



SUSTAINABLE CITIES AND CLIMATE CHANGE

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Ladies and Gentlemen,

Climate change is increasingly recognized as one of the world's greatest crisis. This happens precisely at the same time, and virtually at the same pace, as the world becomes urbanized. This is because urbanisation brings about irreversible changes in our production and consumption patterns. How we plan, manage and live in our growing cities determines, to a large extent, the pace of global warming. According to various experts, about three quarters of global energy consumption occurs in cities, while greenhouse gas emissions that cause global warming come predominantly from urban areas. Roughly a third of these emissions are caused by burning fossil fuels for urban transport; another third comes from energy to heat or cool our buildings and to run our appliances and the last third comes from the industrial sector. These are the hallmarks of our built environment and the consequence of our quest for quality-of-life in urban areas.

BACKGROUND

Between 1950 and 2007 we have witnessed an increase in the Earth's average temperature of 0.7°C. Today, we know that the key driving force behind climate change is the emission of greenhouse gases. The latest IPCC report (Climate Change 2007: Impacts, Adaptation and Vulnerability) states that human activities since 1750 have played a significant role by overloading the atmosphere with carbon dioxide, hence retaining solar heat that would otherwise radiate away.

The main emitters of greenhouse gasses are the building and metal industries, transport, housing estates and agriculture. The direct sources of global greenhouse gas emissions in cities include energy generation, vehicular use, industrial use of fossil fuels, and the burning of bio-mass. The indirect sources include electrical energy use for public lighting, transport, industrial, commercial and house-hold consumption, such as cooking, lighting, heating and cooling. If policies of OECD countries, specifically the USA, but also China and India do not change, the CO₂ emissions (which represent 72% of GHG emissions) will increase in 2020 by one-third instead of being reduced by 5% as agreed in the Kyoto protocol.

PROBLEMS

Global warming will put cities at risk. With ongoing climate change, we are entering a new era of increasing urban vulnerability. The rapid pace of urbanization with the concentration of a growing share of the population in cities (50% globally, 83% in South America) will also significantly increase the overall vulnerability of urban areas to natural and man-made dangers. It will become more and more difficult to say what is man-made and what is natural as both risks will overlap. The frequency and intensity of disasters will grow very rapidly worldwide. The risks are particularly severe in regions around the Equator, in Africa, the river deltas of South East Asia, the Amazon region, in low islands and regions located near the oceans.

People most affected by climate change are the world's urban poor, particularly those living in favelas and slums. Urban transformation, which represents a major challenge for attaining the Millennium Development Goals, is inseparable from the issue of climate change and the links between climate change, poverty and urbanization should be emphasized. Global warming exacerbates existing environmental, social and economic problems, while bringing new challenges and opportunities. Cities will be sustainable only if they are able to address these challenges and to take advantage of these opportunities.

Five challenges should be highlighted:

Sea-level rise

According to the different projections, sea level is expected to rise between 20 cm and 90 cm during the 21st century, mostly due to the loss of mass from glaciers and ice caps. Sea-level rise is the most fundamental challenge of global warming that urban settlements face, and it will tend to increase because of the on-going influx of people and economic assets into the coastal zones. Many of the largest cities in Africa, Asia and Latin America are port cities, and thus directly subject to the impacts of a rising sea-level. Rio and Buenos Aires are only two cases in point.

Increasingly frequent and intense tropical cyclones will likely cause severe wind damage and storm surges which, compounded with the sea-level rise, are expected to become a severe problem for low-lying coastal regions and cities, with particular risks for ports and coastal infrastructure.

Flooding and landslides

The expected increase in the scale, intensity and frequency of the rainfall regimes in many developing countries will likely strain severely or overwhelm the storm-drainage systems of many urban centres. It will likely cause periodic flooding of low-lying areas as well as landslides in geologically unstable terrains, often sites of informal settlements, which are most vulnerable. Areas built next to rivers or on reclaimed lands in river-bed planes will be prone to additional inundations.

Water quality and shortage

Floods of the urban areas will likely damage water treatment works and wells, pit latrines and septic tanks. Sewage treatment systems and solid waste disposal will likely be equally affected, also contaminating water supplies. Where overall rainfall decreases, droughts will likely compromise the replenishment of the water tables and thus the source of water supply for the urban areas. By 2020, in sub-Saharan Africa up to 250 million people are likely to face water shortages, and in some countries food production could fall by half.

Heat, cold waves and droughts

Intense episodes of thermal variability, such as heat and cold waves, will likely severely strain urban systems, by imposing extraordinary consumptions of energy for heating and air conditioning, and disrupting ordinary urban activities. During heat waves there will be an increased demand for irrigation water in the agricultural sector, water that is also needed by industry for cooling, and by households.

Health hazards

The socioeconomic impacts of climate change on urban areas include enhanced effects of urban heat islands, an increase of pollutants and ground ozone formation especially during hot summer days and temperature-inversion days in winter, thus causing an increase of the morbidity and mortality rates. Malaria is likely to occur in greater areas due to flooding and a wider habitat range for mosquitoes. Also infectious diseases like cholera, allergic and respiratory disorders, nutritional disorders related to climate-related food shortages, as well as physical damages will impose additional stresses on the health care systems.

SOLUTIONS

Based on the Bali roadmap adopted in December 2007, we should distinguish between mitigation and adaptation measures. Mitigation addresses the front-end of the global warming

problem. It comprises any measure to reduce greenhouse gas emissions. Adaptation, on the contrary, is the back end of the problem: trying to live with the changes in the environment and the economy that global warming has generated and will continue to generate.

1. Reduction of Green-House Gas Emissions

Green-house gas emissions emanating from urban areas can be mitigated through four types of actions.

Urban density

Multi-storey buildings' demand for energy is less than of suburban family homes, and in compact cities infrastructure costs are lower as land consumption, transport and commuting time, costs and emissions are lower. In dense cities, the share of car owners is much less than in the suburbs provided public transport benefit from serious investments. Urban sprawl should be discouraged by all means.

Building and energy efficiency

The business of operating office and residential buildings is responsible for 38% of CO₂ emissions in the USA. A big part of this stems from air conditioning. Thus, it is necessary to reduce the energy needs for heating, lighting and cooling of buildings, but also to increase the efficiency in the use of building technologies and of the building cycle itself. The technology for passive zero energy and zero carbon buildings based on improved insulation materials already exists, and these buildings cost only 5% to 10% more than the conventional ones.

Transport demand management

By promoting vigorously mass transport systems, pedestrian zones, non-motorized transportation, and the use of more fuel-efficient vehicles and environmentally-friendly fuels the total volume of CO₂ emissions can be drastically reduced.

Cleaner energy generation

Switching from coal to natural gas in power plants, promoting the use of clean energy sources to replace fossil energy, and the cogeneration of heat and electricity represent important opportunities. Additionally, policy-makers can promote carbon-free energy sources like windmills, solar panels, geothermal energy, combined heat- and power-plants. Also nuclear plants are being reconsidered, although their radioactive waste may pose long-term problems.

2. Adaptation of Cities to Climate Change

Even if strict mitigation measures are being taken up by national governments and local authorities, the need for adaptation is rooted in the fact that momentum of the climate system-carbon dioxide remains in the atmosphere for decades, while oceans store heat for centuries. No matter how much humanity cuts greenhouse-gas emissions from now on, our previous emissions will keep warming the planet for decades. Thus, cities must also strengthen their resilience against the impact on the climate that our past emissions have set in motion.

New Infrastructure

Determinants of adaptive capacity include the availability of financial resources, of technology, specialized institutions and human resources, access to information and the existence of legal, social and organizational arrangements, all assets that are typically scarce in developing countries and small cities. In cities with a proven vulnerability to climate change, investments will likely require a "hardening up" of urban infrastructure, including

storm-drainage systems, water supply and treatment plants and the protection or relocation of solid waste management facilities, energy generation and distribution systems.

Coastal regions will likely need to invest in heavy physical infrastructure projects specifically related to sea-level rise, such as construction of sea-surge protective barriers and dams, re-development of harbour facilities and improvement of flood and coastal defence management.

Land-use planning

Another adaptation measure would be to build new cities on higher grounds, abandoning vulnerable floodplains altogether. This managed retreat will likely have to take place over time, and this would require a mix of market incentives like, for example, differential costs of insurance and re-insurance, and public sector planning and investments.

Appropriate land-use planning and building codes are required to internalize climate change constraints. Land-use planning should channel new residential developments and productive investments towards less vulnerable areas. Residents of poor and informal settlements should be assisted in regularizing property rights to allow low-income groups to buy, rent, or build adequate housing on safe sites.

As a basis for planning, local authorities need reliable and comprehensive assessments of risks for the exposed cities, the dissemination of such information, the establishment of early warning systems and evacuation plans, including emergency preparedness and neighbourhood response systems; and better urban environmental management.

INTERNATIONAL COOPERATION

Time is running short. Unless we take actions to reduce emissions now and to adapt human settlements to the impacts of global warming, far worse is yet to come, condemning hundreds of millions in the poorest parts of the world to loss of lives, livelihood and homes. We have just entered a new phase of challenge to human life on Earth.

To cope with these various tasks, international organisations like UNEP and UN-HABITAT, as well as city networks and NGOs are in a position to support local action. An international fund for adaptation has recently been established and international cooperation is clearly taking off.

UN-HABITAT is mandated to fight urban poverty and vulnerability by promoting secure shelter for all and improved infrastructure and services. To achieve this goal, particularly within the complexity of climate change, we collaborate with all spheres of government, civil society organizations and the scientific and professional communities. Apart from sister UN agencies, we are also working with international, regional and local financial institutions to mobilize investments for affordable housing and urban infrastructure. UN-HABITAT is particularly committed to supporting national and local authorities in their efforts to cope with the impacts of climate change through renewed City Development Strategies.

Local Authorities

We believe that cities and local authorities have the potential to influence both the causes of climate change and the solutions to advance climate protection. The obligation rests on local authorities to take responsibility, provide leadership and direction, and implement practical initiatives for the communities and citizens they represent. In a participatory manner, they

need to develop local strategies towards a sustainable future, addressing climate change prevention, mitigation and adaptation through urban planning and management.

Already, cities around the world are carrying out a vast range of activities related to renewable energy, cleaner production techniques and the establishment of regulations to curb down and control industrial emissions, and improved architectural designs for heating or cooling. Efforts to reduce traffic or to improve traffic flow, and to improve public transportation are just but a few local authority actions which make a significant contribution to reduce CO₂ emissions. It is crucial that successful measures and good practices be shared by appropriate means of dissemination. To this end, many cities have linked with others to form cities in climate change networks, sharing experiences and information, and learning from each other on planning and management implications of climate change, including preparation and implementation of municipal climate change action plans. However, in the developing world, local authorities are in need of further support to strengthen their capacities and adjust their working tools and methods.

Revisiting sustainable urbanization patterns

We are convinced that climate change in and from cities must be tackled within a broad framework of sustainable urban development. This framework includes a holistic approach to participatory governance, urban environmental planning and management, and the harnessing of ecologically sound technologies. It requires new forms of partnerships with all major stakeholders, not least the people and the communities themselves, and from gender and age perspectives. It requires new paradigm shifts in the critical areas of transport, energy, water and waste management. It also requires, where necessary, innovative approaches to post-disaster relief to build back better. The current debate on climate change offers a fantastic opportunity to rethink the way our cities function, the way they are planned and managed. As the City Agency of the United Nations we have been promoting the concept of “sustainable cities” since the Earth Summit of 1992. We are revisiting this concept now in light of the increasing concern for global warming.

But UN-Habitat can only be a catalyst. For this reason, the fourth session of the World Urban Forum to be held in Nanjing, China on 3-7 November 2008, will be dedicated to the launch of new partnerships, such as the global urban sustainable development network (SUD-Net) and financing arrangements in support of sustainable urbanization, including how cities and towns can cope with the challenges of climate change (this will be in fact the first initiative of SUD-Net). Working together we should be able to transform these challenges into opportunities for climate protection, economic growth and above all social development.

I wish you full success in your deliberations.

Thank you.