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CLIMATE CHANGE: THE CHALLENGES FACING FINANCE MINISTERS

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CLIMATE CHANGE: THE CHALLENGES FACING FINANCE MINISTERS

INTRODUCTION

The scientific evidence on the causes and consequences of climate change has never been more overwhelming. The Earth's climate is changing, mainly as a result of increases in greenhouse gases caused by human activities. This consensus is led by the Intergovernmental Panel on Climate Change (IPCC): its fourth assessment report, published in January this year, expressed a high degree of confidence that human activity is warming the climate and that, despite remaining areas of uncertainty, there is a good basis of understanding for policy making.

2. Climate change, in common with other pollution concerns, has a strong technical core, but it is also about the management of a key global common good – the atmosphere. Sir Nicolas Stern, whose review on the Economics of Climate Change was published in October 2006, called climate change '*the greatest and widest-ranging market failure ever seen.*' The impacts of this externality are global in causes and consequences, with the most severe falling on the poor and most vulnerable and expected to be long-term and persistent across generations. The complexities are such that there are pervasive uncertainties and risks. All these characteristics point to the need for pluralistic political debate and a strong role for Ministers of Finance and Planning in formulating appropriate responses at the national level.

3. The impact of climate change will vary from country to country, depending on physical exposure to risk and the capacity to respond to the challenges. Poor countries and people will face the greatest consequences. Climate change must also be considered in conjunction with underlying development trends such as population growth, changing energy demands, and rapid urbanisation, with which it has a close relationship.

4. A number of Commonwealth countries are already vulnerable to extreme weather conditions – both rapid onset emergencies and slow onset disasters like drought. Large populous countries such as India face multiple challenges to their economic systems many of which rely on known and previously relatively stable weather patterns. In Asia and Africa, many countries will have reduced rainfall and lose already scarce water supplies, with consequences on agriculture and food security. The island states of the Commonwealth are vulnerable both to hurricanes, floods and sea level rise, and to substantial losses of economic activity including in the agriculture and tourism sectors. A number of states face the loss of a substantial proportion of their territory if sea levels rise significantly.

5. The development of responses to the economic implications of climate change is still at a very early stage. Much work has yet to be done to examine the steps that need to be taken at national and international levels to ensure economies, especially those in the most vulnerable countries, are ready for the twin challenges of tackling the problem of climate change at its root, and dealing with the impacts that are already underway.

6. This paper is presented in two parts:

- Part One examines the evidence for climate change and current scientific understanding of its likely future impact on economic and social development. It then examines the challenges that face governments in mitigating climate change and adapting to its effects.

- Part Two presents a concrete Framework for Action for the consideration of Finance Ministers, based on the foregoing analysis. This focuses on both planning and finance concerns and outlines actions that need to be considered at the national level to develop appropriate economic policies and an international strategy.

ISSUES FOR MINISTERS

7. In their discussion on climate change concerns, Ministers may wish to consider the following:

- *Carbon pricing* – what steps are needed to place a price on carbon so as to provide an incentive towards a lower carbon economy? International discussions are focusing especially on two approaches: carbon taxes; and carbon trading.
 - *Carbon taxes.* What are the prospects for an international agreement that helps to co-ordinate carbon taxes at the national level? What barriers do Ministers anticipate within their own economies to introducing carbon taxes that would need to be addressed through an international agreement?
 - *Carbon trading.* What has been the experience of member states in regard to generating and trading carbon credits? What lessons should be taken forward in future approaches and agreements to scale up carbon trading?
- *Blended financing for climate-related investments* – Should multilateral financial institutions develop a third window of financing between IDA and other loans to scale-up the financing available to developing countries in implementing climate-related investments? What other approaches to financing need to be considered?
- A Commonwealth initiative on the economics of climate change could help national governments and local communities to integrate climate change risks into existing national/local development planning processes and negotiation strategies. In what areas do governments require priority assistance?
- What climate issues should the Commonwealth be exploring in greater depth to help build confidence, trust and understanding in climate negotiations?

PART ONE: THE BASIS FOR ACTION

CLIMATE CHANGE IMPLICATIONS FOR DEVELOPMENT

The Evidence for Climate Change

8. Over the last decade climate change has moved from being the subject of intense dispute and debate within the scientific community to being an issue on which there is a broad consensus that serious risks exist and that precautionary action to mitigate those risks is justified.

9. Global warming is a current reality and the most recent reports from the Working Groups of the Intergovernmental Panel on Climate Change (IPCC) reflect the increased confidence in judgments on both the likely causes and the potential consequences.

10. In February 2007, Working Group 1 of the IPCC reported that:

- 11 of the last 12 years rank among the 12 warmest years in the instrumental record of global surface temperature – that is since 1850. Twenty-three of the 24 warmest years have occurred since 1980.
- Sea levels have risen by an average of 3.1 millimetres per year over the period from 1993 to 2003 – almost twice the historic average rate of increase.
- The incidence of extreme weather conditions including major floods, the number of wildfires, the average wind speed and the frequency of cyclones have all increased in the last two decades.

11. The latest IPCC reports also show the increased confidence now felt in judgments about the causal relationships behind these developments and in predictions of the consequences of continuing global warming over the next century, including:

- That it is very likely that the net effect of human activities since 1750 has contributed to global warming.
- That most of the observed increase in globally averaged temperatures since the mid 20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations.
- That continued greenhouse gas emissions at or above current rates is very likely to produce further warming and induce other changes in the global climate system during the 21st century which will be greater than those seen in 20th century.

12. *Very likely* in the language formally applied within the IPCC reports, reflects a judgment of 90 per cent confidence in each of the statements made. Many issues, of course, remain subject to continuing scientific analysis. There is still, in particular, substantial uncertainty over the timing and pace of climatic change.

Future Impact on Social and Economic Sectors

13. *Global warming will have many severe impacts, often mediated through water.* Challenges for governments, already identified by the IPCC reports¹, the Stern Report² and other recent studies, include the following:

- *Water supplies:* Reduced water supplies will eventually threaten one-sixth of the world's population, predominantly in the Indian sub-continent, parts of China, and the Andes in South America. There is a risk of both increases in river runoff and water levels at high latitudes and in some wet tropical areas, and conversely decreases in water supplies in the drier tropical areas – some of which are already short of water.
- *Agriculture and food security:* Declining crop yields, especially in Africa, could leave hundreds of millions without the ability to produce or purchase sufficient food. At mid to high latitudes, crop yields may increase for moderate temperature rises (2-3°C), but then decline with greater amounts of warming. At 4°C and above, global food production is likely to be seriously affected.
- *Health and mortality:* In higher latitudes, cold-related deaths will decrease. But climate change will increase worldwide deaths from malnutrition and heat stress. Vector-borne diseases such as malaria and dengue fever could become more widespread if effective control measures are not in place. The net effect on health is anticipated to be negative especially in developing countries.
- *Disaster Risks:* Rising sea levels will result in tens to hundreds of millions more people flooded each year with warming of 3 or 4°C. There will be serious risks and increasing pressures for coastal protection in South East Asia (Bangladesh and Vietnam), small islands in the Caribbean and the Pacific, and large coastal cities, such as Tokyo, New York, Cairo and London. According to one estimate, by the middle of the century, 200 million people may become permanently displaced due to rising sea levels, heavier floods, and more intense droughts.
- *Ecosystems and biodiversity* are particularly vulnerable to climate change, with around 15–40 per cent of species potentially facing extinction after only 2°C of warming. And ocean acidification, a direct result of rising carbon dioxide levels, will have major effects on marine ecosystems, with possible adverse consequences on fish stocks.

14. *Abrupt and large-scale changes* may be triggered at higher temperature changes as the damages from climate change accelerate:

- Warming may induce sudden shifts in regional weather patterns such as the monsoon rains in South Asia or the El Niño phenomenon.
- A number of studies suggest that the Amazon rainforest could be especially vulnerable to climate change. One model, for example, finds that the Amazon

¹ IPCC. Working Group Reports II and III, March, April 2007.

² Stern Review: The Economics of Climate Change. HM Treasury, 1996, ISBN 978-0-10-294420-4.

rainforest could be significantly, and possibly irrevocably, damaged by a warming of 2–3°C.

- The melting or collapse of ice sheets would eventually threaten land, through flooding and sea level rise, which today is home to one in every 20 people.

15. *Existing development challenges will be compounded by climate change* and the *geography* of many developing countries leaves them especially vulnerable to climate change. These factors cannot be considered in isolation from other major social and economic trends:

- *Dependence on vulnerable ecosystems*: All humans depend on the services provided by natural systems. However, environmental assets and the services they provide are especially important for poor people, ranging from the provision of subsistence products and market income, to food security and health services. Poor people are consequently highly sensitive to the degradation and destruction of these natural assets and systems by climate change.
- *Dependence on agriculture*: The concentration of economic activities in the rural sector – and in some cases around just a few commodities – is associated with low levels of income. The concentration of activities in one sector also limits flexibility to switch to less climate-sensitive activities such as manufacturing and services. The agricultural sector is one of the most at risk to the damaging impacts of climate change – and indeed current extreme climate variability – in developing countries. However, for many areas, future population increases and changes in land use including the loss of forests and agricultural land (including some land which is likely to be diverted to the production of biofuels), will imply a need for more intensive farming and adjustments to agricultural practices and crops to ensure food security in drier conditions.
- Specific policies are needed to manage and develop *forestry*, recognising the pressures on forests and the damage being created by deforestation (on some estimates a source of up to 20 per cent of net annual global emissions of CO₂), the potential for reforestation, and the need to incorporate local economic and employment impact into any future plans.
- *Population growth and rapid urbanisation*: Population growth is projected to add 1.7 billion to the world's population by 2030, including some 800 million in the Commonwealth. This will add to the existing strain on natural resources – and the social fabric – in many poor countries, and expose a greater number of people to the effects of climate change. Planning considerations include: increased waste volumes, especially in urban areas; an increased reliance on trade and the transportation of goods to meet the needs of urbanising populations (some 35 per cent of the Commonwealth's total population is currently living in cities); increased energy use to meet increasing demand; and addressing the needs of those migrating to cities, many of whom live in poor conditions – often on marginal land – and are particularly vulnerable because of their limited access clean water, sanitation, and location in flood-prone areas.
- *Emergency planning systems* need to be able to cope with extreme weather conditions and the hazards of flood, fire and heatwaves. In the words of the IPCC

WG II fourth assessment report “Many millions more people are projected to be flooded every year due to sea level rise by the 2080s... The number affected will be largest in the mega deltas of Asia and Africa while small islands are especially vulnerable”. There will be an increasing need to relocate people, infrastructure and economic activity away from vulnerable areas.

- *Food insecurity, malnutrition and health:* Even if the Millennium Development Goals are met, more than 400 million people could be suffering from chronic hunger in 2015. Malnutrition is a health outcome in itself, but it also lowers resistance to infectious diseases by weakening the immune system. Climate change will potentially exacerbate this vulnerability as a greater number of malaria carrying mosquitoes move into previously uninfected areas. This is likely to generate higher morbidity and mortality rates among people suffering from malnutrition than among food-secure people.
- *Low adaptive capacity:* People will adapt to changes in the climate as far as their resources and knowledge allow. But developing countries lack the trained personnel, infrastructure (most notably in the area of water supply and management), financial means, and access to public services, that would otherwise help them adapt.
- *Poor water-related infrastructure and management:* Developing countries are highly dependent on water – the most climate-sensitive economic resource - for their growth and development. Water is a key input to agriculture, industry, energy and transport and is essential for domestic purposes. Indeed, irrigation and effective water management will be important in managing the effects of climate change on agriculture. But many developing countries have low investment in irrigation systems, dams, and ground water. Many developing countries do not have enough water storage to manage annual water demand based on the current average seasonal rainfall cycle. This will become an even greater constraint with a future, less predictable cycle.

In addition, inappropriate water pricing and subsidised electricity tariffs that encourage the excessive use of groundwater pumping (for agricultural use, for example) also increase vulnerability to changing climatic conditions.

- *Low incomes and underdeveloped financial markets:* In many developing countries the capacity of poor people to withstand extreme weather events such as a drought is limited both by low income levels and by poor access to credit, loans or insurance. These constraints are likely to become worse as wet and dry seasons become increasingly difficult to predict with climate change. This is often exacerbated by weak social safety nets that leave the poorest people very vulnerable to climate shocks. At the national level, many low-income countries have limited financial reserves to cushion the economy against natural disasters, coupled with underdeveloped financial markets and weak links to world financial markets that limit the ability to diversify risk or obtain or reallocate financial resources.
- *Current employment patterns* need to be adjusted in response to (for example) desertification, changes in growing seasons and crop yields, regional changes in

the distribution and production of fish species, and changes in the potential for tourism.

- *Poor public services:* Inadequate resources and poor governance (including corruption) often result in poor provision of public services. Early warning systems for extreme weather conditions, education programmes raising awareness of climate change, and preventive measures and control programmes for diseases spread by vectors or caused by poor nutrition are examples of public services that would help communities to manage and cope with the effects of climate change.

Future Impact: Implications and Trends in Energy Use

16. To a crucial degree the pace of change from now on will depend on the future level of greenhouse gas emissions, especially carbon dioxide, which is released when we burn fossil fuels. In the short term, emissions are growing and despite numerous expressions of international concern there is as yet no sign of the trend being reversed.

17. The annual carbon dioxide concentration growth rate was larger during the last ten years – with an average addition of 1.9 parts per million (ppm) per year - than it has been at any time since the beginning of continuous direct atmospheric measurements.

18. The growth in world carbon emissions from hydrocarbon consumption has increased to 3.4 per cent per annum since 2001, three times the rate in the previous 5 year period.

19. World energy consumption has also become more carbon intensive in this period – that is, carbon emissions have risen more rapidly than energy consumption. After falling steadily from 1970 to 1996 the world's average carbon intensity of energy flattened in 1996 to 2001 and has been increasing since then.³

20. The principal cause of this trend has been the increased use of hydrocarbons and in particular of coal. In the five year period from 2001 to 2006 coal use worldwide increased by 29.5 per cent.⁴

21. There is as yet no evidence of a fundamental change in the world's pattern of energy use and with oil prices remaining high, the use of coal is set to continue to grow, predominantly in the developing market economies, but also in Europe and the US. Although increased prices over the last five years have begun to impact demand growth in the developed world, the absence of market based prices in many developing economies has shielded consumers from the increases and led to a continuing pattern of energy (and hydrocarbon) intensive growth. Worldwide energy consumption grew more rapidly relative to GDP growth in the period from 2001 to 2006 than in the previous five years.

22. Looking ahead, and even with an assumption of improved efficiency and a reduced level of energy intensity, the International Energy Agency suggests that by 2030 energy demand will have increased by over 50 per cent with hydrocarbons accounting for 80 per cent of the increment. As a result emissions of CO₂ will have risen to 40 megatonne, an increase of 55 per cent above the 2004 level.⁵

³ BP Statistical Review of World Energy. Commentary. June 2007

⁴ BP Statistical Review of World Energy. June 2007

⁵ World Energy Outlook 2006. International Energy Agency.

23. The level of carbon concentration is very likely to reach 400ppm within a decade and on current trends would exceed 450ppm within 30 years.

24. In the words of the Stern Review, “On current trends, global temperatures could rise by 2–3 degrees C within the next fifty years or so, with several degrees more warming by the end of the century if emissions continue to grow.”⁶

25. Speaking to the UN General Assembly in July 2007 Sir Nicholas Stern reiterated the prediction and stressed the likely consequences:

26. “Even if we are sensible about climate change and get emissions down, the climate is going to change more than it has.... Even if we act strongly to decrease emissions we’ve got another 1.5 to 2 degrees centigrade to come. New York, London, Cape Town, Shanghai, Bombay, Calcutta, Dhaka – they’re all under threat from sea level rise and many parts of the world will be under threat from hurricanes, typhoons, droughts and floods”⁷

27. A key challenge for governments and the international community will be to reduce the carbon intensity of production and move towards a low-carbon world economy, while maintaining economic development and expanding the use of energy services by the poor.

HOW COUNTRIES MITIGATE AND ADAPT TO CLIMATE CHANGE

Mitigation

28. If no action is taken to reduce emissions (mitigate climate change), the concentration of greenhouse gases in the atmosphere could reach double pre-industrial level as early as 2035, virtually committing us to a global average temperature rise of over 2°C. In the longer term, there would be more than a 50 per cent chance that the temperature rise would exceed 5°C. This rise would be very dangerous indeed; it is equivalent to the change in average temperatures from the last ice age to today. Such a radical change in the physical geography of the world must lead to major changes in where people live and how they conduct their lives. All countries will be affected, but the most vulnerable – the poorest countries and populations – will suffer earliest and most.

29. Climate change is an externality in the global economy associated with greenhouse gas emissions – and it entails costs that are not paid for by those who create the emissions. Climate change has a number of features, which if they are taken together make it different to other externalities:

- it is global in its causes and consequences;
- the impacts of climate change are long-term and persistent;
- uncertainties and risks in the economic impacts are pervasive; and
- there is a serious risk of major, irreversible change with non-marginal economic effects.

⁶ Stern. *The Economics of Climate Change*. CUP 2006. p 458

⁷ Stern. Speech to UN July 31st 2007.

30. These features shape our economic analysis of, and policy response to, climate change, which must be global, deal with long time horizons, have the economics of risk and uncertainty at its core, and examine the possibility of major, non-marginal changes.

31. In other respects, managing climate change is similar to managing other pollution externalities, with a need to limit the cause of the pollution (overcoming free rider problems) and address the impacts, using a mix of regulatory approaches, incentives, compensation, market-based instruments and public information strategies, as appropriate.

32. Emissions can be cut through increased energy efficiency, changes in demand, and through adoption of clean power, heat and transport technologies. The power sector around the world would need to be at least 60 per cent decarbonised by 2050 for atmospheric concentrations to stabilise at or below 550ppm CO₂, and deep emissions cuts will also be required in the transport sector.

33. Even with very strong expansion of the use of renewable energy and other low-carbon energy sources, fossil fuels could still make up over half of global energy supply in 2050. Coal will continue to be important in the energy mix around the world, including in fast-growing economies. Extensive carbon capture and storage will be necessary to allow the continued use of fossil fuels without damage to the atmosphere.

34. Cuts in non-energy emissions, such as those resulting from deforestation and from agricultural and industrial processes, are also essential.

35. With strong, deliberate policy choices, it is possible to reduce emissions in both developed and developing economies on the scale necessary for stabilisation in the required range while continuing to grow. In this, there may be significant opportunities for developing countries in coupling their action on climate change with assistance in achieving improved efficiency, cleaner technologies and greater energy security.

36. Stern has called climate change the greatest market failure the world has ever seen, and it interacts with other market imperfections. He has suggested that there are three elements of policy required for an effective global response. The first is the pricing of carbon, implemented through tax, trading or regulation. The second is policy to support innovation and the deployment of low-carbon technologies. And the third is action to remove barriers to energy efficiency, and to inform, educate and persuade individuals about what they can do to respond to climate change.

Mitigation under the UNFCCC

37. The principal mechanism for international action on climate change is the 1992 United Nations Framework Convention on Climate Change (UNFCCC), which has almost universal membership, with 191 countries having ratified.

38. The “ultimate objective” of the Convention is the “stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system”, “within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner”. The Convention incorporates the precautionary principle, and recognises the “common but differentiated

responsibility” of states. Developed countries must take the lead in modifying longer-term trends in anthropogenic (human-caused) emissions.

39. In 1997, the Kyoto Protocol was negotiated under the UNFCCC. It introduced, for the first time, binding commitments on greenhouse gas emissions for industrialised countries listed in Annex I of the Protocol. These countries have differential percentage cuts (or limited increases) to be made on their emissions baseline of 1990. Compliance to the targets by those that have signed up to the Protocol is required over the period 2008-2012 (known as the first commitment period). A number of measures were agreed that enable countries a degree of flexibility in the way in which they achieve their targets. These include: pooling targets with other Parties in Annex I countries to collectively achieve an aggregate target; trading certified emission certificates; and generating certified emissions reductions in other participating countries. To support investments by Annex I countries in signatory developing countries, a Clean Development Mechanism (CDM) was established under the Protocol. A levy on CDM projects will generate a fund for adaptation projects in developing countries.

40. Given that the first compliance period of the Kyoto Protocol ends in 2012, countries are now working on their proposals for what happens next. Negotiators have agreed to ensure a smooth transition to a new set of rules starting in 2013. The way in which this will be achieved will be the subject of negotiations, in Bali, in December 2007.

Other Action

41. Meanwhile, governments and other groups in society are beginning to take their own actions, including setting their own targets for emission reductions and energy intensity.

42. In China and India, policymakers are demonstrating a strong interest in moving towards more secure and sustainable energy use. In China, a wide range of measures is beginning to be implemented towards a domestic target to improve energy intensity of GDP by 20 per cent by 2010: energy efficiency audits and major investment projects for manufacturing industry, and changes to taxation of vehicle sales and energy-intensive products for export. In India, the Integrated Energy Policy under the 11th Five Year Plan is being taken forward – including changes to energy subsidies, plans for more efficient coal-fired power plants and further development of innovative new technologies for renewable energy.

43. The European Union, at the March 2007 Head of Government meeting, set a “firm independent commitment” (irrespective of the actions taken by any other country) to reduce emissions of greenhouse gases by 20 per cent from a 1990 baseline by 2020 with a non binding objective of a further 30 per cent reduction within the same timescale⁸. The German Government announced in July 2007 its own programme to reduce emissions by 40 per cent by 2020.⁹

44. In May 2007 President Bush announced his intention to convene a meeting of the current major emitters and energy consumers to complete a post 2012 Framework on Climate Change by the end of 2008.¹⁰

⁸ Council of the European Union. Presidency Conclusions. Brussels May 2007

⁹ International Herald Tribune. July 4th 2007

¹⁰ Fact Sheet: A New International Climate Change Framework. White House. May 31st 2007

45. At the G8 meeting in June 2007, the leaders endorsed a statement committing themselves to “urgent and concerted action on climate change” and for the development of a new global framework by the end of 2008.¹¹ The 21 members of the Asia-Pacific Economic Co-operation (APEC), which met in September 2007, agreed to work towards an aspirational goal of a reduction in energy intensity of at least 25 percent by 2030 (on a 2005 baseline) and an increasing forest cover in the region by at least 20 million hectares by 2020¹².

46. Many businesses are also beginning to take action to reduce their own emissions and, through new product developments, the emissions of their customers. In part this is driven by the benefits of reducing input costs but in many cases action is also being driven by the anticipation of new regulatory regimes which could see a price applied to carbon in all economic activity in order to promote the move to a lower-carbon economy.

47. Equally important is the shift in public opinion. Numerous studies¹³ in recent months have demonstrated that across the developed world, in particular, climate change is understood to be a material risk and that action to reduce emissions enjoys increasing levels of public support.

48. In these circumstances, the Commonwealth has a unique opportunity deriving from its diverse membership to influence the debate by ensuring that any measures agreed through the UN process, or by any other grouping of nations:

- Take account of the interests of those countries and communities not represented in the G8 and similar groupings.
- Are equitable and support the process of development.
- Establish a carbon pricing regime which does not discriminate against countries at an early stage of development or allow climate change to become an excuse for renewal or concentration of protectionism.
- Support technology transfer and the establishment of new or expanded clean development mechanisms which encourage the transition to low carbon economic activity in developing countries and allow emerging economies to play an active role in emissions trading regimes.
- Include programmes which enhance the potential of sustainable forestry as a means of mitigating emissions.

49. In the interests of sustained development, there is an urgent need to reach international agreement through the UNFCCC to ensure mitigation of climate change, perhaps on the basis of an agreed maximum level of carbon concentration, and including time-related national targets and mechanisms for both technology transfer and the management of the costs

¹¹ G8 Summit 2007. Chair’s summary. http://www.g-8.de/nsc_true/Content/EN/Artikel/___g8-summit/anlagen/chairs-summary,templateId=raw,property=publicationFile.pdf/chairs-summary

¹² Sydney APEC leaders’ declaration on climate change, energy security and clean development, 9 September 2007. <http://www.apec2007.org/documents/Declaration%20Climate%20Change.pdf>

¹³ The most extensive recent polling exercise is the BBC World Service Poll conducted in June 2006. The poll found that 8 in 10 citizens across 19 countries were concerned about energy policy and its impact on the Earth’s environment and climate. <http://199.202.238.2/newsarchives/bbwsenergy/>

involved. Any scheme adopted must recognise that different countries are at different stages of development and have common but differentiated responsibilities. As such, uniform reduction targets are unrealistic but the agreement must draw all countries into a common process to achieve a common objective.

Adaptation

50. Adaptation to climate change – that is, taking steps to build resilience and minimise future costs of action – is essential. It is no longer possible to prevent the climate change that will take place over the next two to three decades, but it is still possible to protect our societies and economies from its impacts to some extent – for example, by providing better information, improving planning of land-uses and infrastructure and the need for more climate-resilient crops. Adaptation often needs to be implemented at a very local level, drawing on the experiences of communities with current vulnerabilities and building strategies to address these. Adaptation will cost tens of billions of dollars a year in developing countries alone, and will put still further pressure on already scarce resources.

51. Adaptation efforts, particularly in developing countries, should be accelerated.

52. *Development itself is a key to adaptation.* Much adaptation should be an extension of good development practice and reduce vulnerability by:

- promoting growth and diversification of economic activity;
- investing in health and education;
- enhancing resilience to disasters and improving disaster management;
- promoting risk-pooling, including social safety nets for the poorest; and
- managing and protecting the natural resource-base of economies.

53. Putting the right policy frameworks in place will encourage and facilitate effective adaptation by households, communities and firms. Poverty and development constraints will present obstacles to adaptation but focused development policies can reduce these obstacles.

International Support for Adaptation

54. Adaptation efforts in developing countries must be accelerated and supported, including through international development assistance. The poorest developing countries will be hit earliest and hardest by climate change, even though they have contributed little to causing the problem. Their low incomes make it difficult to finance adaptation. It is in the international community's enlightened self-interest to support them in adapting to climate change. Without such support there is a serious risk that both development progress and efforts to combat climate change will be undermined. Furthermore, the repercussions will spill over into the developed world through illicit migration, disease pandemics and increased criminality.

55. It is for the developing countries themselves to determine their approach to adaptation in the context of their own circumstances and aspirations. Rapid growth and development will enhance countries' ability to adapt. The additional costs to developing countries of adapting to climate change could run into tens of billions of dollars and it is clear that substantial additional resources are required to support action in this area.

56. Donors and multilateral development institutions should mainstream and support adaptation across their assistance to developing countries. The international community should also support adaptation through investment in global public goods, including improved monitoring and prediction of climate change, better modelling of regional impacts, and the development and deployment of drought- and flood-resistant crops.

57. In addition, efforts should be increased to build public-private partnerships for climate-related insurance; and to strengthen mechanisms for improving risk management and preparedness, disaster response and refugee resettlement.

58. Strong and early mitigation has a key role to play in limiting the long- run costs of adaptation. Without this, the costs of adaptation will rise dramatically.

Planning

59. Adaptation actions should be integrated into development policy and planning at every level. This will incur incremental adaptation costs relative to plans that ignore climate change. But ignoring climate change is not a viable option – inaction will be far more costly than adaptation.

60. It is clear that climate change will affect the basic elements of life for people around the world – access to water, food production, health, and the environment. Such a cross cutting issue requires the leadership of Heads of Government and Finance Ministries.

61. As described earlier, the impacts of climate change are not evenly distributed – the poorest countries and people will suffer earliest and most. And if and when the damages appear it will be too late to reverse the process. Therefore, it is essential for finance and planning ministries to look now to prepare their economies for the challenges and opportunities that lay ahead. Climate change must become central to all economic, environmental and social planning across the world.

Commonwealth Role

62. Economic analysis of the potential for adaptation is still very limited. There could be value in a Commonwealth initiative on the economics of climate change to help the most vulnerable countries take practical action on the basis of a clear understanding of the implications of climate change for their economies and by mainstreaming climate change concerns into planning. In collaboration with others through the Nairobi Work Plan, a crucial element is the ability of governments to analyse the potential costs of adaptation so as to maximise the benefits.

63. It is already clear that the absolute costs, and costs relative to current levels of GDP per capita are likely to fall most heavily on those least able to afford them. If adaptation – from infrastructure development to the adjustment of current patterns of economic activity – is to be achieved in a timely manner – mechanisms for allocating and distributing resources within and between states will be required. The development of such a mechanism is being considered within the UN process but the Commonwealth with its shared values and diverse membership is uniquely well placed to influence and advance those discussions. Work on such mechanisms could be the second element of a Commonwealth initiative on the economics of climate change.

64. The third element concerns capacity. Successful adaptation will require specialist skills, such as in climate modelling, cost-benefit analysis, and land-use management and planning in the context of climate change. The development of those skills is part of a practical approach to adaptation. So too, given the existing gaps in scientific capacity, is the establishment of mechanisms to share specialist skills and experience which may not be readily available in each country but which exist across the Commonwealth and the wider international community.

65. The changes required need the active engagement and support of local communities and the broader public. Public awareness of climate change has grown but detailed knowledge is still limited. The requirement for major shifts in economic activity – including relocation, changes in crops, investment insurance and expenditure on climate defence systems – will have to be justified and understood if programmes of adaptation are to be successful. National planning is crucial but many of the actions required will rest with individuals, families and communities. A programme of work on climate change, focusing on capacity building and public engagement, was broadly welcomed by Commonwealth Environment Ministers at their meeting in April 2007.

Cost of Action Versus Inaction

66. Using the results from formal economic models, the Stern Review has estimated that if we don't act, the overall costs and risks of climate change will be equivalent to losing at least 5 per cent of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates could rise to 20 per cent of GDP or more.

67. In contrast, the costs of action – reducing GHG emissions to avoid the worst consequences of climate change – can be limited to around one per cent of global GDP each year.

68. The costs of taking action are not evenly distributed across sectors or around the world. Even if the rich world takes on responsibility for absolute cuts in emissions of 60-80 per cent by 2050, developing countries must take significant action too. But developing countries should not be required to bear the full costs of this action alone, and they will not have to. Carbon markets in rich countries are already beginning to deliver flows of finance to support low-carbon development, including through the Clean Development Mechanism. A major increase of these flows is now required to support action on the scale required.

69. Action on climate change will also create significant business opportunities, as new markets are created in low-carbon energy technologies and other low-carbon goods and services. These markets could grow to be worth hundreds of billions of dollars each year, and employment in these sectors will expand accordingly.

70. The world does not need to choose between averting climate change and promoting growth and development. Changes in energy technologies and in the structure of economies have created opportunities to decouple growth from GHG emissions. Indeed, ignoring climate change will eventually damage economic growth.

CONCLUSIONS

71. Climate change poses a major threat to the economic development plans of many Commonwealth countries and the issue will be high on the agenda for those responsible for economic and social policy throughout the twenty first century. Finance and planning ministries have a critical role to play.

72. The impact of climate change in both absolute and relative terms will be uneven. It is likely to fall most strongly on those least able to cope, both within countries and across countries. Small states, African countries and very low-lying countries like Bangladesh are particularly vulnerable.

73. Climate change puts at risk the Millennium Development Goals and the wider process of long term social progress and elimination of poverty, which are enduring objectives of the Commonwealth.

74. Fatalism, however, would be inappropriate. As many studies have shown¹⁴, the benefits of concerted early action on climate change will considerably outweigh the costs.

75. Much can also be done to adapt to the changes in climatic conditions which are currently in train. These efforts will not be cost free but the costs will certainly be lower if practical action is initiated now.

76. Creative approaches applying best practice and new technology to the areas of greatest need can be a source of significant gains in economic efficiency and in the wider process of development.

77. There is no trade off between a programme of mitigation and a programme of adaptation. Both are essential and both will become more expensive the longer they are delayed.

78. Equally, mitigation/adaptation to climate change and continuing economic growth with improved living standards can go hand-in-hand. Both are crucial elements of genuine long term sustainable development. Indeed, development is a key to adaptation since it will enhance resilience through stronger technical and institutional capacities. To neglect either mitigation or adaptation would be to put at risk sustainable development, which is a fundamental objective of economic and social policy.

79. The Commonwealth has a unique opportunity to contribute to the development of policies, prioritised on the basis of impact and rigorous cost benefit analysis. This will be to the benefit of not only Commonwealth member states, large and small, but the whole international community.

¹⁴ For example, Pacala and Socolow. Stabilization Wedges: Solving the Climate Problem for the Next 50 Years with Current Technologies. Science 13.8.07.

80. Given the importance of international collective action on climate change policy, the Commonwealth, by virtue of its diverse membership, comprising a cross section of both the developed and developing world, is well placed to:

- provide a forum to take account of the interests of those countries and communities not represented in the G8 and similar groupings;
- develop a mutual understanding of domestic policy goals to support further action;
- deepen policy action towards economic resilience, especially in small states and least developed countries;
- develop a shared code of responsible behaviour and long term goals for countries to conform to;
- develop a co-ordinated strategy to raise public awareness of the issue of climate change; and
- support technology transfer and the establishment of new clean development mechanisms which encourage the transition to low carbon economic activity in developing countries and allow emerging economies to play an active role in emissions trading regimes.

81. The Commonwealth has an important role in shaping the international debate. In developing a shared understanding of the long-term goals for climate policy, Commonwealth Finance Ministers can add to the momentum towards effective international collective action on climate change.

82. Tackling climate change is a pro-growth strategy for the longer term, and fortunately it can be pursued in concert with the aspirations for growth of both rich and poor countries.

83. Building and sustaining collective action is now an urgent challenge. The key building blocks include developing a shared understanding of the long-term goals for climate policy, building effective institutions for co-operation, demonstrating leadership, and working to build trust with others.

84. In the light of these conclusions, Part Two of the paper presents a Framework for Action by Finance and Planning Ministries in addressing the national and international policies that have been outlined.

PART TWO: A FRAMEWORK FOR ACTION BY FINANCE AND PLANNING MINISTRIES

INTRODUCTION

85. Climate change is first and foremost a development concern and one that needs to be at the heart of economic decision-making.

86. A framework to assist Ministers in reviewing the issues they need to consider in preparing their economies is set out below. This is divided into two parts: (i) planning actions; and (ii) financing. These equate broadly (but not exclusively) to action that can be taken at the national level; and those areas where international co-operation, partnerships and other formal agreements are needed. Elements in this framework are designed to help ministers:

- understand the implications for their countries;
- build economic resilience; and
- develop national policies and international strategy.

87. A mnemonic may help illuminate the overall approach – *WARM*:

- **Work out what climate change means for your country.** Its effects will largely be mediated through water (too much, or too little) and greater energy in the weather system (leading to hurricanes, heat waves, changes in weather patterns). Each country has different concerns as geography has a strong influence on how climate change affects it.
- **Aadjust development policy to build economic resilience.** Climate change will have implications for key economic sectors (tourism, agriculture, fisheries) and is related to wider development trends (urbanisation, energy use). There may also be new opportunities. Implement sectoral reviews and act to increase the resilience of livelihoods and infrastructure by investing in your natural resources; institutions; and human capital.
- **Rreview national policy instruments.** Economic analysis of measures to be taken will help governments to maximise benefits over costs. Some possible measures: promote resource, energy and transport efficiency; remove barriers to efficiency; support innovation/transfer of low-carbon technologies; use taxes, charges and permits to adjust behaviour and create new sources of funding. The actual strategy will depend on your economic resource base and sustainable development challenges.
- **Make economic resilience a key concern of your negotiating strategy.** Focus on achieving strong collective approaches to mitigation as well as increased financing for adaptation costs. Consider what supporting measures may be needed to underpin trade and competitiveness in your economy.

A FRAMEWORK FOR ACTION BY FINANCE AND PLANNING MINISTRIES

Planning

Create real progress on sustainable development

88. Vulnerability to climate change is determined both by the exposure to risk, and the capacity of a society to respond to that risk (its resilience). Only with sustainable development can countries mount a robust response to climate change. Ministers need to focus on several basic steps:

- ***Diversify the economy***: dependence on one or two sectors limits the ability to switch to less climate-sensitive activities. The agriculture sector is particularly at risk.
- Implement multilateral environmental agreements and strengthen regional/national environmental management frameworks to ***develop and protect the natural resource base of the economy***. For example, without protected watersheds there can be no effective response to water stress; without healthy soils, more intensive agricultural production under changing conditions will be hard to achieve; and effluent run-off into the sea will further stress coral reefs that are highly sensitive to temperature rises, thus damaging further the potential for fishing and tourism activities.
- ***Invest in health and education***: maintain a focus on the MDGs. A healthy and well educated population is better able to adapt to new economic conditions and activities; mainstream climate change into professional qualifications; and build (or share) a cadre of dedicated climate experts to inform policy making.
- ***Strengthen public services***: inadequate resources and poor governance (including corruption) often result in poor provision of public services. Early warning systems for extreme weather conditions, education programmes raising awareness of climate change, and preventive measures and control programmes for diseases spread by vectors or caused by poor nutrition are examples of public services that would help communities to manage and cope with the effects of climate change.
- ***Pool your risks***: work collectively to strengthen provision of insurance and social safety nets.

Establish National Consultation Platforms

89. Climate change is a mainstream development concern. It needs to be examined at the highest strategic levels to integrate concerns fully into development planning and budgets. Countries already have experience with National Sustainable Development Committees and National Platforms proposed under the Hyogo Framework, which they can review and draw on. Mechanisms may be best placed within the office of the President/Prime Minister to ensure that climate change does not become siloed.

Integrate Climate Change into All National, Sub-national and Sectoral Plans, Budgets and Macro-economic Projections

90. Conditions for each country will be different. Ministers need to understand the implications of climate change for key economic sectors in their country. They also need to ensure that this information is available to a wide range of stakeholders to build political will and action. To support these objectives, Ministers need to act to:

- Establish ***information systems*** about the impacts of climate change that can support decision-making by all sectors of society.
- Review the mandates, reporting structures and financing of ***Meteorological (Met) Offices***. Traditionally, many Met Offices have been housed within departments responsible for aviation. One example is the Meteorological Office of Malta International Airport plc, which is Malta's National Meteorological Service. About 90 percent of all disasters are hydrometeorological in nature, and Met Offices will have an increasingly important role in modelling the climate, providing long-term sectoral forecasts, and communicating with the public and policymakers on the implications of climate change. Some Met Offices experience structural constraints which unnecessarily restrict the role that they can play in informing climate change actions. Effective ways of supporting and developing their capacity to contribute to decision-making need to be considered.
- Undertake ***sectoral reviews of climate impacts***. For example, plans are currently being developed for a Caribbean regional process to bring climate modellers together with agronomists to examine the impact of climate change on agriculture and to propose strategies.
- ***Build skills in climate modelling, and resource/environmental economics***. This may require the provision of scholarships and support for the development of curricula at national or regional levels.
- ***Run climate models on a regional basis*** through collaborative arrangements that draw on world-class expertise in the Commonwealth. Climate models take computing capacity and time to run. By running models on a collaborative basis, countries in a region cut the time it takes to produce results and consider regional implications of climate change.

Support New Approaches to Planning

91. In a dynamic situation where government is mediating climate risks as well as rapid urbanisation and social change, leadership and new approaches are needed in the planning sphere. The following should be undertaken:

- Improve and ***climate-proof disaster risk reduction***. Examine adequacy of legislation and planning frameworks to promote a proactive response to current and future threats. Identify key infrastructure that needs to be safeguarded in the planning process.

- Carry out *vulnerability assessments*, as Seychelles has done, to provide inputs to regular planning processes, land-use planning and zoning. Develop leadership skills in new approaches to urban planning and development so as to climate proof development and safeguard essential infrastructure.
- *Climate proof projects* by making the consideration of climate change impacts a standard requirement.
- *Increase the resilience of livelihoods and infrastructure* in response to vulnerability and sectoral assessments. In particular, current employment patterns may change in the face of desertification, changes in growing seasons and crop yields, regional changes in the distribution and production of fish species, and changes in the potential for tourism.
- *Allow risk management actions to emerge from local communities* and consultations.

Reduce the Carbon Footprint of Government

92. Devise *national procurement policies* that advance environmentally sound procurement in the public sector. The public sector is a major consumer of goods and services and can play a significant role in supporting action on climate change and promoting markets for low-carbon technologies. Efficiency gains will often overcome the costs of investment.

Review Opportunities and Threats to Participate Effectively in Negotiations

93. Economies face new opportunities and challenges as international climate change agreements are implemented. Early analysis will help governments consider the implications of trends and proposals and integrate these into domestic policy and their negotiation of post-Kyoto (post-2012) arrangements. Some issues to consider are as follows:

- *Carbon Miles – Products*. Some member states have concerns related to ‘Carbon Miles’. For Kenya, horticultural products (especially cut flowers, fruit and vegetables), are amongst the country’s top export earners and important in wealth creation. For example, some of the UK’s biggest supermarkets have begun to label produce imported by air freight with an aeroplane symbol to provide information to consumers about the carbon footprint of products and to give expression to their Corporate Social Responsibility policies. Some of Kenya’s products have been labelled in this way. However, some recent research has suggested that distance from market does not necessarily translate into a larger carbon footprint. Further research and public information campaigns are required in this area.
- *International Co-ordination of Regulations and Product Standards*. As the international community considers carbon trading schemes and taxes, the call for international product standards will grow. These can be a powerful way to encourage energy efficiency, raise cost effectiveness, strengthen the incentives to innovate, improve transparency, and promote international trade. The reduction of tariff and non-tariff barriers for low-carbon goods and services, including within the Doha Development Round of international trade negotiations, could provide further opportunities to accelerate the diffusion of key technologies. Ministers

need to consider the implications of these issues and ensure that international agreements take these fully into account.

- ***Energy for Sustainable Development.*** Governments should conduct energy sector reviews to identify opportunities for achieving their goals through international co-operation. Energy security; emission reductions; energy efficiency; and access to energy for sustainable development can all be promoted through technology transfer and development. Renewable technologies can be particularly effective in reducing reliance on fuel imports and provide electricity to areas where grid supply may be difficult.
- ***Carbon markets and forestry.*** Emissions from deforestation are estimated to represent more than 18 per cent of global emissions and curbing deforestation is a cost-effective way of reducing greenhouse gas emissions. Action to preserve the remaining areas of natural forest is needed urgently. There is a need for effective mechanisms through which Commonwealth peoples can benefit economically from their forest resources while preserving and regenerating them. Carbon markets (creating tradable carbon credits through the forest sector) could play an important role in providing such incentives in the longer term. But there are short-term risks of destabilising carbon markets if deforestation is integrated without robust agreements on emission reductions. These agreements must be based on an understanding of the scale of transfers likely to be involved. Policies on deforestation should be shaped and led by the countries themselves, but they need strong support from the international community, which will benefit from action to reduce deforestation. At a national level, defining property rights to forestland, and determining the rights and responsibilities of landowners, communities and loggers, are important to effective forest management. This should involve local communities, respect informal rights and social structures, be based on development goals, and reinforce the process of protecting forests.

Finance

94. Finance is key to promoting investment in low-carbon technologies and systems, and is perhaps the most significant constraint in adaptation to climate change.

Accelerate and Support Adaptation Efforts in Developing Countries

95. The poorest developing countries will be hit earliest and hardest by climate change, even though they have contributed little to causing the problem. Their low incomes make it difficult to finance adaptation, yet the additional costs to developing countries of adapting to climate change could run into tens of billions of dollars. The international community has an obligation to support these countries in adapting to climate change, and without such support there is a serious risk that development progress will be undermined. Despite recent improvements, there remain major obstacles to climate change funding. The major UNFCCC funds and funding provided by OECD countries are well below the estimated levels required for adaptation in developing countries. Where the funds do exist, many governments and private companies find it difficult to access these due to the processes involved.

- ***Rapid growth and development*** will enhance countries' ability to adapt.
- Donor countries should ***honour existing commitments on aid flows***. Jeffrey Sachs has concluded that between 0.44 to 0.54 per cent of GNP each year is needed from donor governments to fund the poverty gap and achieve the Millennium Development Goals. He hastens to add that "the donor countries should not plan to land short of their 0.7 percent commitment...[The estimate] leaves out one potentially large expense: help for the poorest countries to adapt to long-term climate change that is under way."
- Donors and multilateral development institutions should ***mainstream climate change in assistance to developing countries***: climate-proofing infrastructure and other projects, working in concord with national development policies.
- The international community should also support adaptation through ***investment in global public goods***, including improved monitoring and prediction of climate change, better modelling of regional impacts, and the development and deployment of drought- and flood-resistant crops.
- Build public-private partnerships for ***climate-related insurance***, a key concern for small member states.

Work Collectively to Support Strong and Early Action on Mitigation

96. Strong and early mitigation has a key role to play in limiting the long-run costs of adaptation. Without this, the costs of adaptation will rise dramatically. Building and sustaining collective action is an urgent challenge. The key building blocks for any collective action include developing a shared understanding of the long-term goals for climate policy, building effective institutions for co-operation, demonstrating leadership and working to build trust with others.

Scale-up Carbon Finance Flows

97. As a matter of priority, carbon finance flows to the poorest and most vulnerable countries need to be scaled up.

- ***The Clean Development Mechanism*** of the Kyoto Protocol is currently the main formal channel for supporting low-carbon investment in developing countries. Most energy projects through the CDM have been implemented in Latin America and Asia. These account for about 94 per cent of all projects, with over 85 per cent of these in just four countries (China, India, Republic of Korea and Brazil). In future, a transformation in the scale of, and institutions for, international carbon finance flows will be required to support cost-effective emissions reductions in, and technology transfer to, the poorest and most vulnerable countries. Providing assistance with the likely costs of low carbon investments in developing countries will require a major increase in the level of ambition of trading schemes such as the European Union Emissions Trading Scheme (EU ETS). This will also require mechanisms that link private-sector carbon finance to policies and programmes rather than to individual projects. These should be pursued within a context of

national, regional or sectoral objectives for emissions reductions. Carbon finance flows will be crucial in accelerating private investment and national government action in developing countries.

- The *International Financial Institutions* have an important role to play in accelerating carbon finance flows: the establishment of a Clean Energy Investment Framework by the World Bank and other multilateral development banks offers significant potential for catalysing and scaling up investment. *Developing countries* need to develop their own capacity in managing carbon projects and trades.
- Greater international co-operation to *accelerate technological innovation* and diffusion will reduce the costs of mitigation. The private sector is the major driver of innovation and the diffusion of technologies around the world. But governments can help to promote international collaboration to overcome barriers in this area, including through formal arrangements and through arrangements that promote public-private co-operation such as the Asia Pacific Partnership. A global portfolio that emerges from developed countries may not be sufficiently diverse, and is likely to place too little weight on some technologies that are particularly important for developing countries, such as biomass.

Consider What Market-Based and Other Policy Instruments Can be Used at the National Level to Promote Mitigation, Innovation and Adaptation

98. There are many opportunities to start now by using market-based instruments (taxes, charges, tradable permits, etc) and other approaches to promote behavioural change, improve efficiency and generate new sources of financing for action on climate change:

- Prioritise *'no regrets' actions*. Insulation of housing, fuel efficient lighting systems, water heating and transport systems can all produce savings. Not all actions will cost money: because of efficiency gains there are net savings to be made, and some ways of cutting carbon are cheaper than others.
- *Remove barriers to energy efficiency*. Policy instruments, including subsidies and raising public awareness, may be needed.
- *Expand the supply* of renewables. Again, public policies including subsidies may be needed. For example, consider the use of *feed-in tariffs* for the supply of renewable energy to national grids.
- Provide strong policy *support for innovation* and scale-up of production, to drive down unit costs of 'clean' technologies.
- Scale-up and form partnerships to secure technology transfer to developing countries. *Carbon markets* in industrialised nations are beginning to deliver finance flows to support low-carbon technology development.
- *Consider taxes and charges*. Carbon taxes can be politically sensitive, but they are efficient. Environmental taxes and charges are in use in a wide range of fields. Congestion charges are increasingly being considered to address transport

productivity concerns. Green taxes could form part of a country's tourism destination management (both in terms of image and actual impact) if hypothecated towards energy efficiency and other actions to reduce environmental impacts. Travel and the supply chain sectors are of great significance to Commonwealth members, particularly in Africa and small island developing states, but tourism will increasingly be affected by climate change. The impact of transport emissions generally, and air transport specifically, as well as other carbon impacts from laundry and cleaning, food imports and air conditioning, are all concerns to the travel industry which need deeper analysis. This analysis at the national level will help to inform decision-making and negotiations in this area.