

Energy and Air Pollution in Cities-

Challenges for UNEP and UN-HABITAT



As cities in developing countries grow rapidly, their energy needs are also increasing. The rapid rise in energy use in developing cities is causing local, regional as well as global environmental problems.

The use of traditional energy sources like wood and charcoal for cooking and heating, together with an unrestrained growth of motorised transport, is a major source of urban air pollution which has serious local health effects. In Dhaka, Bangladesh, alone, the socio-economic cost for air pollution in terms of medical bills and the loss of lives is estimated at 3 to 4% of national GDP. The rising demand for energy also has regional ramifications in many countries. The Aberdare Forest in Kenya is suffering from serious deforestation partly due to the charcoal consumed in Nairobi. Furthermore, fast growing cities in the developing world also contribute substantially to the global emissions of greenhouse gases - over 80 percent of global CO₂ emissions originate from cities.

Unplanned city growth using traditional rural energy solutions unsuitable for an urban environment, both enhances the problems and misses the opportunities that result from a higher concentration of people and activities. Although they are a hub of economic growth and development, many cities in the developing world find themselves restrained by congestion, polluted air and an inefficient and

malfunctioning energy supply that fails to provide services effectively, especially to the poor.

However, cities also offer opportunities for sustainable solutions. The potential to reduce energy use and decrease emissions is substantial and not necessarily expensive. A high concentration of people enables efficient solutions for modern energy supply such as electricity, liquefied petroleum gas (LPG), biogas or other modern biomass fuels. Also, a well-planned city can offer an effective and affordable transport system based on public and non-motorised transport which reduces air pollution and increases accessibility for the poor.

Modern energy and transport solutions can help cities transform from being a source of problems to drivers of change and development, both locally and globally.

The issues of energy and air pollution are the focus of the 14th Session of the Commission for Sustainable Development, to be held at the UN Headquarters in New York in June 2006. UNEP and UN-HABITAT will organise several events, including one by the Partnership for Clean Fuels and Vehicles, which UNEP is spearheading and which addresses better urban quality through cleaner fuels and vehicles. UNEP and UN-HABITAT are currently finalising an interactive CD-ROM on urban air quality management for cities in developing countries and have just released a brochure on the role of cities in climate change. At the World Urban Forum in Vancouver, 19-23 June 2006, UN-HABITAT and UNEP are jointly organising a session on energy and cities.

More information:

UNEP, Urban Environment Unit
urban.environment@unep.org,

Please note the new website:

www.unep.org/dpdl/urban_environment

Saving Kilimanjaro with new stoves

The project *Promoting the use of energy-saving stoves in public institutions* was established by the Green Garden Women's group in 2003 and is being implemented by the Moshi City Council. The area surrounding Mount Kilimanjaro is a major source of firewood for the inhabitants of Moshi. For example, one primary school alone was using an equivalent of 1 lorry (7t) of firewood per week. Energy was wasted because of inefficient stoves and staff suffered from respiratory and eye diseases from indoor air pollution. The Green Garden Women group helped public institutions such as this school by building a new energy-saving stove made of bricks and by training the cooks to use it properly. Nowadays, the lorry has to bring its load of firewood only once a month.

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More information: Sustainable Moshi Project, smpmoshi@moshimc.org



Arequipa, Peru:

- More taxis than in Manhattan

The first lasting impression of the beautiful Plaza de Armas in the historic town of Arequipa is the huge number of cars obstructing the visitor's view of the historic buildings. On an average, 50 cars drive across the old square per minute. Over the last 13 years, the number of cars has been growing, with a rise of 268% since 1992. Most of them are used as taxis, which has prompted some people to say that Arequipa now has more cabs than Manhattan.

As a result, air pollution has become one of the major environmental problems in Arequipa. Vehicular emissions release 61 thousand tons of atmospheric contaminants per year, with serious effects on the health of city residents. These include asthma, chronic pulmonary disease, cardiovascular disease, and lung cancer. Lead emissions are extremely harmful to children under age of six, interfering with the developing brain and other organs and systems.

For this reason, Arequipa has been working on strengthening municipal environmental management since 1999. A local Agenda 21 process was initiated and an environmental department within the municipal council established. Arequipa was the first city in the world to publish an environmental assessment report (GEO Cities) last year in collaboration with UNEP and UN-HABITAT. Arequipa will now focus on urban mobility issues, urban sprawl ("Campinas") as well as on further strengthening the urban environmental management capacities of the municipality by developing an Environmental Management Information System.



Taxis can be found anywhere in the historic town centre of Arequipa

More Information:
The GEO Cities Report Arequipa can be downloaded at www.pnuma.org/geociudades/

Tackling the waste problem

- generating energy

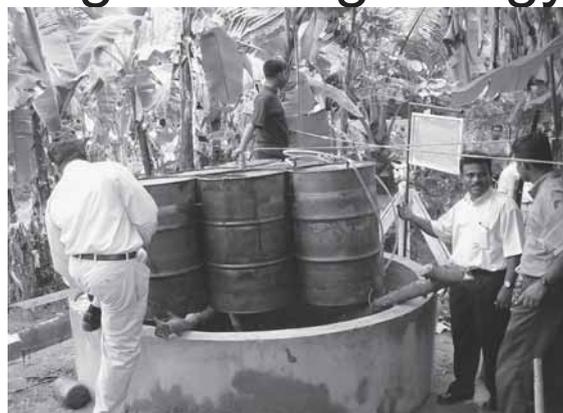
The rising cost of services such as water, electricity and cooking gas are a problem at the Sri Vajira Children's Home, an orphanage run by a Buddhist Priest in a temple premises in Pagoda Ward, Kotte, Sri Lanka. The home houses 300 children as well as about 45 staff. Energy costs to cook meals and prepare tea are very high, averaging 280 US\$ per month for gas and water.

The Sustainable Cities Project focused on reducing the volume of garbage generated by household and markets by 10-12 % by introducing domestic compost barrels and installing a bio gas

unit at the Children's Home. The unit is small in size, having a 4 cubic meter capacity, and can store 8 metric tons of market waste.

After an initial investment of 100,625 rupees (1048 US\$) in land and labour costs, the biogas project has an economic benefit of 30,000 rupees (approx. 312 US\$) savings a year by providing electricity for six months. This means a 30% saving in energy costs for the Sri Vajira Children's Home. Savings to the municipality are even greater averaging 66.000 rupees (688 US\$) yearly, which means that the initial investment has been repaid after 1,5 year operation.

This project is an ideal demonstration of how local councils can solve their own basic services problems in partnership with other organizations. It illustrates how market waste generated in the city can provide substantial energy at low rates to institutions. Using this experience, the Council has stepped into the most challenging stage of replicating the project at household level - by launching a campaign that tries to convince people to have small biogas tanks in their own homes. However, the introduction of these biogas digesters is not yet successful. This shows that there is no one-size-fits all solution even within a single community. Together with the Sustainable Cities Programme, Kotte is working on a new solution to produce renewable energy at low cost for its residents.



Once filled, the biogas unit produces 6 months worth of electricity for the Children's Home

More information:
For the latest mission report with specific background information on topics raised - See www.irc.nl/bus

Air Quality Monitoring in Africa



Rapid rates of urbanization, increasing number of vehicles, including a large number of old vehicles, and poor fuel quality, are all contributing to a deteriorating air quality in Africa's cities. Despite this trend, air quality issues take a backseat in African governments' policy agendas. The major reason for this is the absence of vital information on the scope and scale of the problem.

To fill this gap, UNEP and USAID, through the US Environmental Protection Agency, have been supporting an air quality monitoring project in Dar-es-Salaam, Tanzania and Accra, Ghana to establish baseline data on air quality.

The project aims at building local capacity to monitor air quality, determine key pollutants and sensitize

decision makers on the need to have a long-term air quality management strategy. The project established seven permanent monitoring stations located at residential, commercial and industrial areas, as well as four roadside monitoring stations, in each city. These sites have been used to collect data on sulphur dioxide, nitrogen dioxide, carbon monoxide, ground level ozone and particulate matter (PM10). Preliminary data collected so far indicates that particulate matter is a major pollutant in both cities. The project also has a component of indoor air quality monitoring where air pollution will be monitored in homesteads, in which gas, kerosene and biomass are used for cooking.

To ensure project sustainability at the end of donor support in December 2006, the project is implemented in Ghana and Tanzania by the Ghana Environment Protection Agency and Tanzania's National Environment Management Council respectively. Both organizations are mandated to implement air quality standards in their respective countries.

More information:

UNEP

Urban Environment Unit,
urban.environment@unep.org
www.unep.org

ICLEI engages Municipal Leaders in Fight Against Climate Change

ICLEI - Local Governments for Sustainability, an international association of local governments, is spearheading the Cities for Climate Protection™ (CCP) Campaign. More than 650 local governments from all regions of the world participate in this initiative to adopt policies and implement measures to reduce local greenhouse gas emissions, improve air quality, and enhance urban livability and sustainability.

The campaign is based on an innovative performance framework structured around five milestones that local governments commit to. The milestones enable local governments to understand how municipal decisions affect energy use and how these decisions can be used to reduce global climate change while improving quality of life. They provide a simple, standardized means of calculating greenhouse gas emissions, of establishing targets to lower emissions, reducing greenhouse gas emissions through a Local Action Plan, implementation policies and measures, and monitoring, measuring and reporting performance. ICLEI has developed several software tools that help cities comply with the methodology. The city implements the policies and measures contained in their Local Action Plan. Typical measures include energy efficiency improvements to municipal buildings and water treatment facilities, streetlight retrofits, public transit improvements, installation of renewable power applications, and methane recovery from waste management.

More information:

ICLEI
Local
Governments
for Sustainability

www.iclei.org

Air Quality

Partner

Cities, Biodiversity and Coastal Areas

Local Capacities for Global Agendas

Cities occupy just 2 per cent of the Earth's surface, but their inhabitants use 75 per cent of the planet's natural resources for goods and services. Their products and emissions affect not only their own population, but also regional and even global ecosystems.

For example, in Nairobi, Kenya, the demand for charcoal threatens the nearby Aberdares forest which plays an important role in the city's water catchment system and at the same time is home to endangered animal species such as the forest elephant. Similarly, by over-exploiting the seas as a source of food and as a location for waste disposal, coastal cities compromise the benefits offered by their location. Damage to mangroves, coral reefs and other coastal ecosystems can lead to erosion,

siltation and render coastlines more vulnerable to storms and natural disasters.

These examples are drawn from two new brochures on "Ecosystems and biodiversity: The Role of Cities" and "Coastal Area Pollution: The Role of Cities". They offer useful information on global initiatives and the support mechanisms available for cities to protect biodiversity and coastal areas.

More information: urban.environment@unep.org, Also available: *Climate Change. The Role of Cities brochures can be downloaded from www.unep.org/dpdl/urban_environment.*



SCP - Documentation Series

Sri Lanka: From the Sustainable Colombo Core Area Project to a SCP National Capacity Building Strategy

The Government of Sri Lanka launched the Sustainable Cities Programme (SCP) under the auspices of UN-HABITAT & UNDP in December 1999. The initial objective was to help three municipal councils located in the Greater Colombo Core Area to experiment with and develop institutional mechanisms and approaches to build participatory processes to environmental planning and management (EPM). Recognizing the fact that building human resources, institutional structures and inter-agency linkages to efficiently and effectively address EPM is a difficult and time consuming task, the Programme adopted a long term perspective to realize its objectives. Four distinct but inter-linked implementation phases were designed. Currently, the programme is in its third Phase and the EPM approach is used in 18 municipalities throughout Sri Lanka.

This publication captures their experiences with the process, the demonstration projects implemented and reflects on the capacity-building needs for the future. The participatory documentation exercise was conducted by the local and national partners in collaboration with SCP and IHS.

More information: *The Sustainable Cities Sri Lanka Programme 1999-2004 at scp@unhabitat.org, www.unhabitat.org/publications*

Upcoming events:

The 9th Special Session of the **UNEP Governing Council/Global Ministerial Environment Forum**
Focus in energy and tourism
7-9 February 2006
in Dubai, U.A.E.
more at: www.unep.org

14th Session of the **Commission on Sustainable Development**
Focus on energy, industrial development, air pollution/atmosphere, and climate change
1-12 May 2006
in New York



World Urban Forum III
Our Future: Sustainable Cities - Turning Ideas into Action.
Focus on rapid urbanisation and its impact on communities, cities, economies and policies.
19-23 June 2006
in Vancouver, Canada

Fourth Municipal Leaders Summit

on Climate Change

In December 2005, over 300 local government leaders gathered at the 4th Municipal Leaders Summit on Climate Change, organized by ICLEI in cooperation with UNEP and other partners, in Montreal. The municipal leaders produced the "World Mayors and Municipal Leaders Declaration", a document that laid out the commitment of local governments to addressing climate change at the local level. They committed to implement policies in order to achieve emission reduction targets of 30% by 2020 and to establish a system of accountability on these actions by reporting to the Conference of the Parties of the United Nations Framework Convention on Climate Change (UNFCCC) and Meeting of the Parties of the Kyoto Protocol annually. Mayors also decided to minimize the dependence on fossil fuel energy by shifting to sustainable land use that encourages public transport, diminishes the reliance on vehicular transport and single occupancy vehicles, and improves energy efficiency.

Produced by: *Urban Environment Section, UN-HABITAT, PO Box 30030, Nairobi 00100, Kenya, in collaboration with UNEP, DPDL
Tel.: +254-20-7623225; Fax: -3715. Email: scp@unhabitat.org; Website: www.unhabitat.org/scp*

Photos by: *Thomas Harrison-Prentice, Sustainable Moshi Project, Karin Bühren*