to more than 10 African countries, reaching over 400,000 rural poor. In early results, villages have generated crop surpluses, met caloric requirements, provided cash earnings through diversification, increased school attendance through locally grown school meals, and reduced malaria prevalence.

Both AGRA and the Millennium Villages Project support and reinforce the efforts of the New Partnership for Africa’s Development’s (NEPAD) Comprehensive Africa Agriculture Development Programme (CAADP). CAADP aims to mobilise investment around four strategic themes: land and water management;

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

infrastructure and markets; food supply and ending hunger; and research, technology dissemination and adoption.

The scientific underpinning of agricultural productivity improvements in Africa has been strengthened by more than three decades of research by the international research centres of the Consultative Group on International Agricultural Research (CGIAR) and their national, sub-regional and regional partners.²⁹ Four of the CGIAR's 15 research centres are headquartered in Africa; the other 11 have programmes on the continent. The CGIAR-supported centres spend more US\$200 million (A\$309 million) annually on agricultural research for African smallholders.

Malawi demonstrates that agricultural productivity improvements are possible

In mid-2005 the Government of Malawi responded to a drought-induced food crisis with a national scheme to subsidise improved seed and fertiliser.³⁰ Drawing on US\$58 million (A\$90 million) from its national budget in 2005 and US\$63 million (A\$97 million) in 2006, the program reached most of Malawi's smallholder farmers, most of whom are women. Maize production doubled in the 2005/6 season and almost tripled in 2006/7. Favourable rainfall undoubtedly aided this remarkable recovery. However, the growing conditions in 2005/6 were broadly comparable to the 2001/2 and 2002/3 seasons when relatively small subsidies were provided. The surplus of over a million metric tons in 2007 enabled the country to export maize to Zimbabwe and to contribute to World Food Programme procurements.

Malawi's experience demonstrates the feasibility and value of investing in food crops as a first step towards structural transformation and sustained economic growth. The genetic foundation of the hybrid maize varieties used in the program comes from the International Maize and Wheat Improvement Center, which has benefited from considerable Australian financial support and scientific collaboration. In a country where agriculture employs 78% of the national labour force and provides food security and livelihoods for over 10 million people, agricultural productivity growth will have a direct positive effect on the achievement of the MDGs. Beyond the most obvious impacts on reducing hunger, the maize surpluses reduced disease incidence and increased school attendance. Communities also report increased economic activity in areas where productivity increases have been most pronounced.

Notwithstanding this remarkable achievement in Malawi, solutions are still needed to address the serious risks of drought and dry spells, both through water management technologies and the spreading of financial risk. These risks will be exacerbated by climate change. Improved access to water, through irrigation and water harvesting, increases production options. Access to electricity increases irrigation and processing opportunities, while better roads and telecommunications improve market efficiency. These remaining challenges point to important opportunities for Australian technical and financial support.

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

A niche for Australian support to African agriculture: adapting to climate change

At present, through the Australian Centre for International Agricultural Research (ACIAR), the Australian Government contributes around A\$10 million annually to the CGIAR, representing 16% of the ACIAR budget.³¹ Of that amount, about half is disbursed as unrestricted core budget, while the balance is allocated to the international centres on a competitive basis employing tripartite research linkages among scientists from the CGIAR, Australian and developing country partner institutions. Excluding contributions through the CGIAR, only 1% of ACIAR project funding went to Africa in 2007-8, all of that directed to the Republic of South Africa.

Given this low amount of current engagement, and drawing on the historical evidence from Asia (agriculture-driven growth), the current circumstances of Africa (low agricultural investment and low productivity), emerging examples of success (Malawi's production turnaround), and the positively evolving institutional environment (AGRA, Millennium Villages Project, CAADP and the CGIAR), agricultural productivity improvement appears to be a very good investment option for *any* donor interested in the achievement of the MDGs in Africa.

In crafting its strategy for Africa, we propose that Australia should focus on the challenge facing agricultural producers in adapting to climate change. The Fourth Report of the Intergovernmental Panel on Climate Change (IPCC) highlighted the particular vulnerability of African agriculture and all who depend on it.³² In much of the continent, agriculture will

be affected by reduced growing seasons and higher temperatures.³³ The IPCC reported that rain-fed crops in some African countries are anticipated to decrease by 50%, and 50-250 million Africans will face increased water stress by 2020. With less than 4% of African crop land irrigated, the impacts on smallholders could be catastrophic. Women – who bear the major responsibility for household food security in rural Africa – are especially vulnerable. These direct effects on agricultural production and food security will be exacerbated by greater exposure to malaria and other climate-influenced diseases that reduce labour productivity and employment opportunities.

Fortunately, several practical options for adaptation exist:³⁴

- Intensification of food-crop production by smallholders through better access to improved seed, fertiliser and water.
- Water harvesting, sustainable extraction of groundwater and other underutilised water resources, conservation farming, and improved water use efficiency.
- Shifts towards crop and livestock types/varieties/breeds with greater drought and heat tolerance, and improved pest and disease resistance.
- Enterprise diversification towards higher value crops, value adding and off-farm employment.
- Agroforestry and tree crops that can also help mitigate the effects of climate change through carbon sequestration.
- Grain storage improvements (from household to national levels) to ensure

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

security of carryover stocks and access to surpluses.

- Weather forecasting and provision of timely advice to farmers.
- Weather-related crop and livestock insurance.

Importantly, Australia has practical experience and scientific credibility in all of the areas listed above. Moreover, the need to assist farmers in adapting to climate change is a priority shared by most African countries and Australia. The same cannot be said for Europe or North America where the major emphasis is on mitigation strategies that either reduce or offset carbon emissions. Therefore, recognising the Australian government’s desire to prioritise resources within a relatively small but growing ODA envelope, *adaptation to climate change* provides a compelling agenda from which to innovate and lead.

Policy area #2: Renewable energy for development

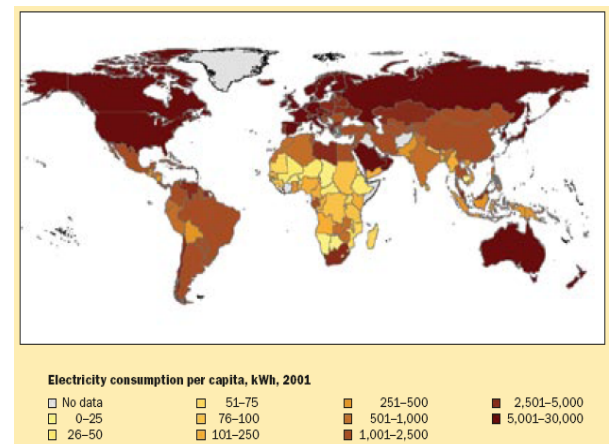
The second area of proposed engagement with Africa is closely linked to the adaptation to climate change. Availability of power and electricity is a necessity for development and economic growth. Access to energy sources allows for agricultural processing so that communities can harness their agricultural productivity into economic growth. Energy is essential for better health whether it is for running a microscope, providing light for procedures, or running a fridge to keep vaccinations secure. Power also facilitates education by allowing students to study in the

evening, running computers, and connecting schools to the internet to open up vast educational opportunities.

State of energy for development in Africa

Despite having almost one billion people, African generates only 4% of global electricity – about three-quarters of which is used by South Africa and North African countries.³⁵ Excluding South Africa, the countries of sub-Saharan Africa share a combined generation capacity equal to that of Argentina, a country of 40 million people.³⁶ The majority of African countries are only able to provide direct access to electricity to 20% of their populations (Figure 3). In Malawi, only 6% of the country’s 11 million people has access to electricity including only 1% in rural areas where 85% of the population lives.³⁷ Many of the continent’s power plants were constructed in the 1950s and 1960s and have deteriorated since.³⁸ Many Africans still rely on solid biomass such as charcoal, wood, and dung as sources of energy for heating or cooking.

Figure 3. World map of electricity use per capita by country³⁹



POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

Sub-Saharan Africa does have some oil and gas reserves but these are mainly located in North and West Africa as opposed to East and Southern Africa where Australia is keen to focus (Figures 4 and 5). This situation places the countries of East and Southern Africa as importers of oil and gas which represents a significant obstacle to economic growth. At the same time, it provides even greater impetus for exploration of alternative energy opportunities in those countries. And it turns out that the countries of East and Southern Africa have tremendous potential for alternative renewable energy.

Figure 4. Proven Natural Gas Reserves Africa 2007⁴⁰

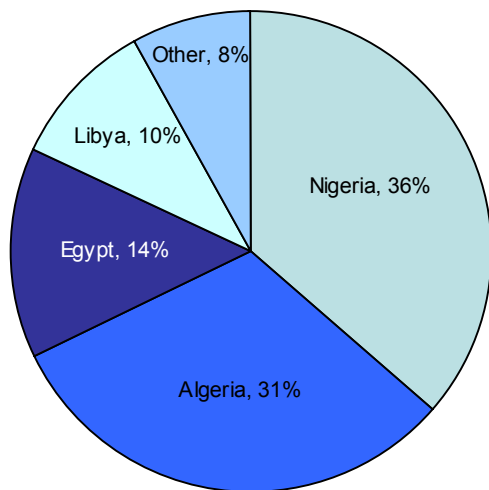
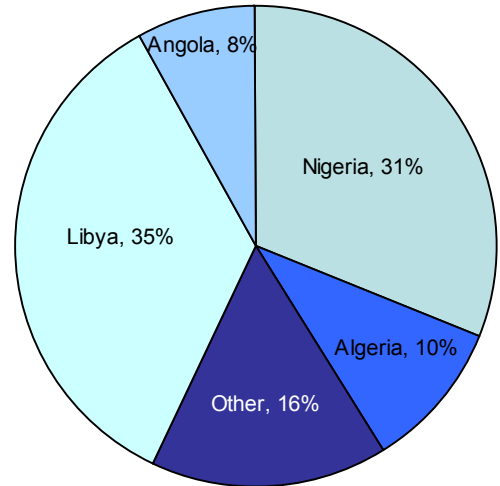


Figure 5. Proven Oil Reserves Africa 2007⁴¹



Despite the continent’s energy poverty, energy projects have accounted for less than 5% of European aid since 1990 and that has focused on large-scale infrastructure.⁴² Where energy is included in development plans, the focus is almost always on national utilities and traditional power. The recent MDG Africa Steering Group recommendations called for a ‘New Deal’ for the energy sector in Africa to ‘plan and build transformational generation and transmission facilities across Africa, and improve the performance of power utilities.’⁴³ While the Steering Group called for an additional annual investment of US\$11.5 billion (A\$17.8 billion) for energy, renewable energy was only mentioned in the context of hydro-power.

On a per capita and overall basis, Africa is a low greenhouse gas emitter;⁴⁴ but with burgeoning economic growth, an opportunity exists for Africa to learn from the mistakes of the rest of the world and develop new models

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

for upscaling clean energy use. The UN Millennium Project report on energy notes that:

In some circumstances, it may be prudent for the poorest to consider leap-frogging to newer low carbon and/or renewable technologies even if they may not be strictly cost-competitive at present. Such circumstances may arise when other factors such as the cost of reliance on imports, domestic job growth, and effects on the environment and tourism are taken into account.⁴⁵

African countries are coming around to the possibilities of renewable energy. While renewable energy technologies account for only 0.2% of total energy in Malawi, the government intends to increase renewable energy contribution to the energy mix to 5.5% by the year 2010.⁴⁶

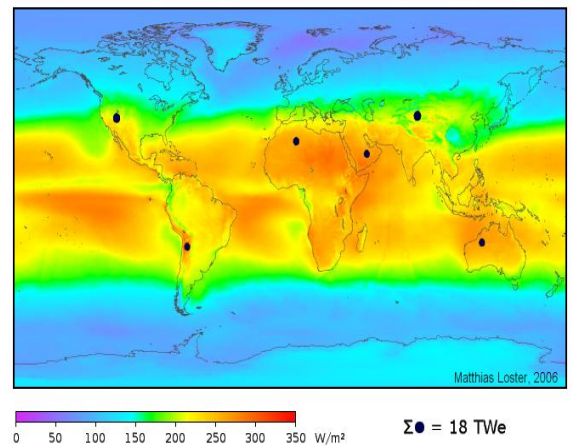
Like Australia, Africa has abundant sunshine, open space, geo-thermal possibilities, and a coastline suitable for wind and wave power. Australia is a world leader in renewable energy and the Rudd government has committed substantial funds to research bringing renewable energy solutions to scale. Australia should make a commitment to bring these solutions to Africa.

Solar power

Like parts of Australia, many African countries receive on average 325 days per year of bright sunlight with the distribution being relatively uniform (Figure 6).⁴⁷ The potential for solar power to bring energy to virtually any location in Africa is unparalleled and opens up the opportunity for bypassing the need for

expensive large scale grid infrastructure. The Government says that it is ready to commit to a target of having 20 per cent of Australia's energy coming from renewable sources by 2020 and has recently unveiled a A\$3 million solar technology centre in Alice Springs which will investigate the efficacy of various models of solar technology. Australia's private sector, supported by government investment, is already experimenting with large scale projects to bring solar energy to scale and could share these innovations with Africa.

Figure 6. Solar Land Area (1991-1993)⁴⁸



Geothermal Power

Geothermal power is a particularly interesting area for East Africa and Australia. Geothermal potential is concentrated through the Great Rift System that runs primarily through Tanzania, Uganda, Kenya, Ethiopia and Eritrea.^{49 50} Preliminary studies in Uganda have shown potential in the west of that country and Kenya has proven potential of 7000 megawatts that the Kenyan government is eager to tap. Kenya currently has three functioning geothermal

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

power sources and is looking to increase capacity dramatically.⁵¹

The University of Queensland recently opened the Queensland Geothermal Energy Centre of Excellence which represents the largest investment in geothermal energy research in Australia. These types of initiatives suggest an opportunity for engagement of Australian researchers and the private sector to engage in projects in Africa to harness renewable energy potential and to share lessons that will benefit both continents.

Wind and wave power

Africa has abundant potential for wind and wave power. Africa's long coastline presents a significant opportunity, especially in southern Africa. The African Wind Energy Association reports that there are already a number of existing wind energy projects in the following countries:⁵² three in South Africa, four in Morocco, one in Namibia, two in Egypt, one in Eritrea, one in Libya, two in Tunisia, and one in Algeria. South Africa in particular has an abundance of wind power potential and is already seeing significant domestic and international investment in pilot projects in the Western Cape. While landlocked countries generally have less wind power potential than coastal areas, work in Uganda has found that around lakes and hilltops, there is sufficient wind power to run a small turbine to drive water pumping and comparable activities. Thus even small-scale wind projects can help with simple agro-processing or pumping.

Australia's opportunity in renewable energy

Renewable energy is a policy area in which very few of the large global actors currently engaged

in Africa are involved. The UN Environment Programme and the African Development Bank provide some funds and niche donors like the Danish government are involved, but this is far from a crowded field. Australia could contribute to developing successful projects that could lead the way in innovating models for delivering renewable energy to rural areas. This would be a significant contribution to economic development, research and innovation, and would have important lessons for Australia as well. There are synergies with the new Australian government's commitment to renewable energy: Programs such as Solar Cities and the Renewable Energy Equity Fund could be adapted to contribute to the African re-engagement and research institutions such as the University of Sydney's new Institute for Sustainable Solutions could play a role in developing models for action.

Other areas of Australian comparative advantage

Besides sustainable agriculture and renewable energy, Australian research and development organisations maintain world-leading skills in other activities. These should be considered as possible additional areas of inclusion into AusAID's re-engagement planning on a case-by-case basis, depending on demand from specific African nations. Global health remains an area of expertise for Australia and more progress against health indicators is certainly needed for Africa to achieve the MDGs.

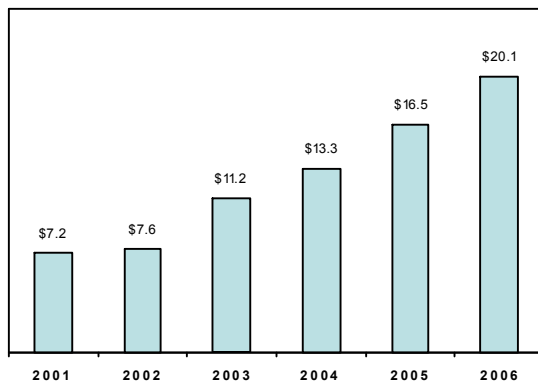
Global health is, however, a very crowded arena in Africa. In 2006, US\$20 billion (A\$31

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

billion) was committed by rich countries as ODA – much of which went to Africa (Figure 7). More than US\$10 billion (A\$15 billion) was made available in 2007 for HIV activities alone and this figure increases substantially each year with significant contributions from major global actors including the World Bank, Global Fund for AIDS, TB and Malaria, and the US government. Health funding represented 17% of overall official development assistance in 2006, an increase from 13% in 2001.

Figure 7. Total Health ODA Commitments, US billions⁵³



With such a crowded field, it might be advisable for Australia to avoid the area of global health in its re-engagement with Africa. If policy-makers are particularly keen to contribute to the great needs in African health, however, then they should find areas of comparative advantage where Australia can contribute something innovative, rather than duplicating or minimally adding to other larger efforts. There are several such areas of potential comparative advantage for Australia to consider.

HIV control among intravenous drug users

Australia is seen as a world leader in HIV prevention and care among intravenous drug users (IDUs). The Australian response served as a model for Canada and elsewhere, yet there has not been a rigorous effort to work with other countries on adapting this model. While the majority of HIV transmission in Africa is heterosexual, there are very few groups working with the pockets of drug users in countries such as Kenya, Tanzania and South Africa. Indeed, the US government's PEPFAR program, the largest source of funds for the HIV response in many countries, does not work with IDUs, leaving it to other donors. This is an area where Australia could step in and fill an important, neglected niche.

Activities such as needle exchange and education have proven very successful in the developed world^{54 55 56 57} and there is increasing evidence of need for such programs in sub-Saharan Africa.⁵⁸ A recent report noted that injecting drug use in Kenya and South Africa appears to be more common than previously believed. In 2000, HIV prevalence rates of 9.8% were reported in a sample of Nigerian drug users.

Non-communicable disease

Australia is a world leader in cardiovascular disease care and in non-communicable disease (NCD) in general. Researchers are increasingly becoming engaged in projects in India, China and Southeast Asia as well as the Pacific and are developing successful treatment and prevention programs. Though Africa currently suffers from a disproportionate burden of infectious disease, a transition is underway to higher levels of NCDs. While the vast majority

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

of global health focuses on infectious disease, this area might be an appropriate niche for some limited Australian investment.

Maternal health and fistula treatment

Maternal health is another area for potential Australian involvement. There is certainly a substantial need in this area, with the majority of countries in Africa unlikely to meet MDG 5 on reducing maternal mortality.⁵⁹ A woman in sub-Saharan Africa has a 1 in 22 lifetime risk of maternal death – compared to a 1 in 8000 risk in industrialised countries.

While women's health remains neglected globally when compared to HIV interventions and child health activities, Australia's potential impact in this area of need is limited and an engagement in this area would not meet the goal of finding niche areas where Australia can have an important impact. One area that would meet this requirement would be fistula treatment. Obstetric fistula occurs during prolonged obstructed labour. A hole develops between the vagina and bladder or vagina and rectum, leading to permanent incontinence. It is essentially a result of poverty and lack of access to obstetric health services. Australian Dr. Catherine Hamlin is a world leader in this effort through her fistula hospitals in Ethiopia⁶⁰ and an effort to support the expansion of such efforts, along with linked midwifery training programmes, to a wider range of regions in Ethiopia or to other countries in Africa, would be a dramatic statement of Australia's commitment to women's health and to health system capacity development.

Effective delivery systems for aid to Africa

Critical decisions are also needed about the way additional Australian aid might be structured and delivered. Questions include where the aid should be focused, the role of delivery systems, and the allocation of funds across different initiatives.

Geographic focus

Australian funding is limited and if disbursed among the many countries of East and Southern Africa it will be extremely diffused. Australia might instead choose to focus on a specific country or subset of countries such as the East African Community comprised of Tanzania, Uganda, Kenya, Rwanda, and Burundi and/or a comparable southern African bloc. Strategic considerations might include emphasising countries that are currently relatively neglected by the majority of donors. Eritrea might fall into this category. Some countries have cultural links to Australia through the Commonwealth or through large migrant communities. A further alternative is to include countries that are seeing significant Australian investment. The Lowy Institute Paper *Into Africa* notes that South Africa, the Democratic Republic of Congo, Tanzania, Botswana and Zambia are the most frequently mentioned target countries for Australian investment in the resource sector.

The issues on which the aid program chooses to focus will also influence the countries chosen. If renewable energy is selected as a priority area, for example, then those countries with the greatest potential, strong domestic support for and interest in renewable energy, and those

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

who need assistance to reach set goals should be given priority. Assuming an emphasis as recommended in this *Policy Brief* on agriculture and energy, a comparison of countries in East and Southern Africa reveals that the countries of greatest need include Burundi, Madagascar, Ethiopia, Eritrea, Mozambique, Uganda and Malawi (Table 1). Given this data, along with Australia’s current relationships and capacities, as well as the recipient country’s political will to engage effectively with donors, we recommend a short list of countries for initial focus for Australia’s re-engagement with Africa comprising Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania and Uganda. We also recommend that Australia should stand ready to assist Zimbabwe once governance improves in that country.

Table 1: Under 5 malnourishment and electricity consumption by country (recommended focus countries in bold)

| Country | Percentage of children under 5 malnourished ⁶¹ | Electricity consumption per capita in kilowatt hours ⁶² |
|-------------------|---|--|
| Burundi | 39 | 73 |
| Madagascar | 37 | 51 |
| Ethiopia | 35 | 30 |
| Eritrea | 35 | 61 |
| Zambia | 23 | 598 |
| Mozambique | 21 | 70 |
| Namibia | 20 | no data |
| Uganda | 19 | 66 |
| Malawi | 18 | 76 |
| Rwanda | 18 | 23 |

| | | |
|--------------|---------|---------|
| Tanzania | 17 | 85 |
| Kenya | 17 | 140 |
| Zimbabwe | 14 | 950 |
| Botswana | 11 | no data |
| Swaziland | 9 | no data |
| South Africa | no data | 4313 |

Aid delivery and funding allocations

As Australia looks to re-engage with Africa, there might be an inclination to set up new systems to deliver the increased aid. Current trends in international development, however, best represented by the Paris Declaration on Aid Effectiveness, emphasise harmonised approaches that limit duplication and the establishment of parallel systems by various donors.

For investments in sustainable agriculture, the CGIAR centres present an effective ‘ready made’ delivery mechanism. With a long history in Africa and established partnership with African governments, universities (both local and Australian), non-governmental organisations, regional coordination bodies, and ACIAR, the CGIAR centres are well positioned to receive and disburse programmatically restricted and project-based funding. Another possibility would be to allocate targeted programmatic support through AGRA and the World Bank’s Multi-Donor Trust Fund.

In an area such as renewable energy that might initially be research-focused, university-to-university partnerships might be appropriate. Another avenue for development in this area

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

would be through public-private partnerships, which can inject funds into infrastructure that governments could not initially afford.⁶³ These partnerships could leverage existing and developing Australian private sector expertise in renewable energy.

Working through existing mechanisms or through partnerships is especially necessary given that AusAID currently has limited representation in Africa. This partnership model reinforces the importance of dialogue during the design of Australia's aid program.

For the sustainable agriculture and renewable energy focus areas in particular, an early emphasis should be placed on research, demonstration, and capacity building. The areas in which Australia can best contribute are largely emerging areas that do not have sufficient scientific and operational evidence of how to make them work in less developed settings. Such an approach would require partnerships to be developed with existing research institutes and implementing bodies.

Given the level of need and opportunities for Australia and African partners, we suggest the following funding allocation of Australian funds committed to re-engagement with Africa: 60% for sustainable agriculture and climate change adaptation; 25% for sustainable energy; and 15% for other activities such as priority health interventions. While acknowledging that such an allocation is open to discussion and change, the large allocation to agriculture would allow Australia to have a significant impact during the current global food crisis as well as over the longer term. At the same time, the allocation to sustainable energy would

provide for the development of research, innovation and partnership models to guide future spending by the World Bank and others as renewable energy gains a higher profile in less developed countries.

Conclusions

While the Pacific and South East Asia will remain Australia's priority regions for development assistance, re-engagement with Africa presents Australia with an opportunity to play a significant role in the sustainable development of the poorest continent. At the same time, it provides an opportunity for AusAID and others to be creative and flexible in leveraging local expertise to address shared challenges.

Based on an analysis of Australia's capacity in relation to African needs and areas of policy neglect by the donor community, we suggest that Australia should focus its African development program on sustainable agriculture and renewable energy. Australia can make a substantial contribution through practical solutions in these areas and can enhance Australia's role as an effective development partner. Moreover, these areas represent common challenges faced by Africa and Australia.

In order to maximise Australian efforts in these areas, we propose that Australia allocate 60% of its African development funds for sustainable agriculture, 25% for renewable energy activities and 15% for other activities such as health. While these allocations are somewhat arbitrary and are open to change, we

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

believe that is important to set quantitative targets and reassess their relevance after three to five years.

Geographically, the focus of Australian ODA should be on a subset of not more than seven countries chosen based on need and the political will of recipient countries to work effectively with donors: Ethiopia, Kenya, Malawi, Mozambique, Rwanda, Tanzania and Uganda. Restricting aid to a limited number of countries ensures focus and a concentration of limited funds on high priority states. The dire needs of Zimbabwe should be considered once governance improves.

Finally, a re-engagement with Africa, if focused on important niche areas of Australian comparative advantage, will not only contribute to sustainable development in Africa but will also contribute to the strengthening of AusAID's work in the Asia-Pacific. The opportunity to be nimble, innovative and creative in Africa can bring new ideas and methods of working to AusAID's existing areas of focus. Lessons from Africa, in particular on providing renewable energy sources to isolated populations, could be particularly relevant to the Pacific Island and PNG contexts.

LIST OF ACRONYMS

| | |
|--------|---|
| ACIAR | Australian Centre for International Agricultural Research |
| AGRA | Alliance for African Green Revolution |
| CAADP | Comprehensive Africa Agriculture Development Programme |
| CGIAR | Consultative Group on International Agricultural Research |
| GDP | Gross Domestic Product |
| GNI | Gross National Income |
| IDU | Injecting Drug User |
| IPCC | Intergovernmental Panel on Climate Change |
| MDG | Millennium Development Goals |
| NCD | Non Communicable Diseases |
| NEPAD | New Partnership for Africa's Development |
| ODA | Overseas Development Assistance |
| PEPFAR | US President's Emergency Plan for AIDS Relief |
| PNG | Papua New Guinea |
| UN | United Nations |
| WDR | World Development Report |

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

NOTES

¹ OECD data and predicted values based on government statements.

² Hayward-Jones J. *Beyond good governance: shifting the paradigm for Australian aid to the Pacific Islands region*. Lowy Institute for International Policy, 2008.

³ Joint press conference by the Prime Minister with UK Prime Minister Brown in London, April 2008: http://www.pm.gov.au/media/Interview/2008/interview_0172.cfm.

⁴ 2020 Summit Report. *Australia's future security and prosperity in a rapidly changing region and world*. Commonwealth of Australia, Canberra, May 2008.

⁵ Ravallion M, Chen S, Sangraula P. *Dollar a day revisited*. World Bank Policy Research Working Paper 4620, May 2008.

⁶ OECD figures.

⁷ Excludes Russia which is not a significant donor.

⁸ *The DATA Report 2008*. One: <http://www.one.org/report>.

⁹ Donnelly R, Ford B. *Into Africa*. Lowy Institute Paper 24. Lowy Institute for International Policy, 2008.

¹⁰ Bob McMullan, Future directions for Australian assistance to Africa. Speech delivered to Australia Africa Business Council, Sydney, 12 August 2008.

¹¹ Australian Year Book 2008.

¹² African Think Tank Inc. *African resettlement in Australia*: Conference Report 2007.

¹³ Negin J. Australia and New Zealand's contribution to Pacific Island health worker brain drain. *Australian and New Zealand Journal of Public Health* 32 2008 pp 507-11.

¹⁴ Kevin Rudd address to the American Australian Association, New York, March 30, 2008: 'And it means developing a creative middle power diplomacy to work with our close partners in our region and around the world on challenges like

climate change, economic development and countering terrorism' and Kevin Rudd address to the UN General Assembly in New York, September 26, 2008.

¹⁵ Figures assume 2.5% GNI growth per year and assume linear increase in aid to Africa over time to reach the final target by the 2015/2016 budget.

¹⁶ AusAID. *Australia and Africa: facing the challenges as partners 2003-2007*. Commonwealth of Australia, Canberra, 2005.

¹⁷ IFPRI, ADB. *Agriculture and rural development for reducing poverty and hunger in Asia: In pursuit of inclusive and sustainable growth*. IFPRI and ADB, 2007.

¹⁸ Otsuka K. *Changing sources of household income and poverty reduction in rural Asia, 1984-2004*. Paper presented at IFPRI-ADB Policy Forum, 2007.

¹⁹ World Bank. *Agriculture for development: the World Development Report 2008*. Washington, World Bank Group, 2007.

²⁰ UN Millennium Project, Task Force on Hunger. *Investing in development: a practical guide to achieve the Millennium Development Goals*. London, Sterling, VA, Earthscan, 2005.

²¹ Kofi Annan. Opening remarks at the seminar on Innovative Approaches to Meeting the Hunger MDG in Africa. Addis Ababa, Ethiopia, 5 July 2004.

²² World Bank. *Agriculture for development*.

²³ World Bank Press Release No 2008/080/DEC.

²⁴ World Bank Press Release No 2009/112/SDN, 11 October 2008.

²⁵ See www.agra-alliance.org.

²⁶ UN Millennium Project. *Investing in development: a practical plan to achieve the Millennium Development Goals*. New York, 2005.

²⁷ Sanchez P, Palm C, Sachs JD, Denning G, Flor R, Harawa R, Jama B, Kifleariam T, Konecky B, Kozar R, Lelerai E, Malik A, Modi V, Mutuo P, Niang A, Okoth H, Place F, Sachs SE, Said A, Siriri D, Teklehaimanot A, Wang K, Wangila J, Zamba

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

C.The African Millennium Villages. *PNAS* 104 (43) 2007 pp 16775–16780.

²⁸ A non-profit organisation based in the United States, www.millenniumpromise.org.

²⁹ See www.cgiar.org.

³⁰ Denning, G., P. Kabambe, P. Sanchez *et al.* Input subsidies to improve smallholder maize productivity in Malawi: towards an African green revolution. *PLoS Biology* (in press 2009).

³¹ Australian Centre for International Agricultural Research. *ACIAR Annual Report 2007–08*. Canberra, 2008.

³² Boko M. I., et al. Africa. In: *Climate change 2007: impacts, adaptation and vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Parry M. L., ed. Cambridge, Cambridge University Press, 2007.

³³ Collier P, Conway G, Venables T. Climate change and Africa. *Oxford Review of Economic Policy* 24 (2) 2008 pp 337-353.

³⁴ Denning G. Agriculture leads to the MDGs, rural development in Africa. *UN Chronicle* (4) 2007 pp 24-27.

<http://www.un.org/Pubs/chronicle/2007/issue4/0407p24.html>.

³⁵ The Economist. *An African energy crisis*. 16 August 2007.

³⁶ United Nations et al. *Achieving the Millennium Development Goals in Africa: recommendations of the MDG Africa Steering Group*. June 2008.

³⁷ African Wind Energy Association. *Malawi*. <http://www.afriwea.org/en/malawi.htm>

³⁸ Madamombe I. Energy key to Africa's prosperity. *Africa Renewal* 18(4) 2005 p 6.

³⁹ Modi, V., S. McDade, D. Lallement, and J. Saghir. *Energy and the Millennium Development Goals*. New York, Energy Sector Management Assistance Programme, United Nations Development

Programme, UN Millennium Project, and World Bank, 2006.

⁴⁰ BP p.l.c., *BP statistical review of world energy*, June 2008.

⁴¹ BP p.l.c., *BP statistical review of world energy*, June 2008.

⁴² Europe's chance to help light up Africa: energising poverty reduction. Practical Action 2005. http://practicalaction.org/docs/advocacy/energising_poverty_reduction.pdf

⁴³ United Nations et al. *Achieving the Millennium Development Goals in Africa: recommendations of the MDG Africa Steering Group*.

⁴⁴ Africa accounts for 2–3% of the world's carbon dioxide emissions from energy and industrial sources and some African countries are greenhouse gas sinks due to large forested areas. Economic Commission for Africa. *Harnessing technologies for sustainable development*. Addis Ababa, Ethiopia, 2002.

⁴⁵ Modi, V., S. McDade, D. Lallement, and J. Saghir. *Energy and the Millennium Development Goals*, 2006.

⁴⁶ African Wind Energy Association. *Malawi*.

⁴⁷ Yansane AM. *Solar power in Africa*. National Solar Power Research Institute. 2007.

⁴⁸ Loster M. *Total primary energy supply: land area requirements*:

http://www.ez2c.de/ml/solar_land_area/

⁴⁹ Business Council for Sustainable Energy. Eastern Africa Geothermal Market Acceleration Conference, Market assessment report. 2003:

<http://www.uneptie.org/energy/act/re/geo-conference/docs/marketreport.pdf>.

⁵⁰ Malin PE. *Establishment of Geothermal Resource Center to accelerate the development of Eastern Africa*. 2001.

⁵¹ Karekezi S and Kithyoma W. *Renewable energy in Africa: prospects and limits*. Workshop for African Energy Experts on Operationalizing the NEPAD Energy Initiative. 2003.

POLICY BRIEF

SHARED CHALLENGES AND SOLUTIONS

⁵² From African Wind Energy Association:
<http://www.afriwea.org/en/projects.htm>.

⁵³ Kates J, Lief E, Pearson J. *Donor funding for health in low- & middle- income countries, 2001–2006*. Kaiser Family Foundation, July 2008.

⁵⁴ Matthew G Law and Robert G Batey. Injecting drug use in Australia: needle/syringe programs prove their worth, but hepatitis C still on the increase. *MJA* 178 (5) 2003 pp 197-198.

⁵⁵ Commonwealth Department of Health and Ageing. *Return on investment in needle and syringe programs in Australia*. Canberra, Department of Health and Ageing, 2002.

⁵⁶ Lurie, P., and Drucker, E. An opportunity lost: HIV infections associated with lack of a national needle exchange program in the USA. *The Lancet* 349 1997 pp 604-608.

⁵⁷ Dolan, K, et al. *Needle and syringe programs: a review of the evidence*. Australian Government Department of Health and Aging, Canberra; World Health Organization, 2005.

⁵⁸ *Regional Overview Sub-Saharan Africa*. International Harm Reduction Association. <http://www.ihra.net/Assets/590/1/GSHRSubSaharanAfrica.pdf>.

⁵⁹ World Health Organization, UNICEF, United Nations Population Fund and the World Bank, *Maternal Mortality in 2005, 2007*.

⁶⁰ See <http://www.fistulafoundation.org/index.html> for more information.

⁶¹ UN data. <http://data.un.org/>.

⁶² *Human Development Report 2004: Cultural liberty in today's diverse world*. UNDP, New York, 2004.

⁶³ Hayward-Jones J. *Beyond good governance*.

ABOUT THE AUTHORS

Joel Negin

AB (Harvard) MIA (Columbia)

Joel Negin is a lecturer in international public health at the University of Sydney and has an ongoing appointment at the Center for Global Health and Economic Development at the Earth Institute at Columbia University where he worked for the previous three years. While at the Earth Institute, Negin served as technical adviser to Kenya's National AIDS Control Council and as Health Systems Coordinator for the Millennium Villages Project's 14 sites in ten sub-Saharan African countries. Previously, he worked in Côte d'Ivoire, Liberia, Zimbabwe, Botswana and South Africa on various health and development projects for UN agencies, government departments and private sector organisations.

Glenn Denning

BAgrSc (UQ) MAgrSc (UQ) MPA (Harvard) PhD (Reading)

Glenn Denning joined the Earth Institute at Columbia University in July 2004 as Senior Research Scholar and Associate Director of the Tropical Agriculture Program. He played a lead role in establishing the Earth Institute's Millennium Development Goals (MDG) Centre in Nairobi, where he now serves as Director. Denning has more than 25 years of experience in international agricultural research and development, including 10 years in sub-Saharan Africa. He earlier held senior management positions at the International Rice Research Institute and the World Agroforestry Centre.

LOWY INSTITUTE

FOR INTERNATIONAL POLICY

WWW.LOWYINSTITUTE.ORG