

Environmental Sustainability, Water and Poverty in Africa

THE MILLENNIUM DEVELOPMENT DECLARATION, WITH ITS EIGHT MILLENNIUM DEVELOPMENT GOALS (MDGs) AND MEASURABLE TARGETS AND INDICATORS, WAS THE FIRST GLOBAL COMMITMENT TO COMBAT POVERTY. EVEN THOUGH REAL CHANGE HAS INDEED TAKEN PLACE SINCE THE 2000 MILLENNIUM SUMMIT, MANY COMMUNITIES AROUND THE WORLD ARE STILL SUFFERING FROM HUNGER AND LACK ACCESS TO SAFE DRINKING WATER. THE HIGHEST PROPORTIONS OF POPULATIONS DEPRIVED OF THESE MOST BASIC NEEDS ARE LIVING IN SUB-SAHARAN AFRICA.

This policy paper makes an overview of the current status of three of the MDG indicators for Africa relating to, hunger (MDG 1), environment and water (MDG 7), and global partnership for development (MDG 8). It also features Cypriot experience and expertise that could contribute to sustainable development in Africa.

In 2011, prolonged droughts affected more than 13 million people in East Africa. Estimates suggest that between 50,000 to 100,000 people in Somalia, Ethiopia and Kenya died, more than half of them children under five years of age (Hillier and Dempsey, 2012). While these countries are still recovering from this famine, attention has shifted to West Africa where droughts have devastated harvests in Burkina Faso, Chad, Mali, Mauritania, Niger, Cameroon and Nigeria. More than 15 million people are consequently facing food insecurity (UN News Center, 2012).

Even though early warning systems were in place in Ethiopia and Kenya, national and international responses to the emerging crisis were insufficient. It was not until worldwide media turned their attention to the crisis that large-scale international action started to take shape. However, the delay had already done its damage with far greater malnutrition, suffering and damaged livelihoods, than would have happened had more concerted preventive action and early relief been taken.

On a global scale, nearly 850 million people suffered from hunger in 2006-2008, with 26% living in Sub-Saharan Africa (FAO, 2011a). Sub-Saharan Africa is also the region with a frighteningly low level of water resources development. More than 60% of the population in Sub-Saharan Africa did not have access to safe drinking water sources in 2008 (UN, 2011). Malnutrition and famine resulted from both droughts and floods, while the associated dependencies on food aid severely hampered the economic development of many African countries. Access to water and improved management of water resources however, play a critical role to agriculture development and consequently food security.

In the summer of 2008, Cyprus was in the grip of a severe drought. Domestic water supplies were significantly rationed and irrigation water supply was almost completely halted. Cyprus' emergency back-up was provided by Greece, with the transfer of more than 5 million m³ of water by ship, at a cost of about 50 million euro. Cyprus obtained financial support from the European Solidarity Fund and farmers received drought compensation and emergency state aid. Since then, the pathway to future water security has been safeguarded with the construction of three more desalination plants.

Droughts are a recurrent phenomenon in semi-arid environments such as Cyprus, Eastern Africa and the Sahel. Global warming is leading to more extreme climate events and longer and hotter dry periods, while the impact of floods and droughts is also becoming more difficult to manage due to population growth, poverty, changing migration patterns, conflicts and poor governance.

Humanitarian crises can be avoided by investing in infrastructure and services, the development and diversification of rural livelihoods and the improvement of governing mechanisms and policies. To achieve sustainable and resilient livelihoods it is essential to facilitate effective participation of local communities, enabling people to make better-informed choices, at both individual and communal levels.

The Millenium Development Goals

In September 2000, world leaders signed the Millennium Declaration, agreeing to take decisive action to combat world poverty in all its different dimensions (UN General Assembly, 2000). This pledge became manifest in eight Millennium Development Goals (MDGs), which constitute the first ever set of shared development goals at international level. In brief these goals are:

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

The Millennium Development Goals provide a framework of time-bound targets and indicators by which progress can be measured. They include 21 targets and 60 quantitative indicators. Each of the eight MDGs should be reached and fulfilled by 2015. The various MDGs are interlinked, each goal depending, to varying degrees, on the progress of the other goals. Moreover, the individual goals are mutually reinforcing in embarking for poverty reduction and human development.

Developing countries have established their own MDG-based development strategies. The United Nations Development Programme has been devised to support governments' preparation of national strategies and capacity development for MDG localization (UNDP, 2012a). MDG localization includes setting local goals and targets, planning how to achieve them, and strengthening local institutions to ensure their successful implementation. It also involves establishing links between national policies and frameworks and their application at the local level.

Many of the world's poor are directly dependent on natural resources for their daily survival and thus most vulnerable to environmental hazards and the degradation of natural resources. Environmental integrity, as well as maintenance of ecosystems essential for the survival of the poor, is imperative to the MDG success. Maintaining healthy and resilient ecosystems and avoiding non-reversible damage is necessary for securing economic growth and reaching the MDGs, despite of

resource depletion and global environmental challenges. The targets and indicators that integrate environmental sustainability into the objectives of poverty reduction are shown in Box 1.

This paper looks at development challenges and opportunities in Africa with a special focus on the sustainable management of the environment (MDG 7). It also identifies similarities between Cyprus and Africa and identifies expertise, experiences and achievements gained in Cyprus over the past 50 years that could contribute to the development in Africa.

After a brief introduction on basic environmental conditions, this paper addresses Africa's development challenges and opportunities, particularly as regards the following indicators: reduce by half the populations that suffer from hunger (indicator 1.9), halt deforestation (indicator 7.1), reduce water exploitation (indicator 7.5), reduce by half the people that do not have access to a safe drinking water source (indicator 7.8), and development assistance as a percentage of gross national income (indicator 8.1).

Box 1. Millennium Development Goal 7 - Ensure Environmental Sustainability (UN Statistics Division, 2012a)

TARGETS	INDICATORS
7A: Integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources.	7.1 Proportion of land area covered by forests 7.2 CO ₂ emissions, total, per capita and per \$1 Gross Domestic Product 7.3 Consumption of ozone-depleting substances 7.4 Proportion of fish stocks within safe biological limits 7.5 Proportion of total water resources used
7B: Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss.	7.6 Proportion of terrestrial and marine areas protected 7.7 Proportion of species threatened with extinction
7C: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and sanitation.	7.8 Proportion of population using an improved drinking water source 7.9 Proportion of population using an improved sanitation facility
7D: By 2020, achieve a significant improvement in the lives of at least 100 million slum dwellers.	7.10 Proportion of urban population living in slums

Understanding Africa's Environment

Africa's people and economies are heavily dependent on rain-fed agriculture. Figure 1 shows the average precipitation over Africa. Northern Africa and the coastal areas of southern Africa have a Mediterranean climate similar to that of Cyprus, with highest rainfall rates in the mountains. For comparison purposes, it is worth mentioning that the average annual precipitation over Cyprus is 460 mm (1980-2010), ranging between 300 mm in the inland Mesaoria plain to 1000 mm on the top of the Troodos mountains (CMS, 2012).

The Sahel region, which runs along the southern edge of the North African Sahara desert, covers arid and semi-arid regions, with 100 to 600 mm rain per year (Figure 1). The areas around the equator are humid, especially the western and central parts, with up to 3200 mm of rain.

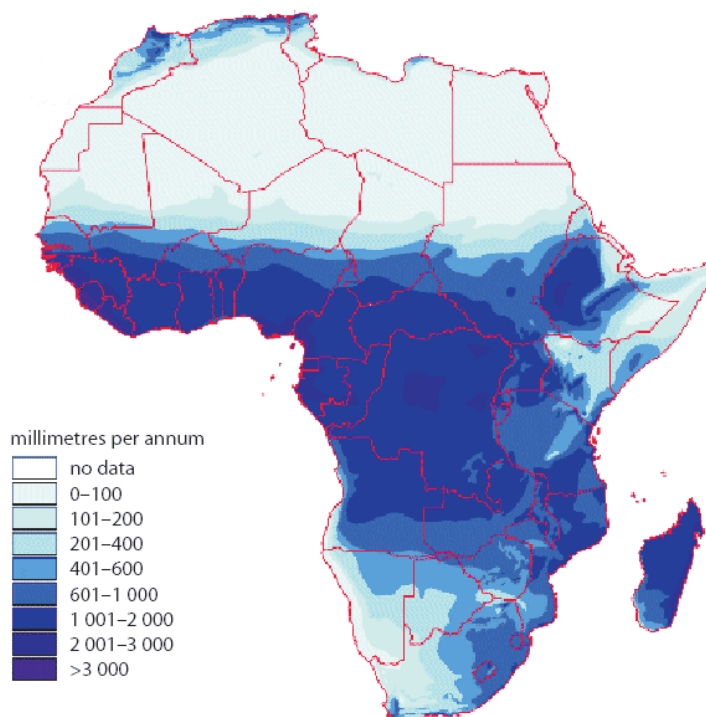


Figure 1. Average annual precipitation in Africa (UNEP, 2002).

Similar to Cyprus, downward trends in long-term rainfall records have been observed in western, eastern and southern Africa (Trenberth et al, 2007). These regions have also experienced strong multi-decadal variability, with the wet years of the 1950s and 1960s being followed by much drier years in the 1970s, 1980s and 1990s. These downward trends have been strongest in the Western Sahel. As depicted in Figure 2, which shows the normalized rainfall index (the deviation from the long-term average precipitation divided by the standard deviation) for both the Sahel and Cyprus, both areas show high inter-annual variability and drier conditions during the last thirty years. Nonetheless, Cyprus still experienced a number of good rainfall years during that time.

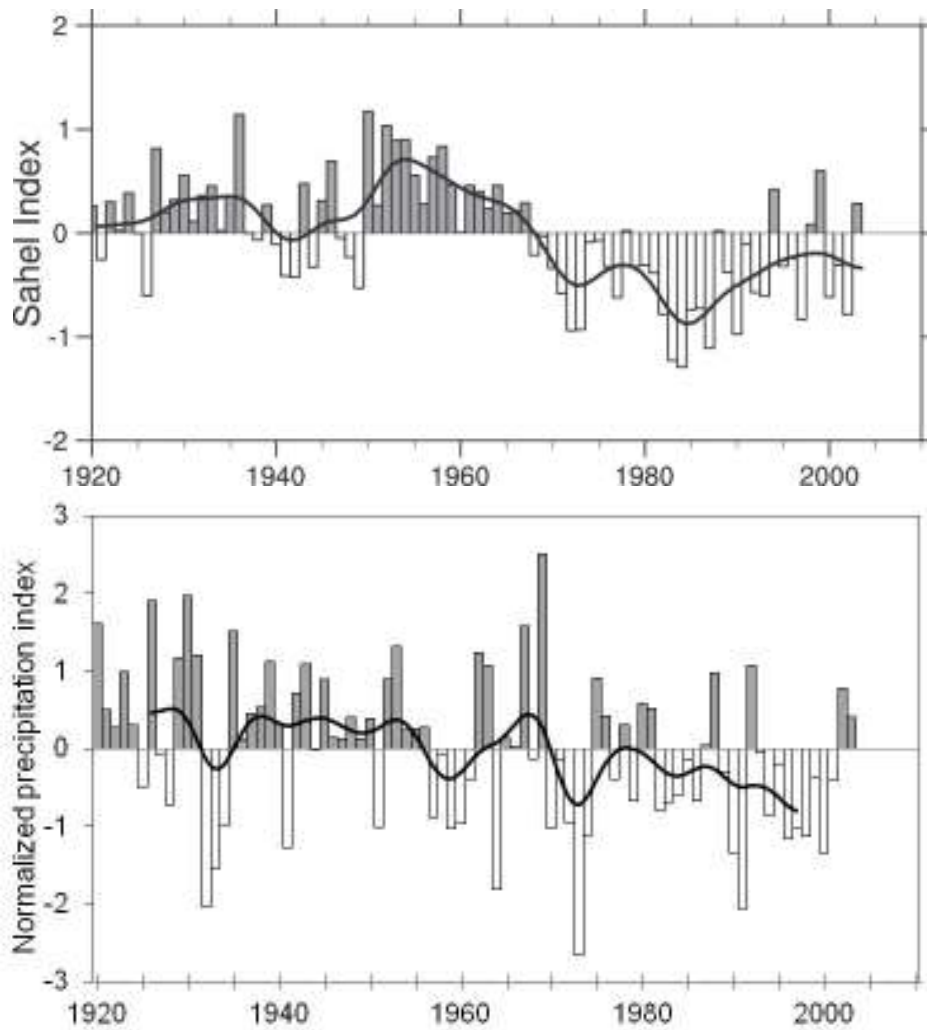


Figure 2. Time series of normalized rainfall anomalies for the period 1920 to 2003 for the Sahel (10°N–20°N, 18°W–20°E) (Trenberth et al, 2007) (top) and the Republic of Cyprus (source: CMS, 2012) (bottom).

Climate and its anticipated changes will play a pivotal role in environmental sustainability, particularly with regard to the availability of water in sufficient quantities and adequate quality. As far as environmental sustainability is concerned, significant changes in species diversity and environmental integrity are expected as a result of changes in climatic conditions throughout the current century.

Temperature increases in Africa are likely to exceed the global annual mean warming, with higher temperatures in drier subtropical regions than the moister tropics, according to the fourth assessment report of the Intergovernmental Panel on Climate Change (Christensen et al, 2007). Projections from a set of global climate models show a decrease in precipitation for much of the Mediterranean, northern Sahara and Southern Africa (Figure 3). However, there are still many uncertainties associated with these projections. Inconsistent model results cast doubts on the reliability of global climate models for the Sahel (Christensen et al, 2007). For East Africa, global models project a future with higher precipitation; yet climate reanalysis data, simulations and observations indicate that a decrease in precipitation is more likely (Williams and Funk, 2011).

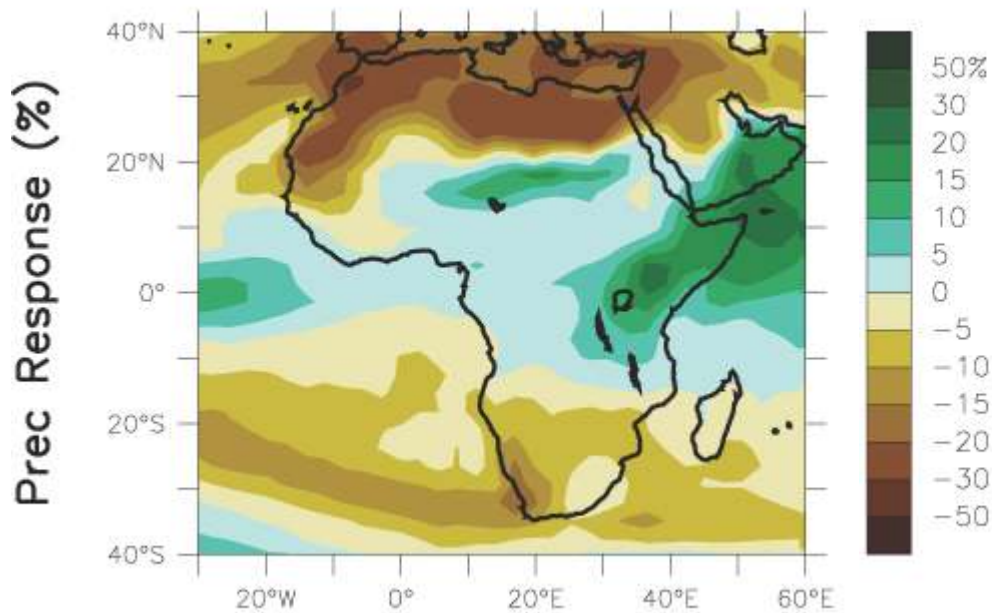


Figure 3. Projected change in precipitation (%) between 1980-1999 and 2080-2099 averaged over 21 global circulation models for the medium emission scenario A1B (Christensen et al, 2007).



MDG1: ERADICATE EXTREME POVERTY AND HUNGER

Indicator 1.9: Reduce the proportion of people who suffer from hunger by half

Challenges

MDG indicator 1.9, which reflects the proportion of the population below the minimum level of dietary energy consumption, aims to reduce hunger by half by 2015. In Africa progress in this regard has been slow. In Sub Saharan Africa, the fraction of people who are undernourished declined from 31% in 1990-92 to 27% in 2006-08 (Figure 4). However, even though MDG 1.9 was achieved in Mali, Ghana, Nigeria, Congo, and Djibouti, during this same period, the proportion of undernourished people in Swaziland, Burundi and Botswana increased by more than 30%. And whereas the overall proportion of hungry Sub-Saharan people decreased, the absolute number actually increased from 165.9 to 217.5 million people (FAO, 2011a). The number of people suffering from starvation further increased when global food prices soared to peak records in 2008.

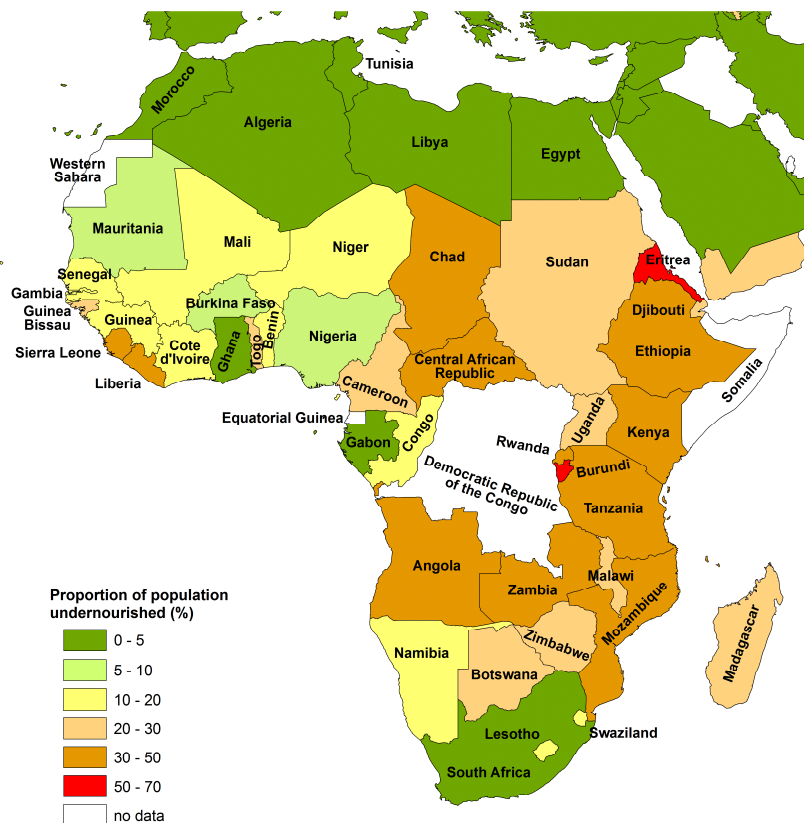


Figure 4. Proportion of the population undernourished (%) in 2006-2008 (source: UN Statistics Division, 2012b).

Opportunities

In order to make progress in reducing hunger, both the causes and the consequences of extreme poverty and hunger need to be addressed. Tackling the causes requires interventions to improve food availability and enhance the income levels of the poor, by broadening their productive activities. Confronting the consequences requires humanitarian aid, with targeted programs that provide the most needy families with direct and immediate access to food (FAO, 2011a).

Investment in agriculture remains critical to sustainable long-term food security. Such investment will improve the competitiveness of domestic production, increase farmers' profits and make food more affordable (FAO, 2011a). However, as is clear from MDG 7, increasing agricultural production should not come at the expense of forests and aquatic ecosystems. Crop yields in Africa are generally much below their potential achievable yields (Licker et al, 2010), thus, there is still much to gain from agricultural intensification. Improvements could be achieved through the use of different crops and management practices, better crop seeds and fertilizer application. Farmers need also better access to information, markets and capital.

Irrigation is a key for reducing production risks and improving yields in semi-arid areas. Small-scale drip irrigation systems could provide important security for farmers, especially when water resources are limited. One or two large buckets or a small drum connected to a few drip lines could supply a vegetable garden or orchard (Figure 5). Drip irrigation kits have also been used in combination with rainwater harvesting practices, such as the collection of surface runoff in farm ponds (GHARP, 2012, UNDP, 2012b). Policy actions, mechanisms and options for improving water

productivity in rain-fed and irrigated agriculture have been outlined by the Comprehensive Assessment for Water in Agriculture (2007).

In Cyprus, the Water Development Department has constructed dams, boreholes and pressurized water supply networks, while the Agriculture Department has provided farmers with technical and financial assistance to transfigure traditional surface irrigation methods to water-use-efficient drip and micro-sprinkler systems (Phoicades, 2002). The Agricultural Research Institute has also contributed to the improvement of agricultural water use efficiency, through dedicated research on irrigation systems, crop water requirements, fertilization practices and greenhouse management (ARI, 2002; Methochis et al., 2002). Even though 2008-2010 figures show that agriculture accounts for less than 3% to Cyprus' Gross Domestic Product, from 17% in the late 1970s, it still provides the country with fresh produce, jobs, and pleasant landscapes.



Figure 5. Drip irrigation kit in a vegetable garden in Kenya (source: GHARP, 2012) (left) and drip irrigation system in terraced grape orchards in the Troodos mountains in Cyprus.



MDG7: ENSURE ENVIRONMENTAL SUSTAINABILITY

Indicator 7.1: Reverse loss of forests

Challenges

Africa's forest area decreased from 749 million ha in 1990 to 674 million ha in 2010, (FAO, 2011b). However, a positive sign is that the reduction in forest area has slowed down from 4.0 million ha per year in 1990-2000 to 3.4 million ha per year in 2000-2010. Forests covered more than 22% of Africa's land area in 2010, which is slightly higher than the forest to land rate (19%) in Cyprus (FAO, 2011b). Forest cover is highest in wet environments around the equator, while countries with large forest areas had the most significant forest losses. Zimbabwe lost forests from 17% of its land area, while 11% was lost in both Ghana and Benin (Figure 6).

Forests fulfill many vital functions for humanity, including the provision of goods (timber and non-timber products) and services, such as protection against flooding, biodiversity habitation, carbon sequestration, watershed protection and soil conservation. However, they are threatened due to

agricultural expansion, wild fires and destructive logging. It should be noted that firewood and charcoal are still the main energy resource in Africa (FAO, 2011b).

In 1987, the Report of the Brundtland Commission defined sustainable development as “development which meets the needs of the present without compromising the ability of future generations to meet their own needs”. Ecosystem goods and services play an essential role in the living and working environment of many poor people around the world. The critical linkage between environmental sustainability and socio-economic development was broadly recognized at the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992. In the 20 years since Rio, the impacts of logging, mining and fossil fuel use have become clearer and call for more urgent action.

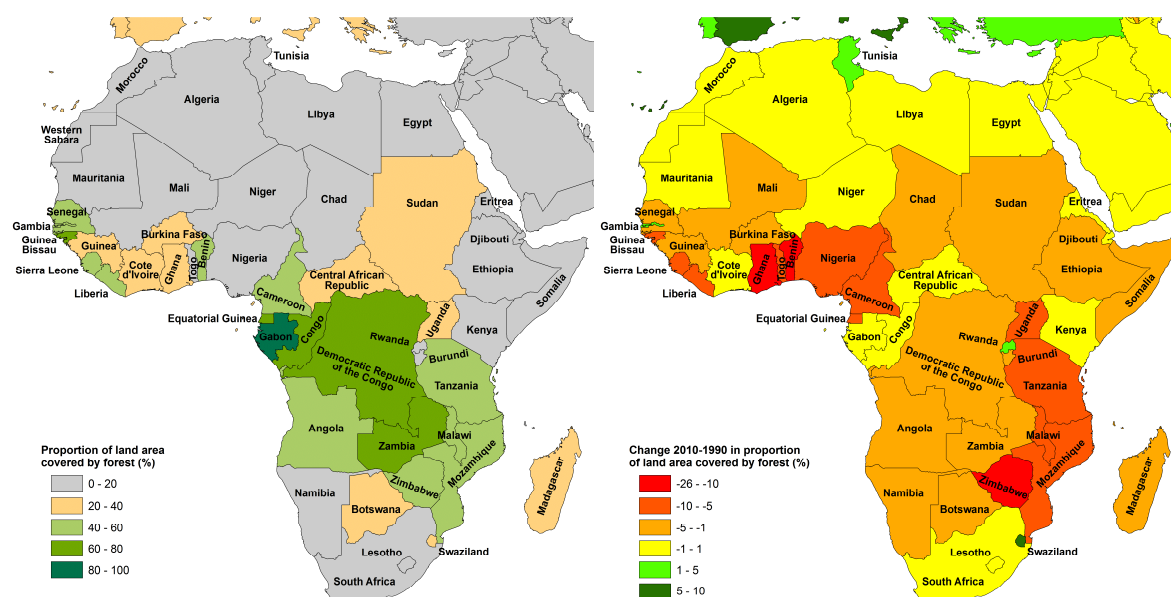


Figure 6. Proportion of land area covered by forests (left) and change between 1990 and 2010 (right), negative numbers indicate a loss of forests (source: UN Statistics Division, 2011).

Opportunities

With few rural communities in Africa connected to the electricity grid, efforts to halt deforestation also need to look at options for reducing firewood use. Various projects have aimed at the development of renewable energy sources, such as solar, wind, hydro and biogas generation, but also low-cost options such as improved firewood stoves (e.g., UNDP, 2012c; d).

Opportunities also exist through the various agreements and arrangements linked to the United Nations Framework Convention on Climate Change (UNFCCC). Under the **Clean Development Mechanism** of the Kyoto protocol, developed countries could obtain emission credits for financing greenhouse gas emission reduction projects in developing countries. The UNDP has set up a MDG Carbon Facility, which provides technical assistance to developing countries for the advancement of projects that reduce greenhouse gas emissions according to the Kyoto Protocol’s agreed standards, while delivering benefits to the environment, the Millennium Development Goals, and broader human development (UNDP, 2012e).

Other climate change initiatives are the **REDD** (Reducing Emissions from Deforestation and Forest Degradation) and **REDD+** mechanisms, which create a financial value for the carbon stored in forests. These programs offer incentives for developing countries to reduce emissions from forested lands and invest in low-carbon options of sustainable development. **REDD+** goes beyond

deforestation and forest degradation, to include the role of conservation, sustainable management of forests and enhancement of forest carbon stocks. Significant funds are available to reward a meaningful reduction of carbon emissions and support new, pro-poor development, biodiversity protection, secure vital ecosystem services and higher resilience to climate change. Developing countries need support to build their capacities and to benefit from the opportunities offered by the **REDD** financial mechanisms (UN-REDD Programme, 2012).

In Cyprus, the Forestry Department is actively engaged in reforestation, watershed protection, soil conservation and forest fire prevention and control. In addition, many foreign nationals have been trained at the Cyprus Forestry College, bringing their knowledge back to their home countries and contributing to the capacity of these countries to engage in sustainable forest management. Providing scholarships for study and internships in Cyprus creates a direct link with other development activities that contribute to a successful forest management in Africa.



MDG7: ENSURE ENVIRONMENTAL SUSTAINABILITY

Indicator 7.5: Proportion of total water resources used

Challenges

Water resources are still relatively underexploited in much of Sub-Saharan Africa. In North Africa, on the other hand, a large share of the renewable water resources – the water resources that are replenished by precipitation – is captured and used (Figure 7). Some of these North African countries (Egypt, Libya, Algeria), as well as Sudan and Chad, are underlain by large sedimentary aquifers. Libya has made substantial investments to pump these fossil groundwater resources from wells in the southern desert to the coastal areas. However, these formations have been filled up thousands of years ago and are not actively recharged today (Scanlon et al., 2006; MacDonald et al., 2012). This is how water use in Libya exceeds their current renewable resources supply.

Except for the shared fossil groundwater reserves in the North, Africa is also home to many large rivers. Sixty-three of these rivers flow in transboundary basins, covering 64% of the continent's land mass (UNEP, 2010). They connect different ecosystems, people and environments, making the management of their resources especially complex. The proportion of water used in different countries not only depends on natural conditions, but also on the increasing water demands brought about by growing populations, agriculture and industry, as well as the ability of local and national water management organizations to fulfill this demand. To respond effectively to the water, development and climate change challenges, African countries need to increase their water infrastructure, improve water governance and institutional capacity and ensure that water resources are allocated in a sustainable and environmentally enhancing manner, while fulfilling their population's needs.

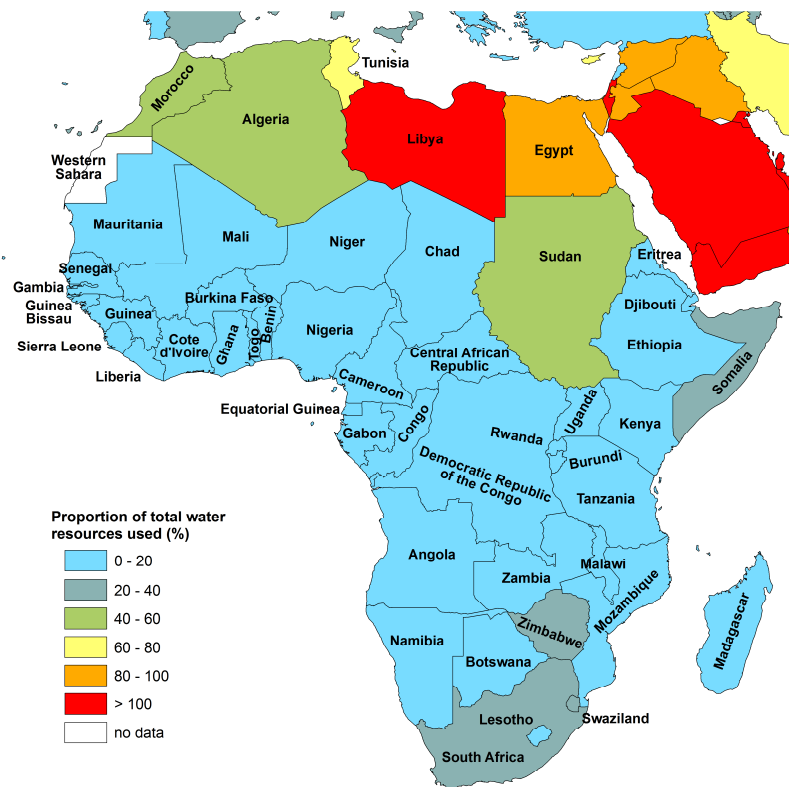


Figure 7. Proportion of annual renewable water resources used (source: UN Statistics Division, 2011; EEA, 2012).

Opportunities

In the past three decades, sub-Saharan Africa has shown increased interest in the development of small dams and small-scale irrigation projects, which has stemmed out of increased attention and awareness of outcomes gained from large-scale irrigation projects across the region. Small dams are considered more cost-effective, manageable, equitable, and serving multiple uses such as bathing, washing, fishing, livestock watering in addition to irrigation (Nkhoma, 2011; Sally et al, 2011). However, the development of small irrigation dams has often remained externally driven, affecting the degree of commitment and participation by government and local communities.

Integrated water resources management (IWRM) is a process that promotes the coordinated development and management of water, land and related resources, in order to maximize economic and social welfare without compromising the sustainability of ecosystems and the environment. IWRM as a concept, was first presented at the International Conference on Water and Environment in Dublin, and in Chapter 18 of Agenda 21, a consensus document from the United Nations Conference on Environment and Development in Rio, both in 1992. Successful IWRM strategies include, among others: capturing societal views, reshaping planning processes, coordinating land and water resources management, recognizing water quantity and quality linkages, combining the use of surface water and groundwater, protecting and restoring natural systems, addressing impediments to the flow of information, and incorporating the consideration of climate change (Hassing et al., 2009).

In semi-arid countries, the challenge is to keep plenty of water in storage for dry years, while having sufficient available storage empty during wet years. Another important concern is to manage the water resources in such a way that sufficient water will flow to downstream users and uses, including to groundwater recharge and natural ecosystems. Since its independence in 1960, the

Government of Cyprus has actively pursued the development of dams to support the expansion of irrigation and thereby increase farmers' income and improve the national economy (Konteatis, 1974). Currently, more than 100 dams and reservoirs are capturing water throughout the island; with the total dam storage capacity exceeding 300 million m³ (WDD, 2009). This means that more than one tenth of the average rainfall can be stored in surface water reservoirs. Water professionals in Cyprus have gained additional, recent experience through the successful planning and implementation of the European Water Framework Directive (WDD, 2012), which aims to enhance and protect all water resources.

The sustainable development of water resources in countries that are still struggling to build their economies and provide their population with basic human needs requires an interdisciplinary education and multi-faceted experiences. Cyprus could play an important role through the promotion of the so-called sandwich PhD programs provided at the various higher education institutes established on the island. In these programs, course work and research proposal development (bottom slice) and the thesis writing and presentation (top slice) are done at the host University in Cyprus. Experimental research in the home country of the qualified PhD candidate, with scientific and financial support from the Cypriot host University, forms the gist. The linkage of PhD scholars and alumni with Cyprus-funded development projects could also contribute greatly to the success of these projects. These programs also create life-long professional networks and contribute to Cyprus' strategic goal to become an international and regional center of education, providing value-adding services and strengthening the research culture, the promotion of innovation and the transfer of technology (Cyprus Planning Bureau, 2006), while enhancing its role as a Development Assistance provider (Cyprus Planning Bureau, 2012a).



MDG7: ENSURE ENVIRONMENTAL SUSTAINABILITY

INDICATOR 7.8: ACCESS TO IMPROVED DRINKING WATER SOURCES

Challenges

Access to an improved drinking water source has globally increased from 77% in 1990 to 87% in 2008. Nonetheless, Sub-Saharan Africa still falls much behind the global average, with only 60% of the population having access to an improved drinking water source in 2008 (UN, 2011). In Ethiopia and Somalia less than 40% of the population has access to safe drinking water sources (Figure 8). The situation in Africa is even worse when only the rural areas are considered (Figure 8, right). But even in urban areas the situation is far from optimal. A survey in Sub-Saharan African countries showed that the poorest 20% inner-city population is almost six times more likely to rely on unimproved drinking water sources than the richest 20% (UN, 2011). Furthermore, in several of these countries, more than a quarter of the population spends longer than half an hour on a single water collection trip. Women have the largest burden of drinking water collection (72% in Africa), followed by girls (9%) and boys (5%) (WHO and UNICEF, 2010).

Access to water is a basic human right (Box 2), a primary requirement to reducing poverty and a driver for growth. Water deficiencies affect mostly the poor, those who live in degraded environments and overwhelmingly women and girls. Unsafe water is a cause of many diseases in developing countries, whereas improved water provides safe water consumption and can come from piped water, public tap, borehole or pump, protected well, protected spring or rainwater collection (WHO and UNICEF, 2010). Nonetheless, satisfying such basic human needs, as the

provision of same water, contributes to the achievement of many of the other Millennium Development Goals.

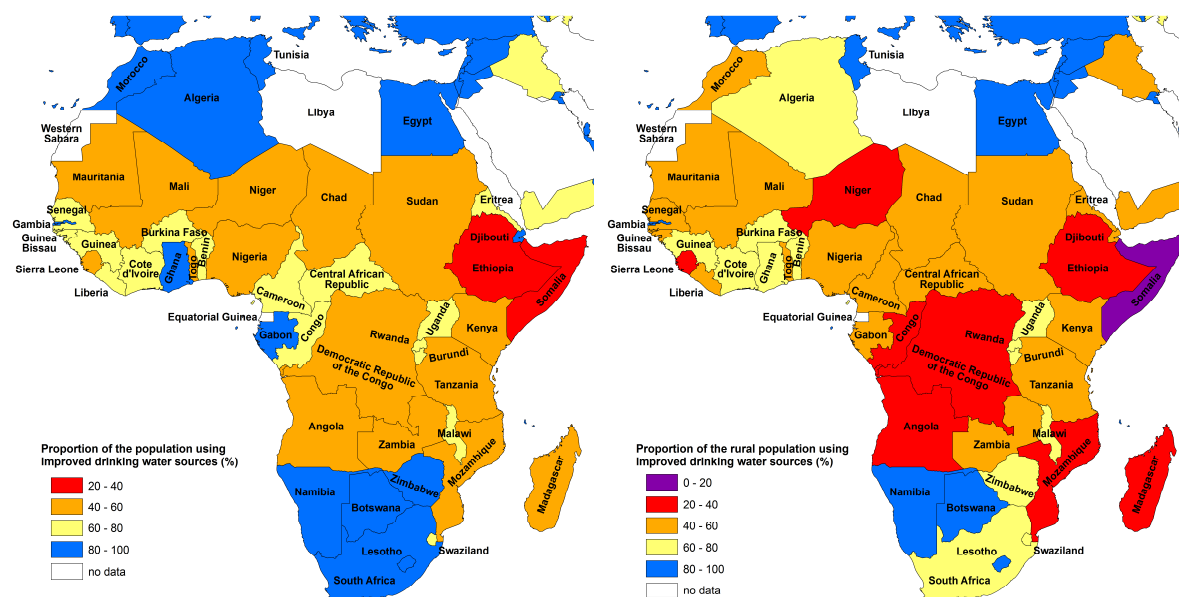


Figure 8. Proportion of the population using improved drinking water sources in 2008 (left) and same for the proportion of rural population (right) (source: UN Statistics Division, 2011).

Box 2. Water as a Human Right

The UNDP Human Development Report of 2006 stated that “ultimately, the case for public action in water and sanitation is rooted in human rights and moral imperatives” (UNDP, 2006). In 2002, the United Nations Committee on Economic, Social and Cultural Rights adopted a General Comment on the right to health. This included access to safe drinking water. Regardless of available resources, all States are obliged to ensure that basic human rights are respected and a minimum essential level of water provision is a constant and continuing duty, so as to diligently prevent dehydration and disease.

Recently, the United Nations General Assembly adopted Resolution 64/292 confirming that safe and clean drinking water and sanitation is a human right essential to the full enjoyment of life and all other human rights. Subsequently, the United Nations Human Rights Council in its Resolution A/HCR/RES/15/9, affirmed, that the right to water and sanitation is derived from the right to an adequate standard of living and inextricably related to the right to the highest attainable standard of physical and mental health, as well as the right to life and human dignity (UNW-DAP, 2012).

Opportunities

The water sector often involves many actors and organizations; a more formalized definition of the role and responsibilities of the different institutions and of the modes of cooperation is therefore important. Building on the principles of Integrated Water Resources Management and based on experiences in six African counties, the European Commission has developed a paper that outlines the development and use of a code of conduct for projects in the water sector (Buhl-Nielsen, 2010). These codes express the principle of mutual accountability (donor and national government) and are based on national policies, strategies and institutional arrangements. Buhl-Nielsen aptly remarked that, “codes of conduct are best and really only effective when they are national codes of conduct rather than a donor code of conduct.”

Large areas in Africa are underlain by weathered basement and volcanic rocks. The potential for boreholes with sufficient water for small-scale household water supply or community irrigation requires detailed hydrogeologic investigations and careful borehole siting (MacDonald et al., 2012). In Cyprus, important experience has been gained with the development of a water supply system for the communities in the fractured volcanic formations of the Troodos mountains.

Furthermore, in Cyprus groundwater recharge dams have been successfully constructed to improve the storage of water in geologic formations along streams, protect against floods, and combat salt water intrusion in coastal aquifers. Groundwater recharge dams could also provide a significant source of water in Africa (Figure 9).



Figure 9. Groundwater recharge dam in Southern Tunisia (left) and near Peristerona in Cyprus (right).



MDG8: DEVELOP A GLOBAL PARTNERSHIP FOR DEVELOPMENT

Indicator 8.1: Net Official Development Assistance

In 2011, the 24 members of the Development Assistance Committee (DAC) of the Organization for Economic Co-operation and Development (OECD) provided **US\$ 133.5 billion** of net Official Development Assistance (**ODA**) (OECD, 2012a). The DAC countries, which include the EU15 countries (Figure 10), are the main development donors. Contributions by non-DAC countries amounted to **US\$ 7.2 billion** in 2010 (OECD, 2012b). Net development aid increased by 63% between 2000 and 2010, but it dropped by nearly 3% in 2011, as a result of the financial and economic crisis.

The majority of this aid, about 59%, was allocated to bilateral development projects, programs and technical cooperation. The next big fraction (30%) constituted contributions to multi-lateral organizations such as EU Institutions, the World Bank, UN Agencies and Programs and Regional Development Banks, while approximately 8% went to humanitarian aid and 3% to debt exoneration (OECD, 2012a). In 2009, debt relief amounted to US\$ 13.1 billion (10%), with Sudan, the Palestinian Administered Areas and Afghanistan the main recipients (OECD, 2011).

Bilateral aid to sub-Saharan Africa in 2011 was **US\$ 28.0 billion**, which was 0.9% less than in 2010. However, aid to the African continent as a whole increased by 0.9% to **US\$ 31.4 billion**, as donors provided more aid to North Africa after the revolutions in the region (OECD, 2012a).

Total net **ODA** by the European Union and its 27 Member States was **€53 billion** in 2011, representing 0.42% of their combined Gross National Income (**GNI**), down from 0.44% in 2010 (EC, 2012). The European Consensus on Development encouraged Member States to achieve the United Nations target for ODA of **0.7%** of their GNI by 2015 (European Parliament Council Commission, 2006). Member States that had already reached that target should commit themselves to maintaining a rate above that target (Figure 10). Member States that joined the EU after 2002 should strive to increase their ODA/GNI to **0.33%**. Consequently, during the period 2005 to 2010, Cyprus has more than doubled its development assistance, exceeding 0.2% in 2010 (Cyprus Planning Bureau, 2012b).

The EU is also committed to providing better aid, as set out in the Paris Declaration on Aid Effectiveness in 2005 and further strengthened by the Accra Agenda for Action in 2008 (OECD, 2011). The Paris Declaration is guided by 5 core principles: **ownership, alignment, harmonization, managing for results, and mutual accountability**. Cyprus is one of more than 100 developing and developed countries that have committed themselves to abiding by these principles. Ownership involves strengthening the developing countries' leadership and institutions, while alignment requires the use of recipient countries' national development strategies, systems and procedures. Developing countries are responsible for creating a supportive domestic environment and for mobilizing their own resources, including coherent and effective policies that respond to their own specific needs.

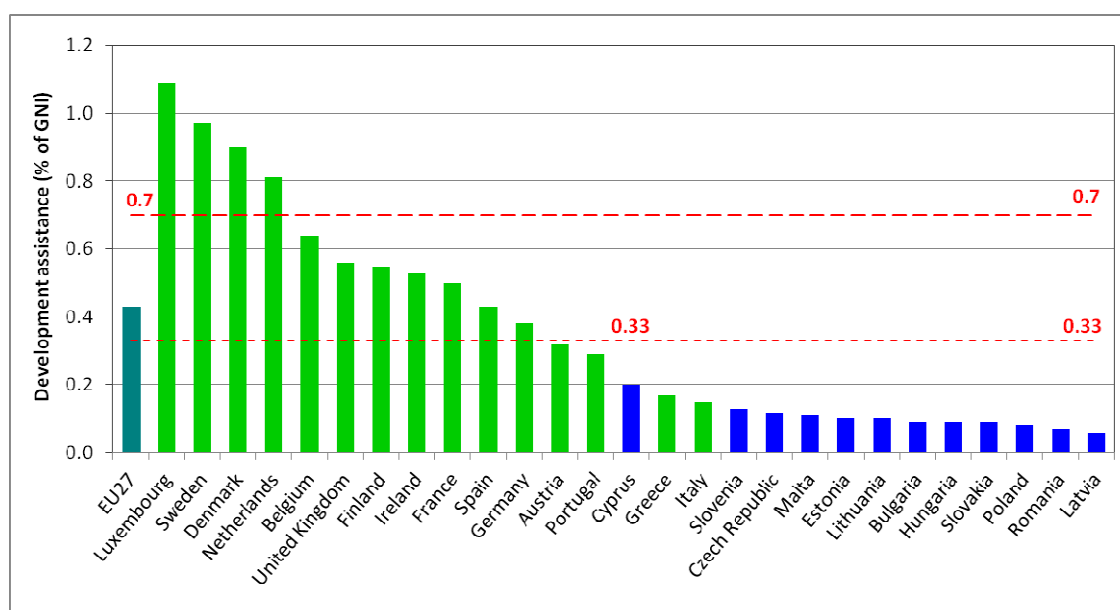


Figure 10. Net Official Development Assistance as a percentage of their Gross National Income for all EU countries in 2010; the EU15 countries are shown in bright green, 2015 targets are indicated in red (source: Eurostat, 2012).

The EU supports the engagement of all stakeholders in development and encourages all sectors of society to take part. The involvement of civil society, including employers' organizations, trade unions, the private sector, NGOs and other non-state actors of partner countries forms a key basis of inclusive development.

Concluding Remarks

The Millennium Development Goals (MDGs), which are a vital part of the Millennium Development Declaration resulting from the 2000 Millennium Summit, constitute the first ever set of shared development goals at international level. The highest proportions of communities that are deprived of many of the most basic human needs, addressed in the MDGs, are found in Sub-Saharan Africa. This paper aims at highlighting some of the tremendous challenges but also opportunities related to three MDGs, specifically to hunger (MDG 1), environment and water (MDG 7), and global partnership for development (MDG 8). Consequently, comparison can be made, correlating these MDGs with current conditions, but also experiences gained and lessons learned in Cyprus.

A comparison between Sub-Saharan Africa and the island of Cyprus may seem incongruous. However, as outlined throughout this paper, Cyprus does offer insight into issues that may be of relevance despite the differences in scale.

One of these issues relates to investments in the improvement of agricultural practices, which remains a critical factor for sustainable, long-term food security. Cyprus has made a lot of progress over the last few decades, not in the least with regard to improvements in agricultural water use efficiencies, through the replacement of traditional surface irrigation methods with water-use-efficient drip and micro-sprinkler systems. Training and technical assistance provided to local farmers in Cyprus may be considered and most likely adapted to conditions in African communities, thereby facilitating similar transitions to more water-efficient agricultural production.

The use of firewood as an energy source, widespread forest fires and the clear-cutting of forested areas for alternative uses remain major obstacles to sustainable forestry practices in large parts of Africa. In Cyprus, where the unsustainable exploitation of forests has marked the island in the past, the Forestry Department is actively engaged in reforestation, watershed protection, soil conservation and forest fire prevention and control. Thus, training of young African professionals at the Cyprus Forestry College contributes to the capacity building and paves the way for more sustainable forest management in these countries.

Even though the provision of better quality drinking water constitutes, globally, a success story of the Millennium Development Declaration, the situation in Africa is less favorable. Clearly, African countries need to increase their water infrastructure, improve water governance and institutional capacity and ensure that water resources are allocated in a sustainable manner so as to protect both their people and the environment. One measure, that has proven beneficial, is the construction of small dams across the countryside, considered additionally cost-effective, manageable, equitable, and serving multiple uses aside from irrigation. Cyprus water professionals, who have gained substantial experience in the development of dams, as a means to enhance irrigation, can significantly contribute to capacity building and training of their counterparts in Africa. Cyprus can also play a major role in the education of young professionals through specialized and advanced training programs.

Finally, Cyprus has more than doubled its development assistance, which in 2010 exceeded the rate of 0.2% of GDP. Maintaining and -desirably- increasing such assistance, as well as capacity-building and training activities, will contribute to advancing Cyprus' strategy in Development Assistance and its strategic goal of becoming an international and regional center for the provision of development services, strengthening its research culture and promoting innovation and the transfer of technology.

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