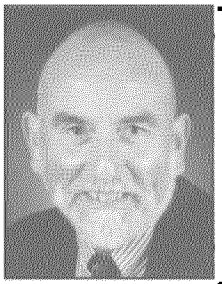
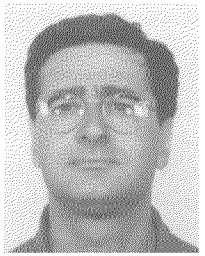
Environmental change and migration



John Hay** and **Martin Beniston
discuss the implications of environmental change for the peoples of small island states.



"NEW ZEALAND is likely to take in some of the inhabitants of a tiny Pacific island nation whose homes are being swallowed by rising sea levels, unlike Australia which has shut them out. The Tuvaluan government last year appealed to the Australian and New Zealand authorities to provide permanent homes for at least 3000 people, and possibly its whole population, within the next few years."

This recent news item in the New Zealand Herald on the 27th July 2001 highlights the multidimensional nature of the links between environmental changes and human migration. The causal factors are typically numerous, interactive and operating over a wide range of temporal and spatial scales. The human responses are usually equally complex, involving as they do the aggregation of individual and collective decisions of the migrants and of decision makers in the regions and countries they transit and to which they eventually relocate.

Increased knowledge of these complex causes and responses is, however, required, for increased understanding is a precursor to actions that mitigate and perhaps even prevent the increasing disruption of socio-economic activities in sensitive regions of the globe which we can expect to see in coming decades.

Environmental change in general, and climatic change in particular, are likely to impact significantly upon resources such as water, soils and vegetation, transforming present-day landscapes and their ecological characteristics. Agriculture is at particular risk, especially in areas where prolonged droughts, sea level rise, enhanced natural hazards, or extreme natural events such as floods or mudslides threaten marginal existence.

Conversely, large-scale movements of people, goods or capital may also disrupt local environments and further contribute to social problems.

One of the direct or indirect effects of global environmental change that is receiving increasing recognition is forced migration. One example is sea-level rise, whereby populations will be forced to move out of low-lying coastal zones or even entire islands, as has been noted above. Migrations can also be triggered when essential resources such as water or food fall below critical thresholds in a given region. In addition, environmental causes can be

combined with social causes, such as large-scale warfare, civil war, political conflicts, and disputes over resources, to produce refugee flows. Social disruption can in itself be at the root of environmental degradation which eventually leads to massive out-migration.

Various studies in recent years suggest that, if environmental change is to be of the projected magnitude and rapidity, there could be as many as 150 million "environmental refugees" by the end of the 21st century. However, even the term "environmental refugee" is struggling for recognition, both legally and institutionally. In view of the current barriers to migration in most parts of the world, the social, economic and political consequences of migration at these projected scales is far from trivial. Most governments are today ill-equipped in legislative terms to deal with this type of situation.

The political and economic tensions that will be raised by an increasing number of refugees could lead to conflict. Given the interdisciplinary nature of the problem, resulting from the complex and often obscure interactions between environmental and economic issues, it becomes difficult to identify and distinguish between the different drivers of migration.

Driving factors include the political, the environmental (for example, depletion of resources through environmental changes, sea-level rise, desertification, and deforestation) and the socio-economic (for example, land-use changes, agriculture, mineral and resource exploitation, and ethnic issues). All are often intimately linked with conflict.

Policy considerations span both the drivers, the consequential migrations and their social, economic, cultural and environmental implications.

Amongst the complex issues that can lead to migration of populations, it is useful to distinguish between voluntary migration and forced migration. Voluntary migration can occur for a number of reasons, particularly economic, political or ideological. Forced migration also has a number of root causes, with these often being found in political and economic domains (for example, slavery, war and ethnic strife).

In this context, environmental factors leading to migration can be considered to be an indirect consequence of decisions taken in the political and/or economic arenas.

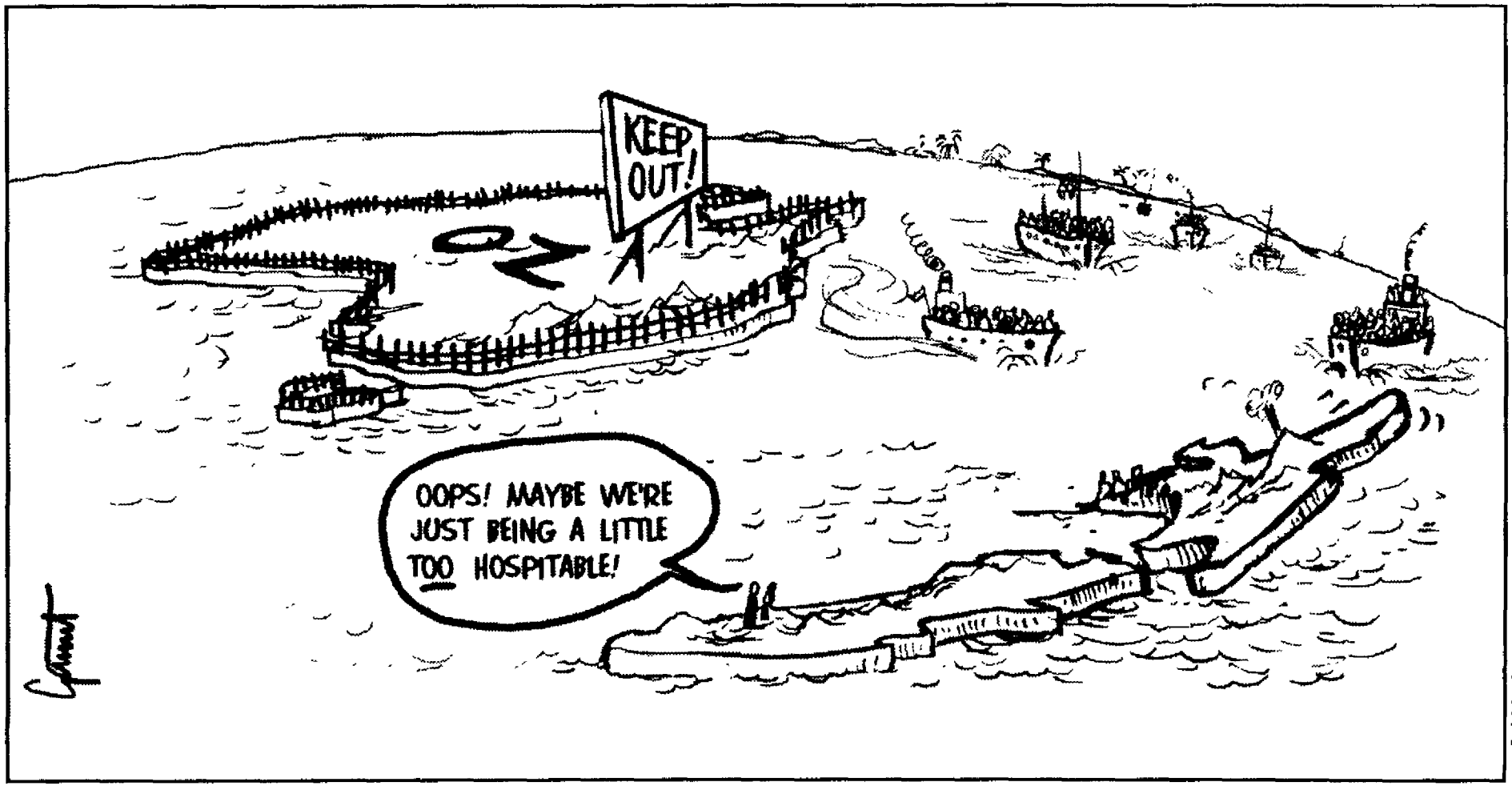
While sea-level rise is an obvious environmental driver which may significantly impact many low-lying coastal regions and island states around the world, it is necessary to bear in mind that sea-level rise is a consequence of a warming world, which is in part the consequence of economic and industrial policies that lead to growing greenhouse-gas emissions. Environmental issues are, therefore, often an expression of underlying economic and political factors.

Along similar lines of thought, population migrations may be triggered by conflicts resulting from resource depletion. In this sense,

This article is based on the presentations and discussions at the Wengen-2001 Workshop "Environmental Change: Implications for Population Migrations" held in Wengen, Switzerland, between the 19th and 21st September 2001.

Over 35 researchers, officials and individuals from the private sector, representing 16 countries from many different parts of the world, attended the workshop, the seventh since the Wengen Workshops on Global Change were initiated in 1995.

The authors acknowledge the important contributions of all workshop participants.



migration does not occur because of the direct consequence of environmental change but rather as a result of a complex series of interlinked, compounding ("snowballing") factors in which single, clear-cut cause-and-effect relationships may not be identifiable. Causes of migration are thus seen to be embedded deep within a confluence of processes and patterns.

Migration takes many forms, the majority occurring as internal migrations, that is, displacements of populations within national boundaries. For example, the migrations associated with desertification in China and sub-Saharan Africa, deforestation in the Amazon Basin and ethnic rivalry in Bangladesh have involved large numbers of people who left inhospitable regions to seek better conditions within their own countries.

International migrations may also occur as a result of adverse environmental and related conditions. A common perception is that most of these occur from the South to the North, that is, from the developing countries towards the industrialized countries, largely as a result of the perceived economic attractiveness and overall better "quality of life" of the industrialized world. A large proportion of migration, however, takes place within and between the countries of the South. An example is the migration of labourers into a region in which mining or forestry is introduced or intensified, as has occurred recently in both Indonesia and Brazil. In such cases, indigenous populations are often forced out of their homelands as a result of commercial activities that transform the traditional resource base.

The resulting redistribution of population can in no way be considered to represent a stable situation because the out-migration of local inhabitants in the face of new immigration represents a loss of traditional cultures and a profound change in the physical environment. This is a good example of the "push" and "pull" features of environment and resource use that can trigger population migrations, the pull factors representing attraction of migrants into an area, and the push factors generating out-migration. Push and pull factors can be triggered both directly and indirectly by environmental and economic change.

Whatever the direct causes of migration, other factors such as property structures also shape migration patterns. For example, whether indigenous rights are recognized and respected influences the potential of new outside economic interests (for example, mining and forestry) to move in and modify the environment, making it more or less favourable for populations to stay. Pricing structures, whether a reflection of policy or market forces, also influence land use and, therefore, its preservation, efficient use, or its degradation.

Population movements themselves have environmental effects. Thus, there will be a number of economic, political and environmental impacts resulting from the displacement of persons forced from their homelands. Issues such as the sharing of resources between increasing numbers of persons in a region of immigration, land tenure, ethnic rivalry and regional conflicts are likely to emerge as issues needing urgent study and attention.

While a number of adaptive measures can be taken to reduce the adverse effects of environmental change, and the potential for out-migration that environmental change may induce, there is a need to address some of the root issues in an internationally coordinated manner.

In particular, immigration policies in the industrialized world need to be reviewed in order to allow some form of open, well-regulated migration, as opposed to policies aimed at keeping migrants out of the prospective host countries. This will require a change of attitude within segments of the population of the host countries, especially in terms of the acceptance of immigrants and their integration within their host society.

In the developing world also, policies will need to be altered, in particular, in order to

remove or at least reduce the push factors of migration. This will require a review of current resource management practices, which are often very poorly developed and implemented, thereby allowing excessive environmental degradation.

There is also a crucial necessity to improve land policies, valuation and property rights in order to reduce the wish or the tendency for out-migration. The problem is that of balancing peoples' needs and wants with the available resources. Solutions will, therefore, need to involve not only flexible policies about population movement but also about movements of goods and capital so as to achieve efficient and equitable redistributions of well-being.

Clearly, the topic of environment and human migration is still in an embryonic state, meaning there is an urgent need for fundamental studies related to the scientific and policy dimensions of the issue.

A framework for possible future research would, of necessity, acknowledge the following:

- the multidimensional nature of migration, especially that associated with degrading environmental conditions;
- the current lack of agreement in definitions of terms and in the use of classification procedures;
- the important role of case studies in aiding our understanding of environment-migration relationships;
- the emerging information technologies and the improved analytical methodologies that are rapidly increasing our ability to characterize the environmental variables that serve as indicators of pressures which drive migration, for example, through remote-sensing techniques, monitoring and the modelling of environmental change and its impacts;
- the need for research-based studies to provide relevant, timely and useful advice to policy- and decision-makers, which will allow them to respond in a more proactive manner to environment-related immigration issues;
- the important and not always mutually supportive roles of international, national and local governmental agencies; and,
- the need for those involved in environment-migration studies, policy development, decision making and assistance programmes to identify research priorities that will address current gaps in our understanding, reduce uncertainties and increase the usefulness of technical and policy-oriented studies related to environment and migration.

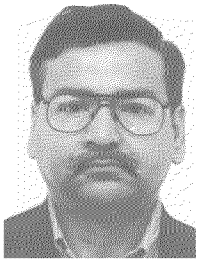
The topic of migration and environmental change is of growing importance but is still in the initial stages of analysis.

The current literature on migration and environment is far from having a well-developed theoretical or conceptual framework for addressing these issues, though one is beginning to emerge, partly as a consequence of the modelling studies that have been initiated in recent years.

Given that there could be as many as 150 million environmental refugees by the end of this century, the need to undertake basic research is taking on a new urgency.

✍ **Professor John Hay is Director of Professional Training at the International Global Change Institute of the University of Waikato, Hamilton, New Zealand. Professor Martin Beniston is Director of the Department of Geosciences at the University of Fribourg, Switzerland.**

After Marrakech



***Saleemul Huq** reports on the outcome of COP-7 and outlines the principal issues still to be addressed.*

THE SEVENTH Conference of the Parties (COP-7) of the United Nations Framework Convention on Climate Change (UNFCCC) was held in Marrakech, Morocco, in November 2001. The meeting brought to a successful conclusion four years of intensive negotiations, primarily amongst the developed countries, on how to implement the Kyoto Protocol and the next phase of greenhouse gas emissions reductions.

At the Marrakech conference, all the developed countries – with the significant exception of the United States of America which had withdrawn from the Kyoto negotiations – agreed to ratify the Kyoto Protocol immediately. This should mean that, by the time of the World Summit on Sustainable Development to be held in Johannesburg, South Africa, in September 2002, the Protocol can come into force. This requires ratification by 55 countries accounting for 55 per cent of global emissions.

With the major political decisions already made during the second half of the Sixth Conference of the Parties held in Bonn, Germany, in July 2001 (*Tiempo*, Issue 40/41, September 2001), there only remained a number of details to be worked out at COP-7 in Marrakech. The Marrakech meeting was, therefore, a relatively low-key one as COP meetings go.

Amongst the outstanding issues was the assignment of the exact amounts of sinks which would be allowed to be counted by some of the Annex 1 countries. The Russian Federation, in particular, held out for an increase of the allowable limit for sinks in its country target. This proposal was supported by Japan, eager to use the Russian sinks to fulfil its own target. Since the Kyoto Protocol would be unable to come into force without Russia and Japan, the other countries had to give in to last-minute hard bargaining by these nations. Russia's sink allowance rose from 17 to 33 megatons of carbon.

Japan, Russia, Australia, Canada and their allies in the Umbrella Group, in fact, insisted on a high price for their continued involvement, with the European Union and the G77/China group forced to compromise on a number of issues, particularly those related to eligibility requirements for use of the flexibility mechanisms.

On a more positive note, there was a solid resolution of outstanding technical points surrounding the development of the compliance regime, resulting in what has been described as "the most innovative and elaborate non-compliance procedure for any existing multilateral environment agreement."

The position of the United States in Marrakech seemed to be somewhat laid-back. Having already stated that they would not participate in discussions around the Kyoto Protocol they, therefore, did not interfere in those deliberations but did actively take part in other discussions under the Convention. There is some speculation that the United States may put in place some national (or hemispheric) activities on emissions reductions in parallel with Kyoto with a view to joining at some later date.

Another important issue which was discussed and then agreed on was the setting up of the system of international trading of greenhouse gas reductions, especially between the developing and developed countries through the Clean Development Mechanism (CDM). The meeting agreed on the modalities of such trading and composition of the Clean Development Mechanism Board as well as fast-

tracking some smaller-scale CDM projects to kick-start the market.

Thus, by the end of the Marrakech meeting, the Parties to the climate treaty were able to come to an agreement on all major outstanding issues and it is likely that the Kyoto Protocol will now become a reality within the next year.

Cameroon, speaking on behalf of the Africa Group, argued that the Marrakech Declaration and Accords should result in the speedy implementation of the Kyoto Protocol and voiced high hopes regarding access to additional funding for the Least Developed Countries (LDCs) and the benefits resulting from CDM projects.

"After several years of tough negotiation, the institutions and detailed procedures of the Kyoto Protocol are now in place. The next step is to test their effectiveness in overseeing the five-percent cut in greenhouse gas emissions by developed countries over the next decade," said Michael Zammit Cutajar, the Convention's Executive Secretary. "The Marrakech results send a clear signal to business, local governments and the general public that climate-friendly products, services, and activities will be rewarded by consumers and national policies alike," he continued.

The successful conclusion of the negotiations on the Kyoto Protocol, although undoubtedly one of the major achievements of the international process since the Rio Summit in 1992, nevertheless falls short on a number of counts to adequately solve the climate problem.

First, the total reductions which have been agreed – approximately five per cent reductions from 1990 levels for the developed countries as a whole to be met by about 2010 – fall far short of what is needed to prevent the worst predictions of climate change. Most scientific estimates suggest that carbon reductions of the order of 60 to 80 per cent are needed to prevent the climate system from changing significantly.

Second, the absence of the United States from the Kyoto Protocol process weakens it considerably, as the United States is by far the world's single biggest greenhouse gas emitter, accounting for approximately 24 per cent of global emissions. The decision of the Bush Administration to remain outside the Protocol will be a major stumbling block to its ultimate effectiveness.

Finally, the role of the developing countries will need to be tackled, as they will also have to reduce the growth in their emissions of greenhouse gases in the future if the problem of climate change is to be minimized. This means that suitable arrangements to enable the developing countries to achieve economic growth with less emissions of greenhouse gases must be incorporated into the next round of the negotiations.

There is another issue that warrants attention. The Kyoto Protocol and the Framework Convention are not exactly the same thing. With the emphasis placed on the Protocol and the limited range of issues that that subsidiary agreement covers, an important matter has been neglected. The Protocol focuses on the reduction of emissions of greenhouse gases but, as noted above, this cannot solve the climate problem completely. Hence, countries will also have to deal with or adapt to a changing climate even if the Protocol is fully implemented.

The Climate Convention takes cognizance of the need for countries to take action to adapt, and it also recognizes the particular vulnerability of a number of developing countries, including the LDCs and the Small Island Developing States.

To this end, the Marrakech meeting has agreed the setting up of two funds under the Climate Convention to deal with problems of

adaptation and technology transfer, through the Climate Change Fund, and of the Least Developed Countries, through the Least Developed Countries Fund. Both funds are to be administered through the Global Environment Facility and will be based on voluntary contributions from the developed countries. Already, a number of developed countries, including Canada, the European Union and the Netherlands, have pledged to contribute in the order of US$ 410 million a year to these funds.

Following the Marrakech meeting, future negotiations will revolve around the ratification and implementation of the Kyoto Protocol. The negotiations will also increasingly pay attention to other issues covered by the climate treaty such as adaptation to climate change, technology transfer, and capacity building. In addition, the thorny issue of developing country targets for emission reductions will have to be tackled and negotiated. This will require a greater emphasis on issues of equity and fairness including recognition of *per capita* rights to the atmosphere.

As well as finding ways to reduce emissions in the developed countries, it will be necessary to ensure transfer of clean technologies to the developing world so that they can develop on a non-greenhouse gas emitting pathway. The relationship between climate change and sustainable development will have to be closely examined. This will come more into focus as the World Summit on Sustainable Development in September 2002 approaches.

The Eighth Conference of the Parties to the United Nations Framework Convention on Climate Change will be held from 23rd October to 1st November 2002, venue to be announced.

✍ **Saleemul Huq is Director of the Climate Change Programme at the International Institute for Environment and Development in London, United Kingdom.**

CONTACT ADDRESSES

Martin Beniston, Department of Geosciences, University of Fribourg, Perolles, CH-1700 Fribourg, Switzerland. Fax: +41-26-3009746. Email: martin.beniston@unifr.ch.

John Connell, School of Geosciences, Division of Geography, University of Sydney, NSW 2006, Australia. Fax: +61-2-93510184. Email: connelljohn@hotmail.com.

John Hay, International Global Change Institute, University of Waikato, Private Bag 3105, Hamilton, New Zealand. Fax: +64-7-8585689. Email: j.hay@waikato.ac.nz. Web: www.waikato.ac.nz/igci/

Saleemul Huq, International Institute for Environment and Development, 3 Endsleigh Street, London WC1H 0DD, UK. Fax: +44-20-73882826. Email: saleemul.huq@iied.org. Web: www.iied.org.

IPCC Secretariat, c/o World Meteorological Organization, PO Box 2300, CH-1211 Geneva 2, Switzerland. Web: www.ipcc.ch.

Jeanne Kasperson, Stockholm Environment Institute, Box 2142, S-103 14 Stockholm, Sweden. Fax: +46-8-7230348. Email: jeanne.kasperson@sei.se. Web: www.sei.se.

Roger Kasperson, Stockholm Environment Institute, Box 2142, S-103 14 Stockholm. Sweden. Fax: +46-8-7230348. Email: roger.kasperson@sei.se. Web: www.sei.se.

Gerald Leach, 3 Tanza Road, London NW3 2UA, UK. Fax: +44-20-74316147. Email: g.leach @btinternet.com.

Lawrence Moore, 356 Fulham Palace Road, London SW6 6JH, UK. Fax: +44-20-77368058. Email: lawrence@gaunt.demon.co.uk. Web: www.earthrod.co.uk.

UN Framework Convention on Climate Change Secretariat, PO Box 260 124, D-53153 Bonn, Germany. Fax: +49-228-8151999. Email: secretariat@unfccc.int. Web: www.unfccc.int.

A weather eye on.....

Stabilization of greenhouse gas emissions is not the only obligation the North has failed to meet. Research by the Jubilee Debt Campaign shows that the leading industrialized nations have yet to come close to matching their latest debt relief commitment.

In 1999, the Group of Seven major industrialized nations pledged to cancel US$ 100 billion of debt owed by 52 of the world's poorest countries. So far, only US$ 18 billion of debt has been cancelled. Only four countries, Uganda, Tanzania, Mozambique and Bolivia, have benefited.

The Jubilee Debt Campaign, based in the United Kingdom, calls this state of affairs "the cruel joke that is debt relief."

While some countries have moved to lift the burden of debt by cancelling bilateral loans, around 40 per cent of the poorer countries' debt results from loans from agencies such as the International Monetary Fund (IMF).

In the latest rebadging of the IMF's controversial condition of structural adjustment, nations must now accept the "poverty reduction growth facility" to qualify for debt reduction.

Each government seeking debt relief must prepare a strategy paper to address poverty relief in consultation with civic society to ensure it reflects the real needs of the poor. If the IMF/World Bank agree with the strategy, then debt service is suspended. If, after a review period, the plan is seen to be implemented, then the debt will be finally cancelled.

The Jubilee Debt Campaign argues that there are two problems with this approach. First, the debt is not, in fact, cancelled but is reduced to a so-called sustainable level. Second, the government's strategy will be looked on more favourably if it contains the main elements of the IMF structural adjustment platform: liberalization, privatization and payment for services such as health and education.

For the marginalized, the burden of debt and the pressure of structural adjustment cannot fail to increase vulnerability to climate hazards and the emerging threat of global warming.

Yet the climate impacts report of the Third Assessment of the Intergovernmental Panel on Climate Change fails to give more than a passing mention to these overarching factors when considering differential levels of vulnerability. Population growth, resource depletion and poverty are all cited, but debt is, perhaps, too political an issue.

Further information: *Jubilee Debt Campaign, PO Box 36620, London SE1 OWJ, United Kingdom. Fax: +44-20-79221122. Email: ashok@jubileedebtcampaign.org.uk. Web: www.jubileedebtcampaign.org.uk.*

Tiempo

ISSN 0962 - 7030. **Published** by the University of East Anglia (UEA, Norwich, United Kingdom), the Stockholm Environment Institute (SEI, Stockholm, Sweden, and SEI-York, York, United Kingdom) and the International Institute for Environment and Development (IIED, London, United Kingdom) with financial support from the Swedish International Development Cooperation Agency. **Editorial team:** Sarah Granich, Mick Kelly and Richard Sandbrook. **Editorial office:** ***TIEMPO,*** Attn: Mick Kelly, School of Environmental Sciences, University of East Anglia, Norwich NR4 7TJ, UK; tel: 44-1603-592722; fax: 44-1603-507784; email: m.kelly@uea.ac.uk; web: http://www.cru.uea.ac.uk/tiempo/. **Design and production manager:** Ian Brooke. **Printed** by Gallpen Colourprint, Norwich. **Distributed** free on request.