



Grantham Research Institute on
Climate Change and
the Environment

Possibilities for Africa in global action on climate change

EXECUTIVE SUMMARY

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ABOUT THIS PAPER

This paper is a collection of summaries of four papers:

1. **Fact pack:** A fact-base on climate change in Africa, including impacts, required actions, and opportunities.
2. **Elements of a global climate change agreement:** as a high-level summary of the global climate change negotiations for African leaders. This paper aims to provide a high level summary of the requirements that a global agreement on climate change to be negotiated in Copenhagen in December 2009 must fulfil, in order to limit global warming to 2 degrees C.¹ The paper summarises the discussions on the goal of the Global Deal, the important negotiating elements and related negotiating issues, potential sources of finance and financing mechanisms, and the negotiating process leading to Copenhagen
3. **The Case for a Strong Global Agreement on Climate Change – The African Perspective**
4. **A Global Agreement on Climate Change – Key Issues and a Possible Position for Africa**

The set of papers have been prepared by the Grantham Institute for Climate Change. However, significant contribution to this work has been provided by a number of sources including the UN Economic Commission for Africa, the UN Environment Programme, the UNFCCC, the Stockholm Environment Institute and others. Generous support and input for this work has been provided by the European Climate Foundation. We are also grateful for the contribution from McKinsey & Company which provided fact-based analysis.

The views reflected in these papers are those of the Grantham Institute and do not necessarily reflect the views of those who have contributed to the work. This is a document intended for discussion on possible messages for a report on climate change in Africa.

¹ UNFCCC revised draft decision, COP 13

1. FACT PACK

The challenge of achieving MDGs, economic growth and strengthening institutions are crucial goals for African Leaders. Climate change could add to the development and growth challenges they face, exacerbating Africa's vulnerability in the future.

Most scientists studying the potential impact of climate change believe that Africa could face conditions more severe than other regions. They estimate that Africa is likely to experience higher temperature increases, rising sea levels that could affect much of its population, changing rainfall patterns, and increased climate variability due to proximity to the equator. Its effects on individual countries will depend on their location and attributes, but all countries will be exposed to it and have reason for common cause. Africa's ability to adapt to these effects being lower than that of the rest of the world, they could—if unmitigated—reduce arable land, worsen chronic hunger, and even lead to social unrest.

The current climate change negotiations could offer unprecedented opportunities for Africa to strengthen its adaptive capacity and to move towards low-carbon economic development in a way that will use its comparative advantages (e.g., forests, hydro and solar power potential and land), attract investments from private sector and benefit its nations. Targeted adaptation measures related to irrigation, drought resistant agricultural techniques, and health systems could draw new attention and incremental funding, while Africa's comparatively low cost mitigation potential of 2.8 GtCO₂e in 2030—mainly in land use and forestry 1.2 GtCO₂e at an average cost of 10-15 €/tCO₂e—could give the region a strong position in a global climate change deal focused on emission reductions and avoid the 36% forecast emissions growth from 3.2 to 4.3 GtCO₂e by 2030 under a business as usual scenario. Finally, Africa's development could avoid the lock-in of high carbon infrastructure and realise climate-compatible growth opportunities that would both keep emissions low and offer substantial additional benefits including energy security, rural income opportunities, protection of bio-diversity, lower pollution, and reduced migration and potential for conflict.

The incremental development cost (or adaptation cost) and the cost of putting Africa on a low-carbon growth pathway could amount to \$22–31 billion per year in 2015 (\$13–19 billion and \$9–12 billion). Existing estimates suggest these costs could be \$52–68 billion per year by 2030 (\$21–27 billion for adaptation and \$31–41 billion for mitigation).

- Adaptation is in many cases indistinguishable from development. Current ODA commitments (estimated at \$72 billion per year for Africa to meet MDGs compared to ODA delivered in 2004 of \$29 billion²) should be met both to achieve development goals and because without them adaptation will be much more costly.

² Achieving the Millennium Goals in Africa, MDG Africa Steering Group.

- There is a wide range of global estimates for incremental adaptation costs, prompting for further research on the topic. Attempting to reconcile various estimates indicates adaptation costs could be \$21–27 billion per year by 2030, including \$1 billion per year for adaptation capability building, \$8–9 billion per year for anticipatory adaptation and climate-proofing, and up to \$12–17 billion per year for social protection (which includes protecting livelihoods and health). However, these costs could rise to close to around \$60bn per year if the infrastructure needs in Africa up to 2030 are greater than assumed in the UNFCCC estimates and that the costs of social adaptation will go up between 2015 and 2030.
- Near-term incremental costs (between now and 2015) for adaptation in Africa could be \$1–2 billion per year for immediate priorities, and up to \$12–17 billion per year for social adaptation, for a total of \$13–19 billion per year. This would be 0.04–0.06 percent of developed country GDP.
- It is difficult to be formal and precise about the likely costs of social adaptation beyond 2015 but the costs of this type of adaptation could be higher in 2030.
- Based on incremental costs for low-carbon abatement opportunities, additional financing of \$31–41 billion per year in 2030 could be required. It would be concentrated in three main sectors: \$15–21 billion per year for forestry, \$8–10 billion per year for agriculture, and \$9–10 billion per year for energy.
- Incremental financing required for abatement opportunities around 2015 could be in the order of \$9–12 billion per year, including \$5–6 billion per year for forestry, \$2–4 billion per year for agriculture, and \$2 billion per year for the energy sector (based on incremental marginal costs).

Climate change is a global discontinuity and the momentum created by climate change negotiations could enable climate-compatible development in important sectors. To capture each opportunity will take continued strong domestic policy action that builds on recent progress to build institutional capacity (integrated with current development priorities and taking account of existing barriers to development), support for the private sector's role in financing and operating infrastructure and international support. Initiatives in important sectors include:

- *Agriculture and Forestry:* Both agriculture (including fisheries) and forestry, could be impacted by climate change. Climate change may decrease agricultural yields, increase pressure on forests, and potentially reduce fish stocks in areas such as inland lakes and impacted coastal zones. To develop a climate resilient agriculture and forestry industry and embark on a climate compatible growth path, Africa can grasp three opportunities. First, it can develop and climate-proof agricultural productivity by improving agricultural techniques and adopting higher-yielding, climate-proofed crops. The UNFCCC estimates this would cost an additional

\$1 billion per year by 2030, on top of development spending.³ It would also require capability building, access to new agricultural techniques and inputs (seeds, fertilizers, and pesticides) and large scale dissemination of know-how. Second, its natural assets could allow Africa to seize both agriculture and forestry based mitigation opportunities that may generate additional financial flows and substantial other benefits. If Africa can set up its institutional capabilities and land use management program, long-term financial flows could be generated by avoided deforestation (REDD) and afforestation/reforestation (A/R). The costs of these initiatives in forestry are estimated at \$4.5–6.9 billion per year for 2015, rising to \$14.5–20.5 billion per year by 2030.⁴ Third, developing a sustainable biofuels industry – respecting the food production and avoided deforestation objectives – is another opportunity that African countries are already exploring, in which better access to global markets and technology could help build a large industry. When developing such an industry, land and water constraints will have to be considered.

- *Water:* African countries could climate-proof their water infrastructure and re-shape demand patterns to respond to climate change. Across the continent this initiative would require additional adaptation funding of \$3–3.5 billion per year by 2030. It would take integrated action in four main areas: first, making strategic development choices that reflect water demand; second, factoring climate change into the design and planning of water productivity and efficiency in farms, factories, and cities; third, climate-proofing existing and new water supply infrastructure; and fourth, leap-frogging to new water supply solutions that save both energy and carbon (e.g., solar desalination), rather than following earlier development paths. Funding may be needed to cover incremental costs of supplying water under climate change: more demand for water, higher water provision costs, and more public goods such as research and capability building.
- *Energy:* African countries could use mitigation funding to broaden access to secure, sustainable sources of energy, both on and off the grid (\$2 billion per year for 2015; \$8–10 billion per year by 2030). Actions to achieve this include: developing major on-grid hydro and solar renewable power; rolling out smaller-scale off-grid renewables in rural areas; substituting non-sustainable fuel wood with sustainable sources; and implementing energy efficiency programmes, especially in transmission and distribution grids. A global agreement could attract public mitigation funding and incentivise private funding (through carbon markets) to cover the full incremental costs of low-carbon technologies, accelerate technology development and deployment, and build capabilities at the technical, financial, and policy level.

³ UNFCCC estimates, Samuel Fankhauser.

⁴ McKinsey Global GHG Abatement Cost Curve v2.0.

- *Cities and infrastructure:* African countries could climate-proof urban infrastructure and development, and put transport systems on to a low-carbon path. First, cities challenged by climate change will require extra adaptation resources (up to \$0.4–1.4 billion per year by 2030) to deal with more extreme weather such as storms, and threats to city defences such as coastal flooding.⁵ Initiatives to support adaptation include increasing access, building and reinforcing infrastructure, and protecting coasts. Secondly, cities can seek support for the development of low-carbon public transport. Systems such as energy-efficient buses can support development objectives such as greater urban mobility while also reducing emissions.
- *Health:* Adaption resources can be used to reduce vulnerability to climate-sensitive disease and malnutrition. This could lead to \$3 billion per year in incremental costs by 2030. Opportunities include improving forecasting and diagnostic capabilities, broadening access to health services to address these diseases, and applying greater resources and co-ordination in dealing with humanitarian disasters.

These opportunities will play differently among the different regions: forest-based mitigation funding will mainly go to the Congo basin, Zambia, and Tanzania; agricultural funding will be required broadly except for in forested and arid regions; energy opportunities will benefit South Africa and the Maghreb on the one hand, but also provide a widespread support to a whole range of countries through off-grid and sustainable biomass; coastal cities such as Lagos, Dakar, Dar-es-Salaam, Luanda, and Maputo will require significant funding to adapt to sea-level rise and more extreme weather events; adaptation support for water will be relevant to countries affected by reduced rainfall or droughts, possibly such as Mali and South Africa.

2. ELEMENTS OF A GLOBAL CLIMATE CHANGE AGREEMENT

A global climate change agreement must align countries on six elements:

1. **Long-term emissions targets.** To avoid major risks associated with climate change, temperature increases should be limited to 2 degrees Celsius. In order to limit temperature increases, long term emissions targets have to be set.
2. **Intermediate targets.** To reach long term targets, an intermediate target to reduce emissions by approximately 17 GtCO₂e by 2020 (relative to a baseline of ~ 61 GtCO₂e) is required
3. **Support for low carbon growth.** Developed countries should continue leading the global mitigation effort and should also support low-carbon growth in developing countries.
4. **Support for adaptation.** Despite the mitigation efforts, temperatures are forecast to increase by 2 degrees Celsius. Developed countries should provide

⁵ UNFCCC estimates, Samuel Fankhauser.

technical and financial support to developing countries to adapt to the new climate.

5. **Technology transfer and dissemination.** Financial support alone will not be enough; both adaptation and mitigation efforts will need to be supported by accelerated technology development and diffusion.
6. **Adequate institutions** The agreement will not work if the necessary institutional framework is not in place. This framework will need to consider principles of fairness, minimal transaction costs, and clear accountability systems, and be adaptable to changing context

A number of submissions to the UNFCCC have been made around these six elements including the Algerian proposals submitted on behalf of Africa.

Substantial funding will be required to support both adaptation and mitigation. To fund future adaptation and mitigation measures, clear financial architecture criteria have to be defined, funding sources have to be ramped up, and allocation mechanisms for both adaptation and mitigation measures have to be designed. The funding sources and allocation mechanisms may need to be tailored to meet Africa's specific requirements.

- New financing sources and mechanisms will have to be set-up to collect and allocate these funds. The new sources and mechanisms should follow 12 principles: scale, scope, speed, efficiency and effectiveness, mutual accountability, transparency, equity, reliability, additionality, incentives, leveraging existing institutions, and ease of access
- The four main sources of financing are: public funds from developed countries, international transport levies, self-financing, and offset markets.
- Different allocation mechanisms are being discussed for mitigation and adaptation. The main ones for mitigation are: project level schemes; programmatic level schemes, and sectoral schemes. Fund allocation for adaptation is likely to be based on national adaptation plans.
- Enabling Africa's access to carbon markets requires: tailoring market mechanisms to Africa's opportunities; and designing a phased approach to market access to allow Africa build its capabilities. To meet Africa's needs, offset market mechanisms should include specific opportunities such as REDD; accommodate small scale projects; and guarantee further capability building. Africa's access to markets has to be done in a phased approach. In the short term (2010–2015) initial mitigation measures and pilots might be financed by public finance such as mitigation funds, before gradually shifting on the long term to private funding through offset markets.

A global deal could contribute to making the necessary adaptation and mitigation technologies available to Africa. While some of the suitable technology already exists and can be transferred by attracting private investors, development and IP related

issues for future technology could be addressed in the negotiations (e.g. patent protection exemption in developing countries for critical adaptation and mitigation technologies).

A process is in place to develop a common African negotiating position. The AMCEN (African Ministerial Conference on Environment) is currently preparing a common proposal that will be discussed at the African Union summit in July.

3. THE CASE FOR A STRONG GLOBAL AGREEMENT ON CLIMATE CHANGE – THE AFRICAN PERSPECTIVE

Why the climate negotiations are crucial for Africa

Climate change is a critical issue for Africa. Africa is likely to experience above average impact from climate change due to its proximity to the equator - higher temperature increases, rising sea levels that affect much of the population, changing rainfall patterns, and increased climate variability. The effects on individual countries will depend on their location and attributes, but all countries will be exposed and have reason for common cause. Africa's ability to adapt to these additional stresses is lower than that of the rest of the world, which further increases its vulnerability and heightens the risk of agricultural decline, chronic hunger, water shortage, massive population migration and social unrest.

A strong global deal on climate change is in Africa's interests (see Exhibit below). Because climate change poses such a threat to African development and growth, Africa has a vital interest, more than other world regions, in the strongest possible global deal. A strong global deal must include emission cuts by developed countries of 25-40% by 2020 relative to 1990. It must also include commitments by all developing countries to take action now, while recognising that they will need support from developed countries and that achieving growth and fighting poverty must remain key objectives.

Financing and fostering low-carbon growth

Achieving low-carbon growth is possible and in fact an opportunity for Africa's development, but it requires an 'investment strategy'. African countries must continue to grow, but it is important that this growth does not lock Africa into a 'high-carbon' path. The world as a whole must recognise that low-carbon growth is the only sustainable option for growth: high-carbon growth kills itself, first on hydrocarbon prices and second on the very hostile physical environment it creates. Adopting low-carbon trajectories implies investment in energy efficiency and low-carbon assets as well as access to demonstrated technologies that increase carbon productivity. In doing so, Africa can leverage its unique asset base in power, forests, agriculture and water. Developing a convincing strategy to attract foreign investment will require appropriate policies, the right incentives and a stable business environment. This is a domestic challenge requiring African leadership. But the global deal can support this agenda through finance, technology sharing and support for capacity building.

Low-carbon growth strategies should be embodied in holistic national action plans that integrate adaptation, mitigation and development. These plans will guide implementation and facilitate access to the necessary funding. Integrating the adaptation and low-carbon growth objectives into the national action plans (NAPA⁶ / NAMA⁷) will reinforce the coherence and the effectiveness of the different measures. Proposing coherent national action plans as a means to implement adaptation, mitigation and development measures will also help to secure the required additional funding in both the short and long term.

Africa will need not only additional funding but also timely delivery on existing ODA commitments. The analysis in the accompanying papers suggest that the extra funding needed to finance actions on climate change in Africa is in the order of \$20-30 billion in the short-term (2015), rising to around \$50-70 billion by 2030. These funding resources, incremental to current ODA commitments, will primarily finance measures to reduce deforestation and power related emission mitigation investments and adaptation efforts across water, agriculture and infrastructure. It is crucial that developed countries honour their commitments on development and see climate change support as an additional funding and any shortfalls on ODA and the additional funding would likely hit Africa hard (Africa currently receives approximately a third of committed ODA.)

Accessibility criteria to the financial mechanisms should acknowledge the need to be ‘performance’ based but should suit Africa’s specific needs. Access to carbon markets should be designed with a phased approach allowing the building right away of the capabilities to access financing from global carbon markets , and the inclusion of opportunities most relevant to Africa such as REDD. In addition, the institutional structures in Africa should continue the responsibility to deliver proven results with financial pledges which are stable over time. Mechanisms to provide adaptation funds should be simple and accessible to all, including the most vulnerable countries. A number of financing proposals have been put forward. Although, the Norwegian proposal for allocation of revenue from auction of permits and ear-marking international transport levies seem to be the most widely accepted, a more reliable strategy would consist in tapping into multiple source of funding.

The institutional structures from a global deal should promote equity, efficiency and mutual trust. The administration of funds should be simple and efficient; limiting the number of new institutions and using existing development channels where possible. The African Development Bank with the support of the World Bank can play a leading role in administering the funds and assisting Africa in the implementation of its low-carbon growth strategies. At the national level, efficient and transparent institutions will help build mutual trust and increase the effectiveness of mitigation and adaptation funds.

How to make it happen

⁶ National Adaptation Programmes of Action

⁷ Nationally Appropriate Mitigation Actions

Climate change requires the attention of Heads of State. Climate change is one of the biggest threats to Africa’s growth and development and for this reason alone deserves the attention of all African Heads of State. Their leadership is essential to tackle climate change. Heads of State are best positioned to integrate the diversity of African interests in the UNFCCC negotiations and generate sufficient support for the low-carbon economic growth pathway and adaptation needs across Africa. Moreover, the impacts and responses to climate change are interlinked with other Head of State issues (e.g. trade and security) that require long-term planning and consistent cross-government co-ordination. Leadership at the Head of State level is required in particular to ensure a swift and efficient implementation of adaptation and low-carbon development plans.

The current economic crisis is not an excuse, on the contrary it is an opportunity. Action on climate change needs to start now. Putting on hold actions on the climate crisis until we sort out the financial one is muddled and short sighted. These two crises can, and must be dealt with together, using the period of lower demand to invest to secure a new wave of growth based on the technologies for a low-carbon economy and to capture the low-carbon growth business opportunities. Both crises tell us that postponing action on risk is dangerous.

Africa must ensure its voice is heard over the next four to six months in the most important local and international fora. A number of climate change related meetings (G8, G20, EU Summit, Major Economies Forum) will be held involving developed and developing countries in the period between now and Copenhagen, and all too often the only Africa nations at the table is South Africa. Africa should insist on its presence at these meetings to share its position and press its proposal.

Exhibit: potential Africa asks for a global deal

Africa requirements from global climate change negotiations

Africa requirement	Description
450 ppm pathway	<ul style="list-style-type: none"> Relatively stringent emission reduction pathway that has likelihood (40-60% probability) of limiting global temperature increase to <2 degrees and thereby limit the impacts on Africa
Forestry at centre of deal	<ul style="list-style-type: none"> Include forestry in mitigation efforts and ensure sufficient funding for forestry based mitigation through market based mechanisms (sufficient depth of market) which will help give value to preserving Africa’s forest assets
Adequate adaptation funding	<ul style="list-style-type: none"> Funding for additional adaptation costs that is additional to ODA commitments in order to lessen the impacts of climate change
Reformed CDM suitable for Africa needs	<ul style="list-style-type: none"> Mechanism that allows African countries to access private carbon market based funding
Immediate action	<ul style="list-style-type: none"> Funding currently committed in allocated and disbursed in timely manner Immediate needs such as adaptation priorities, capability building and further research are met before 2012
Seat at the table	<ul style="list-style-type: none"> African representation and participation in global discussions concerning climate change and in governance of institutions related to climate change

Implications of Africa's requirements

Africa requirements	Implications	
	World	Africa
450 ppm pathway	<ul style="list-style-type: none"> Developed country reductions by 25-40% by 2020 and 80-95% by 2050 Developing country reductions contributions led by middle income countries 	<ul style="list-style-type: none"> Commitment to limit per capita emissions to 2 tCO₂e by 2050
Forestry at centre of deal	<ul style="list-style-type: none"> Provide global REDD mechanism able to fund 5 Gt (0.7 Gt for Africa) of abatement by 2020 	<ul style="list-style-type: none"> Build MRV capabilities for forestry Address internal drivers of deforestation as part of low carbon growth plan (LCGP)
Adequate adaptation funding	<ul style="list-style-type: none"> Commit to deliver incremental funding in addition to ODA commitments of up to \$86 bn by 2015 (up to \$19 bn for Africa) Include non-discretionary international funding sources (e.g. global transport levies which could provide \$13-26 bn by 2015) 	<ul style="list-style-type: none"> Prepare and commit to LCGP as basis to allocate internal, ODA and climate change resources
Reformed CDM suitable for Africa needs	<ul style="list-style-type: none"> Develop simplified programmatic and project based mechanisms suitable for land-use and small scale projects 	<ul style="list-style-type: none"> Support domestic business environment conducive to low-carbon investment Build MRV capabilities
Immediate action	<ul style="list-style-type: none"> Timely disbursement of pre-2012 for priority adaptation and capability building (including \$1-2 bn for global adaptation priorities and \$15-90 million per forestry country to develop capabilities and pilot programmes for REDD) 	<ul style="list-style-type: none"> Expand current research, capability building, and plans (NAPAs) to feed into LCGP pilots
Seat at the table	<ul style="list-style-type: none"> Ensure equitable governance for international climate change institutions 	

Climate change is an important head of state issue which requires strong leadership

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4. A GLOBAL AGREEMENT ON CLIMATE CHANGE – KEY ISSUES AND A POSSIBLE POSITION FOR AFRICA

1. **The twin challenges of climate change for Africa are development in a more hostile climate and the creation of low-carbon growth: action on climate change and on development cannot be separated.** Current ODA commitments to support the achievement of development goals did not take the likely scale of impacts of climate change into account. With the need to adapt to a changing climate, development will be much more costly. Low-carbon growth is the only sustainable option, both for the world and for Africa. High-carbon growth will choke itself, first on hydrocarbon prices and second, and more fundamentally, on the hostile physical environment it will create. Low-carbon growth will be more energy secure, cleaner, quieter, safer and more bio-diverse and will draw on Africa's renewable resources. But it does require substantial investment in the next few decades.
2. **The cost of climate change to Africa could amount to around \$30 billion per year in 2015. It is crucial that rich countries not only honour their existing commitments but also find the extra resources necessary to cope with the climate change in the next two decades, which arises mainly from their past emissions.** This figure includes around \$20 billion per year for adaptation and \$10 billion per year for mitigation.

3. **In the 2020s, the additional costs for adaptation together with the mitigation costs for Africa could rise to between \$50–100 billion per year.** Adaptation costs are likely to rise rapidly as the climate changes over the next two decades. Many populations will suffer severe stress from more frequent and more severe floods, droughts and storms as well radical changes in patterns of rainfall.
4. **Carbon markets must be reformed to include opportunities relevant to Africa, particularly opportunities in forestry. But halting deforestation will require major development support, including for agricultural productivity and governance, beyond that from carbon markets.** Over 60% of Africa's mitigation potential lies in forestry. Thus it is crucial for Africa both that development support for halting deforestation is expanded and that Reducing Emissions from Deforestation and Degradation are included in carbon markets as part of the Copenhagen agreement.
5. **The main sources of new public funding for climate change should be (i) national carbon taxes, (ii) national permit auction revenues, (iii) international auction revenues, as in the Norwegian proposal, (iv) international transport levies, (v) general rich country government revenues: all are relevant and a mix would be more stable than just one.** There should be three types of funding: for adaptation, from public revenues; for mitigation, from public revenues; and from carbon markets, largely from private revenues. All three sources should be blended with development funding in as simple a way as possible: both stability of funding and linking to results will be important.
6. **The institutional architecture from a global deal should promote equity, efficiency and mutual trust.** The administration of funds should be simple and efficient; limiting the number of new institutions and using existing development channels where possible to support adaptation to climate change and the transition to a low-carbon economy, in way that is well-integrated into development programmes and with governance embodying full African representation. The African Development Bank, with the support of other multi-lateral and bi-lateral institutions should play a leading role in administering the funds so that funding for adaptation and development are fully integrated and fit with Africa's needs. At the national level, ensuring efficient and transparent national and local institutions will help build mutual trust and increase the effectiveness of mitigation and adaptation activities.

Supporting analysis can be found in three accompanying papers, 'Possibilities for Africa in Global Action on Climate Change'.