Economic Commission for Africa
ACPC African Climate Policy Centre

United Nations Economic Commission for Africa
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*Working Paper 21*

# Filling the Gap: Expanding the financing for Adaptation Under the UNFCCC through a Levy on International Transport Services

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# FILLING THE GAP: EXPANDING THE FINANCING FOR ADAPTATION UNDER THE UNFCCC THROUGH A LEVY ON INTERNATIONAL TRANSPORT SERVICE

**November 2011**

**D R A F T**

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| | |
|---|---|
| CAGR | Compound Annual Growth Rate |
| CCDA | Conference on Climate Change and Development for Africa |
| COP | Conference of Parties |
| GDP | Gross Domestic Product |
| GHG | Green House Gas |
| ICAO | International Civil Aviation Organization |
| IMO | International Maritime Organization |
| IOPC | International Oil Pollution Compensation Fund |
| LDC | Least Developed Countries |
| MDG | Millennium Development Goals |
| NGO | Non- Governmental Organization |
| RPK | Revenue-Passenger-Km |
| RTK | Revenue-Ton-Km |
| TEU | Twenty-foot Equivalent Units |
| UNFCCC | United Nations Framework Convention on Climate Change |
| WWF | Worldwide Fund |

# EXECUTIVE SUMMARY

Global emissions of greenhouse gases (GHGs) have increased significantly during the period since the entry into force of the Kyoto Protocol. Emissions from international civil aviation and from the international transport of marine freight have been important drivers of the growth in emissions from the transport sector and of overall global growth in emissions. The growth in emissions from international transport has occurred despite concerted efforts by the International Civil Aviation Organization (ICAO) and the International Maritime Organization (IMO) and the aspirational targets for emissions reductions that have been established by these organizations.

The impacts of global warming and climate disruption are currently being experienced in Africa, where more than 150 million people are intensely vulnerable and severely at risk. Africa is the continent that is most vulnerable to the impacts of climate change due to:

- the high degree of dependence of its population on rain-fed agriculture and the temperature sensitivity of its traditional agricultural practices;
- the limited infrastructure for dealing with the direct and indirect health consequences of climate change; and
- the areal extent of regions already suffering shortages of potable water and irrigation water that are now facing projections of further declines in rainfall due to the impacts of climate change.

The Copenhagen Accord and the Cancun Agreements promised new and additional resources for climate finance from Industrialized Countries. In particular, the Industrialized Country Parties to the UNFCCC pledged in Copenhagen to increase the financial resources that they would make available to Developing Country Parties to offset the direct costs of damages and the incremental costs of adapting to the impacts of climate change. The pledges of new and additional financial resources made by Industrialized Country Parties at the Fifteenth Conference of the Parties to the UNFCCC (COP-15) were in the range of US$ 30 billion for the period of 2010-2012 (the so-called "*Fast Start*" funds), with a pledged increase to approximately US$100 billion per year by 2020. As of December 2011, only about US$ 2-3 billion of new and additional funds will have been disbursed to Developing Countries.

The Parties reconvening in Durban at COP-17 (December 2011) face a difficult dilemma. The resources provided by Industrialized Country governments to meet their *Fast Start* and longer-term targets for climate finance have been significantly below the pledged levels. In the meantime, the scale of the damages as well as the funding requirements for adaptation have been growing. Concurrently, the prospects for large additional infusions of public funds from Industrialized Countries have declined for a variety of reasons, largely unrelated to climate change. These include the financial crises in the USA and EU, as well as the consequences of the earthquake, tsunami, and nuclear accident in Japan. Addressing this dilemma successfully at COP-17in Durban will require the African Group to speak with one voice and to exert strong leadership in a turbulent environment.

The next decade is likely to be a period of increasing stress for both Industrialized and Developing Countries. Industrialized Countries face the need to rebuild trust in their financial sectors and reinvigorate growth in their economies. The Developing Countries face even sharper challenges in their efforts to meet the UN's Millennium Development Goals,

fulfilling basic human needs, improving public health, and enhancing food security, all while expanding access to clean water and modern energy services.

This suite of challenges will be made more complex and difficult to address due to the growing impacts of climate change. Recent estimates by the World Bank and others suggest that the damages resulting from the impacts of climate change and the financial requirements for adaptation that are necessary to protect the poor in Africa alone will grow from an estimated level of approximately US$ 20 billion per year by 2015, to more than US$ 50 billion per year by 2030.

One possible way to fill the gap between the need for climate finance, the pledges made in Copenhagen and Cancun, and the funds available from public treasuries in the Industrialized countries would be to impose a set of uniform international levies on the cost of air passenger and air freight transport along with a similar levy on international shipments of marine freight. A set of modest levies on the order of US$ 0.001 – 0.002 per revenue passenger-km to € 0.001– 0.002 per revenue-passenger-km, plus US$ 0.01– 0.02 or € 0.01– 0.02 per ton-km of air freight, along with a uniform levy of US$ 0.0001– 0.0002 per ton-km or €0.0001 – 0.0002 per ton-km of marine freight transport (including both bulk freight and containerized cargo) would raise between approximately US$ 12 – 33 billion per year.

These modest levies would have the effect of internalizing part of the costs of damages due to the increasing emissions of GHGs into the market transactions that generate insults to the international atmosphere. The levies would have a marginal effect on the demand for international transport services. The proceeds from such levies could be collected as part of the billing for transport services by transportation companies and conveyed directly to the UNFCCC Secretariat (or its designee) through the International Customs Union or some other appropriate international body. The funds could be transferred directly to the Adaptation Fund and then allocated to Developing Country regions on basis of the number of low-income people identified as severely vulnerable and at risk from the impacts of climate change. Individual Developing Country Parities could acquire these resources through the Direct Access modality of the Adaptation Fund.

There are a number of historical precedents for implementing such an approach. A universal levy has been used to fund the International Oil Pollution Compensation Fund (IOPC). The IOPC collects the appropriate contributions directly from operators of ocean-going tankers and maintains the fund. A number of countries, both in Africa and beyond, have proposed introduction of a similar levy on international air and marine transport.

Imposing a set of modest but uniform international levies on air transport and marine transport would provide a fair and equitable approach to increasing the economic efficiency of global transport markets and internalizing the environmental costs of transportation into the price of transport services. The resources derived from a set of globally harmonized levies could represent a significant contribution by the private sector to addressing the impacts of global climate change without reducing the relative competitiveness of any country, region, or economic sector.

# 1. GLOBAL WARMING AND CLIMATE DISRUPTION: GROWING VULNERABILITY AND CONTINUING IMPACTS OF CLIMATE CHANGE IN AFRICA

Africa has been warming faster than other regions. On average, annual surface temperature in Africa has increasedby1.5 – 4$^{o}$ C during this century. Not surprisingly, Africa is most vulnerable to the impacts of climate change. The continent continues to experience increases in the frequency and severity of extreme events (mostly floods, fires, wind storms, and droughts) as well as the effects of sea level rise. To further complicate this situation, Africa has the lowest average levels of adaptive capacity and is thus least able to cope with the impacts of climate change.

The current and expected future impacts of climate change impacts create new and additional challenges in almost every sector of the economy. These impacts complicate Africa's development efforts and increase the associated costs. The unusually high level of vulnerability in Africa arises from the following factors:

- Africa's natural ecosystems are fragile, due to the combined effects of land degradation and desertification, which have affected over 67% of the total surface area of the continent;
- The region has been exposed to increasingly frequent natural disasters, mainly droughts, fires, and floods; and
- A large proportion of Africa's low-income citizens rely on livelihoods and economic activities that are highly climate sensitive. This is particularly important for the70% of the population that relies for subsistence on rain-fed agriculture.

Figure 1 below highlights some of the key impacts of climate change that are already complicating the development challenge in African countries.

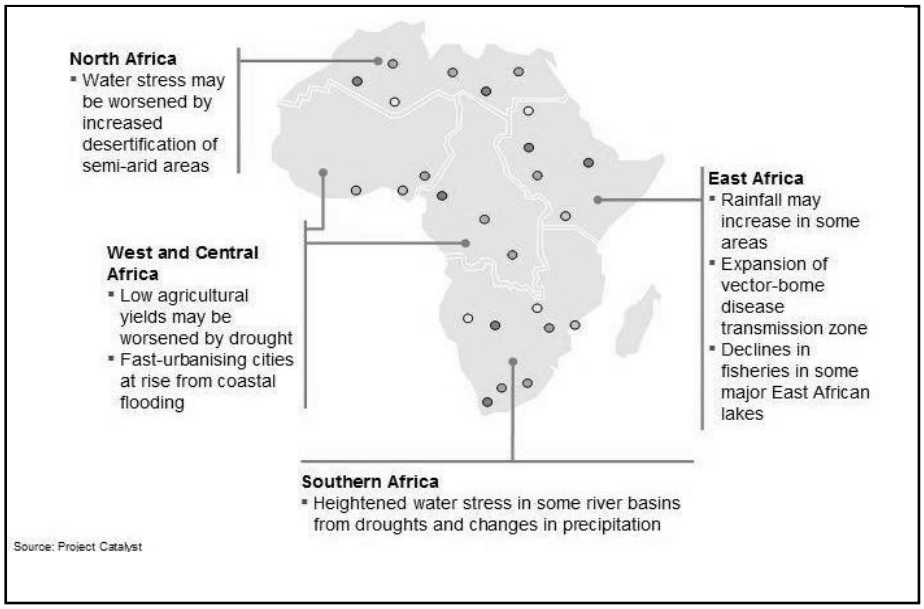


**Figure 1 Some projected climate change impacts in different parts of the Continent**
Source: Haile Gabriel (2011) adapted from Project Catalyst

An especially difficult set of impacts arise from the continent's exposure to extreme weather events. The frequency and severity of these events have been increasing steadily during the last three decades. In East Africa, for example, the number of recorded hydro-meteorological disasters has risen by 50%, increasing from an annual average of seven per year in the 1980s,

to an annual average of 10 per year in the period from 2000-2006. In addition, the tropical cyclone pattern in the southwestern region of the Indian Ocean has become more unpredictable during this period, oscillating between droughts and floods while making it increasingly difficult for East African farmers who depend on rain-fed agriculture to know what crops to plant and when to plant them (c.f., Benjamin Lamptey, et al., 2010, "*Vulnerability and Climate Change Hotspots in Africa: Mapping based on existing knowledge*," presentation to CCDA-1, Addis Ababa, Ethiopia, October 2011).

Figure 2 below illustrates the distribution of vulnerability of Africa's agricultural sector to the direct impacts of climate change.

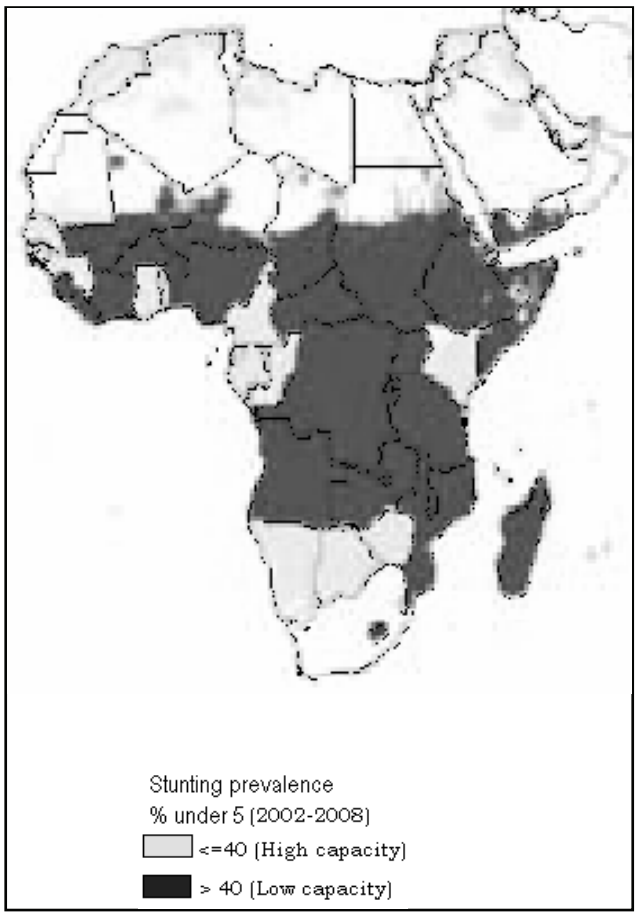


**Figure 2 Vulnerability and Impact in the agricultural sector**
Source: Lamptey, et al. (2011), *op. cit.*

Another dimension along which the impacts of climate change will have major negative consequences in Africa arises from the direct and indirect impacts of climate change on public health. Climate change is likely to increase the areal extent of exposure and the virulence or mortality of a number of infectious diseases. These diseases are not new and they already reduce the effectiveness of domestic investments in economic development for many African countries. Figure 3 below illustrates the chain of causes and effects that link changes in global and regional climate to negative impacts on human health in Africa.

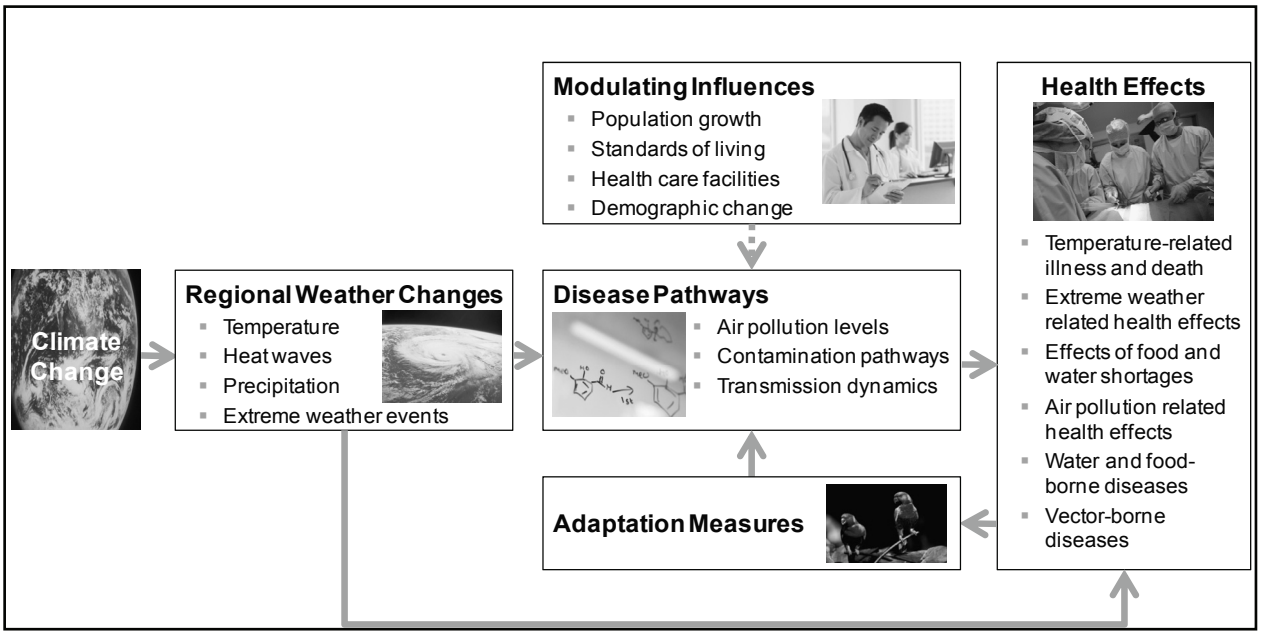


**Figure 3 Climate change and health**
Source: Webb et al. ( 2011)

The direct costs to African countries of adapting to the impacts of climate change are likely to be quite large. The World Bank recently estimated that, between 2010 and 2050, the annual costs of adaptation in Sub-Saharan African countries are likely to exceed 2005US$ 18 billion (R. Cervigni, 2011, "*Infrastructure and Climate Change*." Presentation at CCDA-1, Addis Ababa, Ethiopia, October 2011). Furthermore, the World Bank estimated the annual costs of adaptation in the Middle East and North Africa region would be approximately 2005US$ 3 billion per year. In current dollar terms, the estimated cost for these two regions is equivalent to approximately US$ 24 billion per year (2011US$). Figure 4 below illustrates the World Bank's estimate of the direct costs of adaptation for each region of the globe.

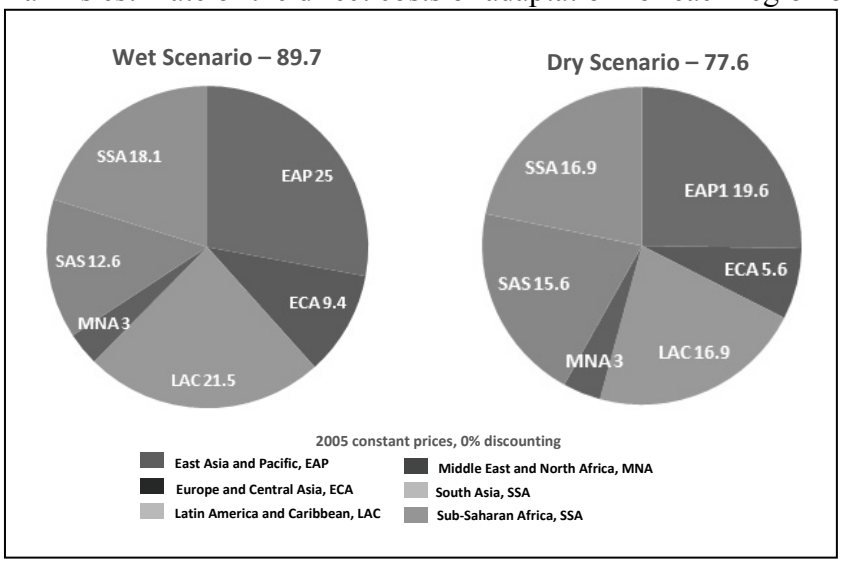


**Figure 4 Annual costs of adaptation: by region, 2010-2050, US$ Billion**
Source: Cervigni (2011); adapted from World Bank Analysis

"Climate proofing" Africa's development pathway could add up to 40% to the costs of meeting the UN's Millennium Development Goals. When combined with the costs of putting Africa on a low-carbon pathway, the total impact of climate change on Africa's domestic

development agenda is an estimated cost of approximately US$ 22-31 billion per year by 2015, and US$ 52-68 billion per year by 2030. (Y. Mulugettaet al., 2011, "*Lessons from Fast Start Finance*," Presentation at CCDA-1, Addis Ababa, Ethiopia, October 2011). Indeed, the overall economic impact of climate change on Africa's development may reach an estimated 1-5% of annual GDP by 2030. A recent analysis by Thomas Downing is summarized in Figure 5 below.

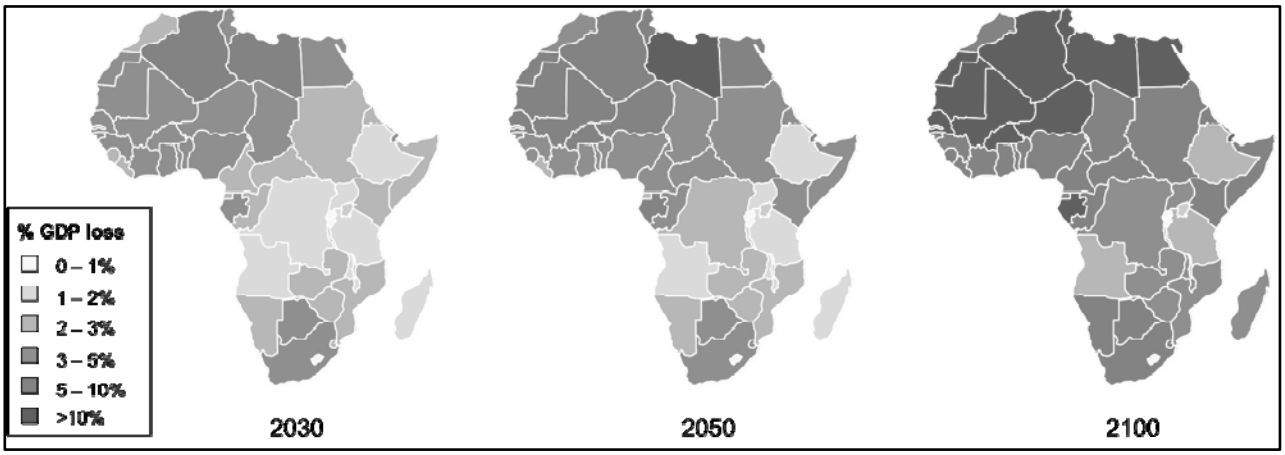


**Figure 5 Annual costs of climate change in Africa, 2030+**
Source: Downing and Watkiss (2011) adapted from UNEP FUND National model AdaptCost project

## 2. THE COPENHAGEN ACCORD, THE CANCUN AGREEMENTS, AND THE DURBAN DILEMMA: THE NEED FOR AFRICAN LEADERSHIP AT COP-17

The crowning achievement of COP-15 (Copenhagen, Denmark, December 2009) was the document which came to be known as the Copenhagen Accord. This agreement committed the USA, the European Union, Japan, Australia, and other Industrialized Country Parties to the UNFCCC to provide new and additional funds to Developing Country Parties that would be used to expand climate finance. These new and additional funds were intended to be applied primarily toward the costs of adaptation to climate change. The so-called "*Fast Start*" component of these funds were pledged in an amount equivalent to US$ 30 billion, with the intention that these amounts would be distributed during the period 2010-2012. Furthermore, the Copenhagen Accord committed the Industrialized Country Parties to raise additional funds for climate finance by 2020 from a combination of public and private financial sources. By 2020, this long-term financing was intended to reach an annual amount equivalent to approximately $US 100 billion. At COP-16 (Cancun, Mexico, November-December 2010), the Conference of the Parties recognized and reinforced the financial commitments that had been made in Copenhagen.

As the Parties move toward COP-17 (Durban, South Africa, November-December 2011), the impacts of global warming and climate change are being observed in the form of increasingly painful storms, floods, fires, and droughts, both in Africa and elsewhere (e.g., Australia, Southwestern USA, Russia, Mexico, Thailand, Myanmar, etc.). Simultaneously, the public treasuries in the Industrialized Countries are being severely stressed by events completely unrelated to GHG emissions or the impacts of climate change. A combination of the impacts of natural disasters (Japan), the Western financial crisis (USA, EU), and the costs associated

with the wars in Iraq and Afghanistan has stressed the public treasuries of these countries in ways that could make it very difficult to fulfill the commitments made at COP-15.Indeed, as of December 2011, only about US$ 2-3 billion of new and additional funds will have been disbursed to Developing Countries (Downing, 2011, op. cit.). Of this amount, according to the African Development Bank, only about US$ 132 million has been disbursed to African countries to address the damages due to climate change and the costs of adaptation (A. Bella-Corbin, 2011. "*The Costs of Adaptation to Climate Change in Africa*," Presentation at CCDA-1, Addis Ababa, Ethiopia, October 2011). Figure 6 below illustrates the gap between the financial support promised through "*Fast Start"* under the Copenhagen Accord and the actual levels of disbursements to date.

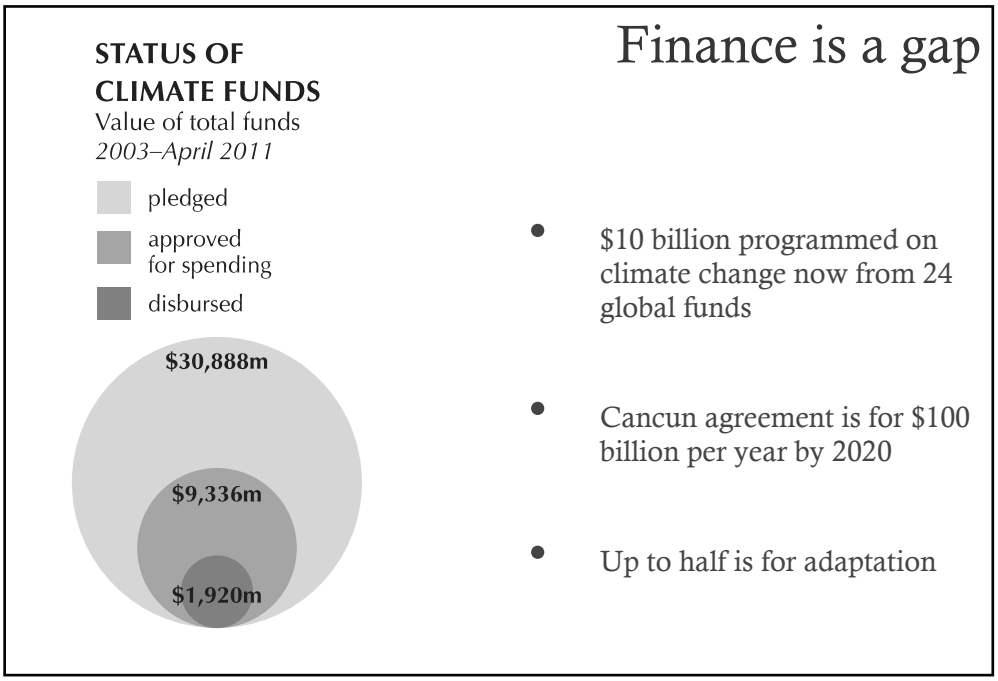


**Figure 6 Status of climate funds and finance gaps**
Source: Downing and Watkiss (2011)

Figure 7 below illustrates the scale of funds recently promised for climate finance under the UNFCCC and the level of resources disbursed to African countries from each of these sources.

| Source of funding | Funding approved (US$ m) | Funding received (US $m) |
|---|---|---|
| Least Developed Countries Fund | 95.7 | 64.5 |
| MDG Achievement Fund – Environment and Climate Change thematic window | 20.0 | 15.6 |
| International Climate Initiative | 12.1 | 12.1 |
| GEF Trust Fund - Climate Change focal area (GEF 4) | 3.3 | 3.3 |
| Strategic Priority on Adaptation | 9.6 | 9.6 |
| Special Climate Change Fund | 28.2 | 20.5 |
| Global Climate Change Alliance | 51.6 | 1.0 |
| Pilot Program for Climate Resilience | 113 | 1.5 |
| Adaptation Fund | 15.1 | 3.8 |
| **Total** | **349** | **132** |

**Figure 7 Funding that has reached Africa**
Source: Bella-Corbin (2011)

# 3. SMOKE RISES: TRENDS IN EMISSIONS OF GHGS FROM INTERNATIONAL AIR AND MARINE TRANSPORT

Global emissions of GHGs have increased significantly during the period since the entry into force of the Kyoto Protocol. Emissions from international civil aviation and from the international transport of marine freight have been important drivers of the growth in emissions from the transport sector and of aggregate global growth in emissions. This growth in emissions has been largely driven by increasing demand for international air and sea transport services. Figure 8 below illustrates the growth in demand for air passenger transport, measured by the industry-standard metric of "Revenue-Passenger-Km" or RPK (OneRPK represents the carriage of one paying passenger over the distance of one kilometer.) Figure 8 below also illustrates the projected rates of growth in international air passenger traffic by region from 2010-2030.

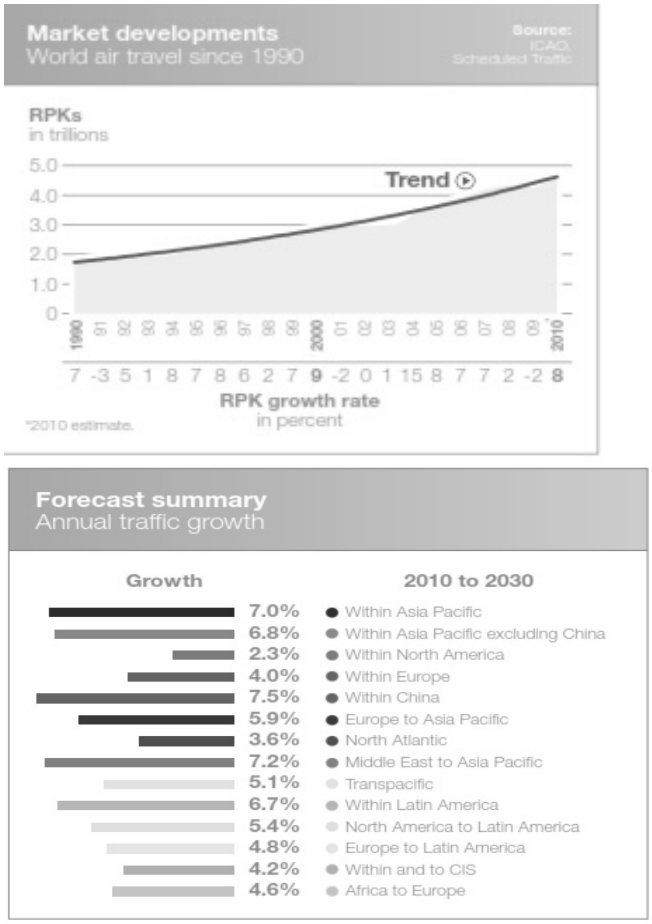


**Figure 8 Market developments and forecast summary**
**Source**: Boeing Corporation (2011). *Current Market Outlook*

The growth in GHG emissions from international air transport has not been due only to growth in demand for air passenger services. Demand for international air freight services has also increased rapidly during the last thirty years, i.e., at a compound annual growth rate (CAGR) of approximately 6%. Figure 9 below illustrates the trend in demand for international air freight services, measured using the industry-standard metric of "Revenue-Ton-Km" or RTK. (One RTK represents the carriage of one ton of air freight over a distance of one kilometer.)

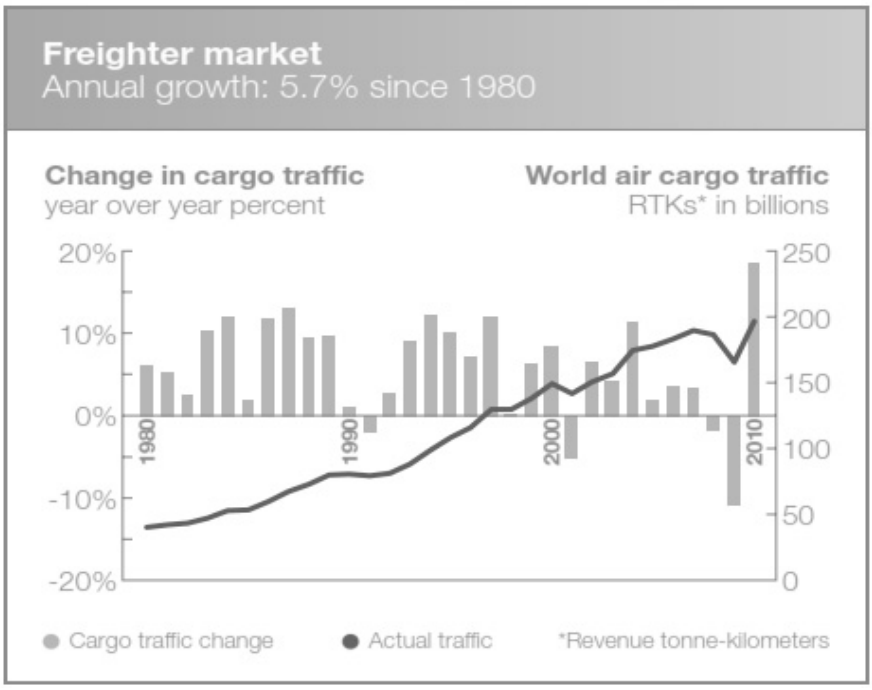


**Figure 9 Freighter market**
Source: Boeing Corporation (2011). *Op cit.*

In 2007, the International Civil Aviation Organization (ICAO) and its member countries recognized the implications of the pattern of growth in air transport-related GHG emissions and endorsed an aspirational target for each Member Country. The ICAO goal is for each Member Country to seek to reduce GHG emissions from aircraft by 2% per year from 2008 to 2020.The ICAO also decided in 2007 that it (the ICAO) should be solely responsible for the development of market-based mechanisms to reduce aircraft emissions. Furthermore, an ICAO Task Force recommended that any money collected from air transport services should be returned to airline companies for the purpose of improving the performance of jet engines. In spite of the good work of the ICAO Task Forces and the introduction of the organization's aspirational goal, GHG emissions from aircraft have continued to increase steadily since 2007.

The demand for international marine freight transport services has also grown rapidly during the last thirty years. This includes demand for both bulk cargo transport and containerized cargo services. The growing demand for bulk cargo transport arises mainly from the expansion of global trade in the oil, iron ore, cement, coal, and grain sectors. The demand for containerized cargo transport has increased concurrently with the growth in carrying capacity of ocean-going container ships. The capacity of these mammoth sea-going platforms has increased from the 1980s-era "PanaMax" class (able to carry 4,500 – 5,000 twenty-foot equivalent units or TEU) to the "SuezMax" class (able to haul up to 12,000 TEU) to the forthcoming "MalaccaMax" class that may carry up to 18,000 TEU and have a sea-going draft of 21m. (In the current environment, the MalaccaMax ships can only be berthed in Rotterdam and Singapore, although if other harbors receive sufficient dredging, it may allow these ships to transit alternative ports of entry.) Figure 10 below illustrates the growth of international marine freight transport services during the period from 1990 to 2005. This figure also illustrates the changing composition of freight cargoes over the same period.

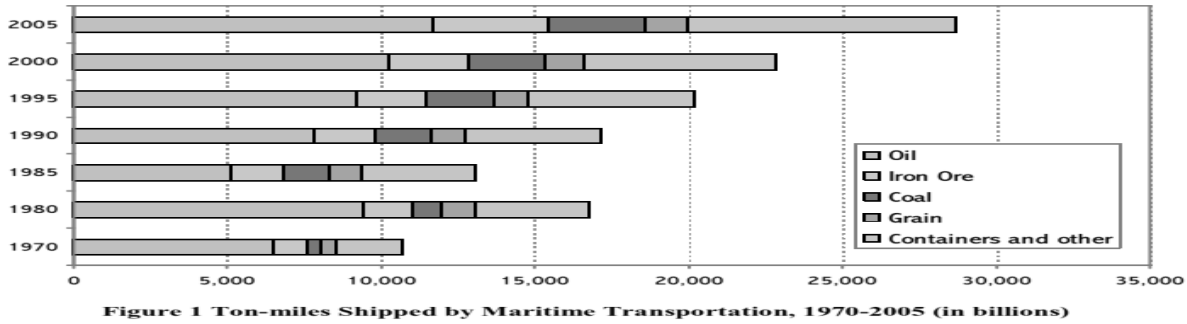


**Figure 10 Miles shipped by maritime transportation, 1970-2005 (in billions)**
Source: Rodrigue and Browne (2010)

The increasing demand for international marine freight transport services has been accompanied by an increasing demand for marine diesel fuel. Although there remains some considerable uncertainty concerning the exact amount of fuel that is consumed in providing international marine freight transport services each year, Figure 11 below illustrates and compares a number of recent estimates (Rodrigue and Browne, 2010).

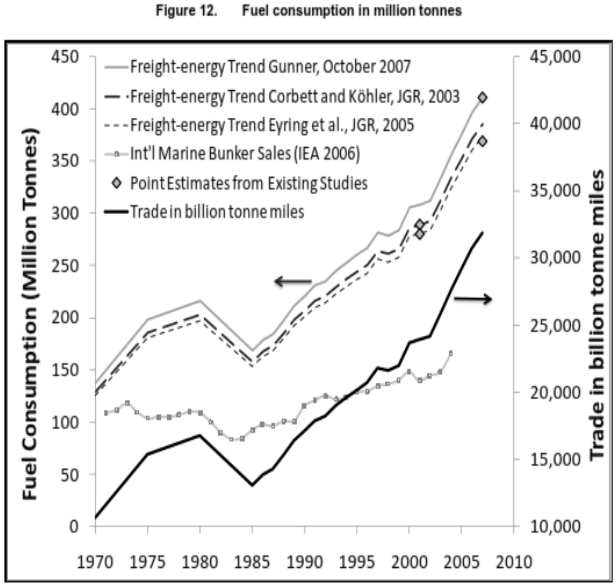


**Figure 11 Fuel consumption (in millions tonnes)**
Source: Corbett and Winebrake (2008)

The International Maritime Organization (IMO) recognized that fuel consumption on this scale generates large quantities of emissions of both conventional air pollutants (e.g., oxides of sulfur and nitrogen) and GHGs. It has therefore begun to press forward an aggressive program to reduce emissions of sulfate aerosols from the combustion of diesel fuel in marine engines. This program, built around the emerging opportunities to burn low-sulfur fuel in marine diesels, has made significant strides in reducing emissions of acid-precursors over the open ocean. However, it has not had much success in reducing GHG emissions from the ships that are used to haul international marine freight.

Unfortunately, despite the past efforts of both the IMO and the ICAO, GHG emissions from both the international air transport sector and the international marine transport sector have risen substantially over the several decades.

# 4. FILLING THE GAP IN CLIMATE FINANCE: THE CHALLENGE OF MEETING URGENT NEEDS IN A PERIOD OF INCREASING STRESS

The Parties to the UNFCCC face a real dilemma:

- The level of global GHG emissions and, especially, the level of emissions from traditionally Industrialized and newly Industrialized Countries are rising steadily.
- The early impacts and the expected economic damages due to climate change are becoming visible and increasingly painful for many developing countries as well as for small island states.
- These impacts are complicating the challenges of sustainable development and raising the cost of efforts by Developing Countries to achieve the UN's Millennium Development Goals (MDGs). One recent analysis (S. Funkhauser and J. Schmidt-Traub, 2010) estimates that the incremental cost of "climate proofing" the MDGs will raise the annual costs of these efforts by Developing Countries from about US$ 70 billion to around US$ 100 billion per year during the period from 2010 to 2020.
- Despite the pledges made in Copenhagen and reinforced in Cancun, and primarily due to circumstances unrelated to climate change, the level of public resources available from Industrialized Countries are unlikely to meet either the commitments that these countries made in Copenhagen Accord or the actual damages experienced by Developing Countries due to the early impacts of climate change.

Nonetheless, the costs of adapting to the impacts of climate change in Developing Countries, especially in Africa, far outstrip the level of domestic budget resources that can be made available for these purposes. Other pressing national development priorities make it impossible to commit sufficient funds to offset the actual and expected economic damages. Furthermore, the sums that have been transferred to Developing Countries under the auspices of the UNFCCC have been far less than adequate to offset either the direct costs of climate-related damages or the costs of adaptive response measures in Africa. Figure 12 below illustrates the levels of finance that have been pledged, committed, allocated, and disbursed to Developing Countries from public sources in Industrialized Countries under the "*Fast Start"* element of the Copenhagen Accord.

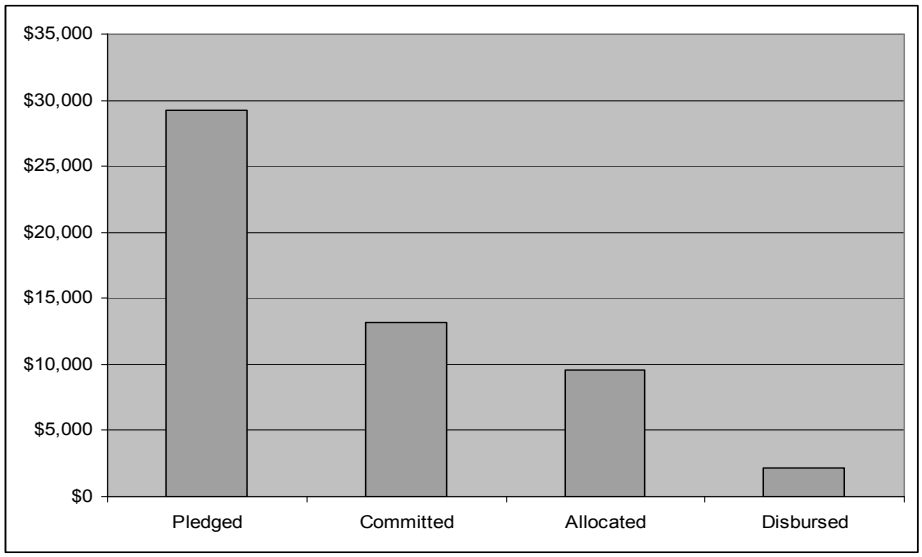


**Figure 12 Pledged, committed, allocated and disbursed fast start finance (so far)**
Source: Mulugetta, 2011. *Op cit*.

Industrialized Country Parties to the UNFCCC have said consistently that the funds required to meet the needs for climate finance would have to be derived from a mix of public and private sources. However, international companies, the traditional sources of private sector finance, will only make investments after they have developed a business plan that identifies how those investments can earn a positive return. Most international companies have neither a concept nor any realistic plan concerning the ways in which investments in adaptation to climate change in Developing Countries, especially in Africa and in the Small Island States, can earn a positive return. Thus, it is highly unlikely that international companies will provide significant resources for climate finance, particularly for adaptation, during the current decade.

How then can the costs imposed on Developing Countries by the impacts of climate change be fully addressed? How will Industrialized Countries fulfill the responsibilities to finance adaptation that they have undertaken in the context of the UNFCCC?

# 5. A MODEST PROPOSAL FOR AN ACHIEVABLE DEAL: INTERNALIZING SOME OF THE GLOBAL COSTS OF EMISSIONS WHILE ENHANCING THE ECONOMIC EFFICIENCY OF INTERNATIONAL TRANSPORT MARKETS

As we move closer to COP-17 in Durban, it is becoming critical for the leaders of the African Group to articulate a new strategy for filling the gap in climate finance. One useful approach to raising funds from the private sector could include a set of harmonized international levies on air passenger, air freight, and marine freight transport services.

A modest levy imposed on air passenger traffic of US$ 0.001 - 0.002or € 0.001 – 0.002 per revenue passenger-km could raise approximately US$ 5 - 14 billion per year, without significantly increasing the cost or reducing the demand of air transport services. Similarly, a modest levy imposed on all air freight shipments of US$ 0.01 – 0.02 per ton-km or € 0.01-0.02 per ton-km could raise approximately US$ 2 - 5 billion per year without significantly

reducing the demand for air freight services. In addition, a levy of US$ 0.0001 – 0.0002 per ton-km or € 0.0001 – 0.0002 per ton-km of marine freight transport services could raise approximately US$ 5 - 14 billion per year, with very limited expected impact on the volume of freight shipped over the ocean. Table 1 below illustrates the revenue-raising effects of such modest levies.

Table 1 Potential Revenue from Small Levies on International Transport

| | US$ 0.001-US$ 0.003 per RPK | US$ 0.01 - US$ 0.03 per RTK | US$ 0.0001 - US$ 0.0003 per RTK |
|---|---|---|---|
| **International Air Passenger Service** (Assuming 4.7 Trillion RPK/year) | US$ 4.7 - 14 Billion/year | | |
| **International Air Freight Service** (Assuming 170 Billion RTK/year) | | US$ 1.7 - 5.1 Billion/year | |
| **Int'l Marine Freight Service** (Assuming 48 Trillion RTK/year) | | | US$ 4.8 - 14 Billion/year |

Note: RPK = Revenue-Passenger-Km; RTK= Revenue-Ton-Km.

A set of uniform, harmonized, levies imposed on the cost of international transport services and applied worldwide would improve the economic efficiency of international transport markets. Such an approach ties the responsibility for off-setting the damages due to early impacts of climate change and the responsibility for costs of adaptation to global warming onto transactions that directly consume significant amounts of the absorptive capacity of the global atmosphere. By bringing the price of air and marine transport services more closely into line with the total costs of providing these services, such levies effectively internalize the traditionally externalized costs of fossil fuels consumed in these economically important activities.

Recent experience with the introduction of excise taxes for security services applied to the air transport sector have shown that the price elasticity of demand for these services is extraordinarily low, and may approach zero. Similarly, recent experiences with the costs of "clean diesel" and with the costs of oil spill-related pollution that have been applied to the marine freight sector have demonstrated that the price elasticity of demand for marine freight services is also extraordinarily low.

The funds raised through such a set of globally harmonized levies could be easily collected from the air and marine transport companies (i.e., as they now collect excise taxes for enhanced security services).The resulting funds could be collected at national level, managed in a uniform fashion, and administered through a mechanism similar to that of the European Union's Customs Cooperation and Mutual Administrative Assistance Agreements. Once collected the funds raised from carriers could be transferred immediately and directly to the

accounts of the UNFCCC Secretariat by those Parties in which such international carriers are licensed to operate. The funds transmitted to the UNFCCC Secretariat could be deposited into the Adaptation Fund of the Convention and distributed through the Direct Access modality of the Fund, moving efficiently to the Parties of the UNFCCC. Countries wishing to apply for use of these resources through the Direct Access modality would need to demonstrate adequate institutional capacity and fiduciary capability to the Executive Board of the Adaptation Fund. Distribution among the Parties by the Adaptation Fund could be based on each country's fraction of the global total of low-income citizens living within its borders that are identified as vulnerable and at risk from the impacts of climate change.

# 6. ARGUMENTS ABOUT AND PREVIOUS EXPERIENCE WITH LEVIES ON INTERNATIONAL TRANSPORT

In the past two decades, a number of proposals have been put forward to raise significant amounts of private sector finance to address the impacts and damages due to climate change. The most prominent of these proposals has been to impose a global excise tax on international financial transactions (i.e., a version of the "Tobin Tax"). This proposal has never gained much traction.

Several Industrialized Countries (including Norway and Canada) have recently made proposals to the IMO for the introduction of a levy on fuel consumed in moving marine freight. France, Germany, and Denmark have all authored detailed proposals to the IMO that would raise significant revenues through a tax on global shipping. Indeed, the Prime Minister of Denmark supported the use of a levy on bunker fuels in a speech to the G-20 Finance Ministers in November 2009.

Nigeria and Liberia have tabled a similar proposal for a global levy on international maritime freight to the IMO. Botswana and the Gambia proposed that aviation and shipping both be used as a source of funding for climate finance. In 2008, the Least Developed Countries group of the UNFCCC (the LDCs) proposed a levy on air passenger transport to finance adaptation. However, this proposal did not gain much traction after its introduction at COP-15.

A number of environmental and private sector NGOs also voiced support for the concept of a levy on aviation and marine transport. During the run-up to COP-15 in 2009, a number of prominent international NGOs (including the Worldwide Fund for Nature or WWF, E3G, German watch, de Noordzee, and Oxfam, among others) proposed that a harmonized international levy be imposed on air and marine transport activities. The coalition of major airline companies that comprise the Aviation Global Deal Group has adopted several proposals along similar lines to those proposed here.

Some experts have argued against the concept of using harmonized levies on international air and marine transport to address the challenges of climate change. Some argue that imposing any levies on transport services will dramatically injure the global tourism industry, which is a significant source of hard currency for many developing countries. Others, including some in the ICAO, argue that if such levies are imposed, for example, on air transport, the resulting revenues should be rebated to the airline industry and used to underwrite investments in more efficient aircraft engines. Still others argue that imposing any levies on international transport will violate the basic principles of the World Trade Organization.

None of these objections constitute strong arguments against imposing a set of modest levies on international air and marine transport to help address the damages due to climate change. No one questions the idea that international air and marine transport activities inject into the global atmosphere significant quantities of the greenhouse gases that cause climate change. No one argues that the economic value of these impacts is captured in the current cost of jet fuel or marine diesel fuel. Nearly all economists agree that internalizing the full costs of transport activities into the price of these activities will improve the economic efficiency of transport markets. Few would argue that the types of modest levies proposed here would have a negative impact on either freight transport or tourism since the much larger fees imposed on these activities to address security concerns since 2001 have not resulted in any comparable reduction in demand. Indeed, demands for international air transport and marine freight services have increased significantly since 2001, despite the imposition of security surcharges.

The argument by airline industry lobbyists to charge airline passengers a fee to underwrite the development of more efficient aircraft engines might have some merit. It is a new approach and one that is not applied in any other industry. Charging users to improve the productivity and profitability of a service provider could make sense, but it is an argument that is not directly or necessarily connected to concerns about climate change.

The argument that imposing harmonized international levies on international transport activities would necessarily violate the principles of the World Trade Organization is demonstrably incorrect. Such a set of levies is already in place and have been used successfully to fund the International Oil Pollution Compensation Funds (IOPC). The IOPC consists of three separate funds that provide compensation for spills of persistent oil pollution from tankers. The funds are managed by a Secretariat that represents the Assembly of all Member States that are parties to the 1992 Civil Liability and Fund Conventions. The Assembly sets an annual target for the total contribution needed by the Fund each year and IOPC collects revenue directly from operators of ocean-going tankers based on the amount of oil carried during the previous year. (See further www.iopcfund.org.)

If the leaders of the African Group were to propose such a set of modest levies, they would be likely to find significant support at Durban from the EU (which is itself considering proposing such levies) and from a number of other Industrialized Countries. Many NGOs representing both Industrialized and Developing Countries would also be likely to endorse and support such a proposal at Durban (as they have supported proposals for similar levies in the past). With a brief amount of dialogue and explanation by the leaders of the African Group, a number of other Parties outside the G-77 and China could be expected to support such measures.

# 7. CONCLUSIONS AND RECOMMENDATIONS

- The early physical impacts of climate change are real, substantial, and easily visible in Africa. Economic damages due to the impacts of climate change are already being experienced across the continent. These costs raise the price of balanced development and of the efforts by African countries to achieve the UN's Millennium Development Goals.
- The estimated costs of adapting to the expected impacts and damages due to climate change far outstrip the domestic resources available to Developing Countries, especially in Africa.

- At COP-15 in Copenhagen (2009), the Industrialized Countries committed to raising new and additional funds for climate finance. The Industrialized Country Parties pledged to provide incremental "*Fast Start*" funds at a level equivalent to approximately US$ 30 billion over the period of 2010-2012, and increasing to approximately US$ 100 billion per year by 2020. These funds were intended primarily to finance adaptation to the impacts of climate change in Developing Countries. The commitments made in Copenhagen at COP-15 were recognized and reaffirmed by Industrialized Countries at COP-16 in Cancun (2010).
- By December 2011, only US$ 2-3 billion of new and additional funds will have been dispersed to Developing Countries for the purpose of financing adaptation to the impacts of climate change. Current conditions in Industrialized Countries make it very difficult to imagine that the remaining commitments to "*Fast Start*" funds or to the larger, long-term target of US$ 100 billion per year target in 2020 can be fulfilled by Industrialized Countries from their public treasuries.
- Private sector sources will be needed to finance the remaining commitments to the "*Fast Start*" fund and to the longer-term targets for climate finance. A set of globally harmonized but quite modest levies imposed on international air and marine transport services could easily raise the equivalent of US$ 10 – 33 billion per year for climate finance, without negatively affecting the competitiveness of any country, region, or economic sector. Such levies could help to improve the economic efficiency of international transport markets as well as to fill the gap in climate finance.
- By distributing the funds so raised through the UNFCCC, using the Direct Access modality of the Adaptation Fund, the low-income citizens who are most vulnerable to the impacts of climate change in Developing Countries could be supported, the pledges made in the Copenhagen Accord could be kept, and the Objective of the UN Framework Convention on Climate Change could be advanced.

The physical impacts of climate change and the economic costs of damages due to those impacts are painfully visible today, especially in Africa and in the Least Developed Countries worldwide. The financial resources that have been dispersed to date through the UNFCCC and its financial mechanism to address these impacts and to enhance adaptive capacity in the affected countries have been grossly insufficient to address the needs. This mismatch between the current impacts and the resources available to support adaptation to those impacts has had a strong negative effect on the efforts of developing countries to promote sustainable development and to achieve the UN's *Millennium Development G*oals.

The new and additional financial resources promised by Industrial Countries as part of the Copenhagen Accords were a good start toward filling the gap between the economic costs of impacts from climate change and the previously available resources. While the US$30 billion promised under the "*Fast Start*" element of these accords is a significant increase, the US$3 billion dispersed to date represents a disappointing level of performance in fulfilling the Copenhagen commitments. Given the current and expected future economic challenges facing the U.S., the EU, and Japan, it seems unlikely that public sector resources in these countries will be able to provide the US$100 billion per year of new and additional resources that were promised in Copenhagen to start in 2020.

Additional financial resources will be needed to ramp up the level of economic support available during the next decade to cope with the increasing economic damages from climate change. Since not all of the necessary resources are likely to be available from public treasuries in Industrialized Countries, a reliable mechanism must be created to augment the

public sector contribution with funds from the private sectors of countries whose economies are adding significant levels of GHGs to the global atmosphere. A modest, harmonized international levy imposed on air transport and marine freight services could make a significant contribution to meeting these needs without imposing any significant negative impacts on the competitiveness of any country, region, or economic sector. If the funds raised from such levies are combined with a global commitment to fulfill the pledges made in Copenhagen through a balanced portfolio of public and private sector programs, the impacts of climate change on poor and vulnerable people, especially those in the Least Developed Countries, could be addressed effectively and efficiently.

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