THE CORNER HOUSE

Climate and Equity after Kyoto

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Most scientists agree that human-made emissions of greenhouse gases, such as carbon dioxide, methane and nitrous oxide, have to be reduced signifiantly. The North is the main emitter of these gases and should make the most cuts. Many Southern countries argue that emission targets should be set on a per capita basis within a framework of “contraction and convergence”: per capita emissions should converge globally to an agreed ceiling, allowing emissions of developing countries to increase and those of developed countries to contract. Accepting this framework may enable an equitable long-term agreement to be negotiated: one that meets developing countries’ demands for fairness; accepts the need for eventual limits on developing countries’ emissions; and meets the prerequisite for an effective, long-term international agreement to avoid dangerous climatic change.

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August 1413. For days on end, a raging storm blows in from across the North Sea. Its driving winds cause the dunes below the Scottish town of Forvie, on the coast of what is now Aberdeenshire, to be whipped up into a petulant sand storm that sweeps inland. Within a month, the town has been buried below thirty metres of sand. Across the North Sea, in Sweden, a sudden dip in temperature causes the harvest to fail for yet another year running, reducing much of the population to such misery that they resort to baking bread from the bark of trees.[1]

Climate change is not new. As the warm medieval period gave way to the colder modern era, ferocious storms drowned scores of towns and villages in the lowlands flanking the North Sea. In many instances, the settlements disappeared literally overnight. In just two floods, in the years 1240 and 1362, 60 parishes in the province of Schleswig were swallowed by the sea, with the loss of half the agricultural land. One-third of a million people drowned in one sea flood that struck the Dutch and German coasts.

You Ain't Seen Nothing Yet

Such events reveal the devastating suddenness of climatic change and its impacts on humans. However, the disruption and misery caused by past abrupt swings in climate are likely to pale into insignificance when compared to the potential upheavals that could be triggered by rising levels of human-made greenhouse gases (such as carbon dioxide, methane and nitrous oxide).

Few scientists now seriously doubt that the earth's climate is changing and that, if corrective measures are not taken soon, humanity will slide into a period of intensified climatic disequilibrium. "The balance of evidence suggests there is a discernible human influence on global climate", concludes the Intergovernmental Panel on Climate Change (IPCC), the UN body charged with assessing the causes and likely impacts of climate change, in a report peer-reviewed by 2,000 of the world's leading scientists.[2] Unless action is taken to reduce emissions of greenhouse gases, warns the IPCC, average surface temperatures will rise by between 1.5°C and 4.5°C by the end of the next century.

To put that rise in perspective: over the past two million years, temperatures on earth have never been more than 2°C warmer than at present. Within a century -- hardly any time at all in the history of the earth -- our descendants and those of other living creatures could face temperatures well outside their evolutionary experience. The implications for many species, including humans, are potentially catastrophic.

One of the central predictions of the climate scientists is that weather extremes -- such as storms, hurricanes, floods, droughts and severe winters -- will become more frequent, with significant implications for human livelihoods. The impacts will not be the same around the globe, however. Some regions (particularly drylands in the Third World) are predicted to dry out, causing severe land degradation; others, such as Britain, to become considerably colder because of changes in the Gulf Stream.[3]

Other predicted impacts include:

- *Rising sea levels and the flooding of low lying islands and many coastal areas*. As the oceans warm, their waters will expand, causing the sea level to rise. Melting ice sheets will add to the problem. By the end of the next century, a rise in average sea levels of 50 centimetres may be expected, with more significant local effects. Further sea level rises are likely to follow as the warmer water reaches the deeper ocean. "Even if there were to be no further changes in climate, sea level rise will continue for hundreds of years," warns Sir Robert May, Chief Scientific Adviser to the British government, in a report prepared for Prime Minister Tony Blair in September 1997. Low lying coastal areas of Britain could be drowned, along with islands such as The Maldives, seven per cent of Bangladesh and many other coastal areas. In Malaysia, the coast is expected to advance some 2.5 kilometres inland.[4] Should the East Antarctic Ice sheet melt, as some scientists now forecast, the seas could rise by as much as 30 metres, threatening such cities as London, New York and Bombay.
- *Increased drought and flooding as hydrological cycles are disrupted*. Desertification is expected to spread and intensify in many parts of Africa, whilst South-East Asia is already experiencing less predictable monsoons which have decreased in some areas, yet caused large-scale flooding in others, such as Nepal, Burma, India and Burma.
- *An increase in insect-borne diseases*, such as malaria, dengue fever and yellow fever, as warmer weather permits insect species to extend their range. Agricultural pests will also increase. The IPCC warns that locust swarms may become common in southern Europe. Animal diseases such as African swine fever are also likely to "jump" countries in a warmer world, and may begin breaking out where they are currently unknown.
- *Severe land and water pollution* as toxic chemicals now bound up in the soil or held in coastal landfills are re-released due to flooding.
- *Increased conflict as people are forced to move because their lands have become uninhabitable*. Up to one million people may have to evacuate flooded islands in the Pacific, South-East Asia and the Indian Ocean, and a further 50 million are at risk. Seven million could be affected by coastal flooding in Vietnam and 3.3 million in Indonesia. According to the Chinese government, some 30 million people may be displaced in China due to climate change. For India, the figure is put at 30 million and for Bangladesh, 15 million.[5]
- *Major disruptions to food supplies, exacerbating hunger and malnutrition.* IPCC scientists predict that grain yields could decline by 10-15 per cent in Africa, Latin America and Asia within the next 50 years, due to climate-induced soil degradation, increased pests, drought and floods -- a prediction which, if accurate, could place one in eight of the world's people at risk of famine. In the US and Europe, the yields of many major crops are also predicted to fall.[6]

- *The collapse of many ecosystems* (forests and coral reefs, for example) which are unable to respond fast enough to "move with temperature change" -- leading to sharp increases in the rate of species loss.[7]
- *Major infrastructure and other financial costs due to storms, flooding, drought-related wildfires and other climatic disruptions*. Property losses due to storms and climatic factors have already been considerable in recent years. In 1995, extreme weather caused $100 billion worth of damage worldwide, with insurance companies paying out $9 billion. As damages mount, warns Dr Jeremy Leggett, chief executive of Solar Century and a former science director at Greenpeace, the $1.4 trillion insurance industry could be in danger of collapse, "with knock-on economic consequences which are completely ignored in most analyses of climate change."[8]

Some of the costs likely to be caused by climate change are incalculable. As Robert May notes:

"A major recent study has attempted to assess the economic value of the 'ecosystem services' delivered by natural ecological processes: soil formation, water supplies, nutrient cycling, waste processing, pollination and much else. The assessment, necessarily very rough, is around £10-34 trillion per year, with a best guess of around £21 trillion, most of it outside the market. This is roughly twice the conventional global GNP, at around £11 trillion per year. Large swathes of this £10-34 trillion are at risk from the possible environmental and ecological changes sketched by the IPCC."[9]

... And It Looks Set To Get Worse

Such predictions do not take full account of potential "positive feedback" mechanisms that could unleash an avalanche of effects which will reinforce global warming, sending surface temperatures soaring even higher than predicted. As the earth warms, for example, vegetation and forests will be become increasingly desiccated, with the result that their ability to absorb CO2 is diminished: CO2 levels will thus rise still further, causing yet more warming and undermining even more the ability of vegetation to regulate climate. If the average surface temperature reaches around 18°C -- which the IPCC predicts will happen by the end of the next century -- plants could lose their ability to regulate climate altogether.

Once such feedback mechanisms come into play, rates of surface temperature rise could increase. Recent analysis of ice core samples from Vostok, Russia, for example, has led scientists at the Rome-based Global Dynamics Institute to suggest that there could be runaway feedbacks

triggered by the levels of CO2 in the atmosphere predicted for mid-way through the next century. For example, the release of massive quantities of CO2 and methane as a result of the melting of the permafrost could cause temperatures to rise by 12-20°C, three to five times the maximum rise predicted by the IPCC, based on its assessment of feedback effects.[10]

Other researchers warn that changes in ocean currents resulting from runaway warming could result in the Gulf Stream shifting course or ceasing to flow. Were this to happen, Britain, which relies on the warming influence of the Gulf Stream for its climate, could find itself oscillating between bitter chills and heat waves -- a prospect described as "awesome" by Robert May. Agriculture, in particular, would be particularly badly affected, since farmers would have few reliable guides as to when to reap and when to sow -- or, indeed, what crops would be most suitable for the next growing season.

Already Underway

Put simply, humanity -- or, more accurately, that part of humanity responsible for increasing atmospheric levels of greenhouse gases -- stands accused of "conducting a gigantic scientific experiment with the planet, and the consequences could be disastrous."[11]

Although it is impossible at present to predict accurately how global warming will affect a given locality, the signs are that climate change is already under way. As Robert May notes:

"In the UK, climate change may already be having an appreciable effect. Of the five warmest years in Central England's 337-year-old temperature records, three have occurred in the past 10 years. 1990 as well as 1987 (the year of the 'hurricane') was a particularly bad year for storms in Europe."[12]

Other areas, too, have experienced unpredictable and extreme climatic conditions. California, Peru, southern Africa, the north-west United States, Queensland and northern China have all been hit by the worst droughts in a century. In Greece, water shortages in some coastal areas have been so severe that supertankers have been called in to transport water to local towns and villages. In Indonesia, drier than usual weather (linked to an unprecedented "El Niño" event, itself linked to global warming)[13] have combined with social, political and economic factors to create wildfires throughout the province of Kalimantan on Borneo: throughout last summer, the entire region was smothered in dense haze and smoke. Drought-related wildfires have also engulfed large areas of Mongolia, Siberia, Zimbabwe and Australia. Meanwhile, the worst floods and storms in a century have caused havoc in parts of eastern Australia, Bangladesh, the east coast of the US and north-west Europe.[14]

No Framework, No Deal

In 1992, alarmed by the prospects of climate change, most of the world's countries signed up to a UN Framework Convention on Climate Change, which commits countries to stabilising greenhouse gas concentrations at a "safe" level "on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities."[15] At the 1992 Earth Summit, held in Rio de Janeiro, most of the countries agreed to return their emissions of "greenhouse gases" to 1990 levels by the year 2000. Few are doing so. Indeed, emissions in the US have risen.[16]

A central problem lies in the failure of countries to reach an international consensus on the principles that should govern the apportioning of cuts in greenhouse gas emissions, if such emissions are to be reduced to acceptable levels. Since 1990, many observers have warned that, unless this consensus is secured *prior* to negotiations over the size of the commitments that individual countries should make, the outcome will be politically divisive, piecemeal, unsustainable and ultimately ineffective.

Unable (or unwilling) to find common ground for agreeing the principles that should govern the global sharing of emissions reductions, the major players -- the US, the EU, China and the G77 Group of Developing Countries -- have pushed forward with their own national, or regional, agendas. The cuts cart has been placed before the framework horse, with the result that political clout and national self-interest, rather than the politics of collaboration, has determined what action (or lack of it) is taken. If ever there was a time when principles needed to inform practice, this is it.

The chances of effective international action thus depend critically on the willingness of governments to settle their differences and agree a collaborative framework for addressing climate change.

Equity and everybody's rights to equal ecological space, however, are surely the starting points. No individual should be denied the possibility of surviving climatic change because of their poverty, race, class, gender, religion or geographical location. Likewise, any "solution" that denies people in the South the resources and technologies that they may seek to build (or rebuild) sustainable livelihoods in a rapidly warming world, whilst permitting the use of those resources and technologies in the North, would be profoundly hypocritical.

If equity is to form the basis for allocating future emissions of greenhouse gases, then Northern countries should shoulder the prime responsibility for making cuts in greenhouse gas emissions. The developing countries are not the ones which have created the problem of global warming -- and expecting them to forgo development options in order to correct a

problem caused mainly by others is patently unfair. Right now, the world's richest countries, with 20 per cent of the world's population, emit 60 per cent of the world's global warming gases. Clearly, it is they -- rather than Indian or Chinese peasants who, per capita, emit a fraction of the greenhouse gases emitted by citizens in developed countries -- who should take the lion's share of responsibility for combating global warming.

Equity also presupposes, however, that everyone takes responsibility for keeping their future emissions within ecological limits. As British political commentator Peter Jay notes:

"Obviously, the huge gap between rich and poor countries in terms of current per capita emissions cannot be closed overnight or even in a decade or two. But, unless there is some recognition that eventually no one group of human beings should expect to have an internationally recognised right to consume more of the world's limited capacity to absorb greenhouse gas emissions (and other global pollutants) than any other group, it is hard to see how a globally effective policy can be built by international consent."[17]

A willingness on the part of all countries to accept future limits on greenhouse emissions is therefore necessary. But on what basis should emission cuts, now and in the future, be allocated? Many Southern countries argue for emission targets to be set on a per capita basis, rather than merely a percentage increase or reduction over 1990 levels. The aim would be for per capita emissions globally to converge, allowing developing countries to increase their per capita emissions upwards, while those of developed countries would contract to meet them. This jointly-agreed pattern of carbon use would take place under an agreed carbon ceiling.

Contraction and Convergence

Accepting per capita emissions as the cornerstone of any future framework for controlling emissions may open the way for negotiating a long-term agreement that takes account of the differing circumstances and means of all countries; meets the developing countries' demands for fairness; accepts the need for eventual limits by developing countries; and meets the prerequisite for an effective long-term international agreement to avoid dangerous climatic change.

One proposal, originally put forward by the London-based Global Commons Institute (GCI) and subsequently taken up by the Africa Group of Nations,[18] suggests a three-fold process for building such a framework:

- *First, countries would set an internationally agreed global ceiling on CO2 concentrations in the atmosphere for the next century*. This ceiling would be negotiated internationally and the agreement would include a scientific review process every five years to allow the target to be revised up or down in the light of new knowledge.
- *Second, countries would agree a global "carbon emissions budget" for each year of the next century in order to reduce global CO2 concentrations progressively to within the agreed ceiling*. The rate at which the "emissions budget" declined year by year would be a matter for negotiation.
- *Third, countries would agree to allocate the annual CO2 budget among each other on a per capita basis and with a view to per capita emissions converging by an agreed date*. Sharing the right to use the world's atmosphere on an equal basis is the fairest and most durable way of dividing the CO2 budget. As with all the other "targets" in the proposal, the year for convergence would be a matter of negotiation.

In effect, the proposal would tie parties into a negotiated, but flexible, programme for reducing emissions which would also ensure that, within a fixed period, no one enjoyed the right to emit more than their fair share of greenhouse gases, as agreed by the international community.

The resulting process of "contraction and convergence" would thus see those in the North cutting emissions, whilst those in many countries of the South would be able to increase their emissions for a period determined by the agreed ceiling, the resulting global carbon budget and the agreed convergence date within it.

It is clearly easier and cheaper to avoid future emissions in developing countries where, for example, fossil fuel-fired power stations have not been built on any scale, than it is in fully industrialised countries where it will take a generation to reverse existing dependence on fossil fuels. However, the South's ability to leapfrog fossil-fuel dependency may depend on their access to clean, energy-saving technologies currently being developed in North as well as South. Given sufficient political pressure, Northern industrial interests may be persuaded to "gift" such technologies. In the short-term, however, initially rising allocations of emissions entitlements in developing countries could be traded with industrialised countries whose allocations are contracting from the outset.

Such "emissions trading", however, would need to be strictly regulated if it is not to be exploited by companies seeking to dump outdated, polluting technologies on the South or to use the threat of doing this via "relocation" as a means of driving down the pay and conditions of workers. Care must also be taken lest emissions trading become a means of postponing action to curb emissions as companies buy up the South's future development options.

It is thus critical to place emissions trading firmly within the framework set by contraction and convergence. As GCI puts it, "Contraction only makes sense if one accepts the science of climate change. Convergence only makes sense if one accepts the need for contraction and the need for equity. Trading emissions only have a place if they are set in the discipline of contraction and convergence and if used as a tool for achieving flexibility within the overall constraints that contraction and convergence defines. Otherwise they would simply make matters worse."

Negotiate, Negotiate

As GCI is at pains to point out, the concept of linking contraction to convergence does not in itself dictate future emissions targets -- but the negotiated application of the concept does. In effect, "contraction and convergence" provides a framework through which targets might be set on an equitable basis and then applied internationally.

GCI's own view is that the targets would need to be considerably more stringent than those put on the table at the December 1997 meeting of parties to the Climate Convention in Kyoto. One problem is that although scientists now recognise that humanity is dangerously close to the cliff's edge, they do not know exactly how close. The current scientific consensus is that anything more than a doubling of atmospheric CO2 concentrations over pre-industrial levels -- 280 parts per million by volume (ppmv) -- which on current trends will happen by the year 2040, is "likely to cause dangerous climate change".[19] To keep global CO2 concentrations in the atmosphere below that level would require global CO2 emissions to be reduced progressively by 60-80 per cent of 1990 emissions.

As GCI points out, significant climatic damage is already being caused at current atmospheric CO2 concentrations, which stand at just 30 per cent above pre-industrial levels. GCI therefore suggests that a future carbon budget resulting in an atmospheric CO2 concentration of no more than 450 ppmv (60 per cent above the pre-industrial level) by the year 2100 should be agreed as the maximum upper limit. This could then be negotiated downwards as evidence of climatic damage and human causation became more apparent.

Under this carbon budget, with a convergence date of, say, the year 2030, the per capita emissions entitlement globally at convergence would be about one tonne of carbon per person per year. To reach that figure, Britain would need to reduce its emissions by 50 per cent and the US by 77 per cent. Meanwhile, China would be permitted to increase its emissions by no more than 41 per cent and Bangladesh by no more than 2354 per cent. Thereafter, all would progressively reduce their emissions

pro rata to a final per capita entitlement of 0.2 tonne of carbon per year by the year 2100.

Support for the principle of setting emission limits on a per capita basis has already been expressed by leading negotiators from China[20] and India, in addition to the Africa Group. The US, meanwhile, has neither ruled in nor ruled out the notion of per capita emissions. The space for negotiation is thus open. Indeed, as the prestigious science journal, *Nature*, remarks:

"Many now feel that an international commitment to per capita based targets, rather than absolute goals, is most likely to produce a solution at Kyoto that both rich and poor countries will be prepared to swallow."[21]

Bringing Equity Home

The case for equity being placed at the centre of climate policies *within* countries is as strong as it is for placing equity at the heart of any international framework for addressing dangerous climate change.

People do not confront climate change on an equal basis. Within Britain, for example, income inequalities and poverty are on the rise. The numbers of people living in poverty (defined by the EU and OECD as earning less than half the average household income) rose from five million in 1979 to 14.1 million in 1992/93 -- one quarter of the country's population. Any policy for reducing carbon emissions must address this reality: if fairness is not an evident and primary characteristic of the policy, it will not happen.

Take energy conservation. The current payback for energy-efficient domestic equipment, cooling and heating systems, ranges between about five and 15 years. This is beyond the means of many households, particularly those with minimal savings and/or low income expectations. A government-led initiative -- backed by public money -- to ensure well-insulated housing is thus urgently required. There are an estimated eight million households in Britain which are currently unable to afford adequate warmth in the home because of the energy inefficiencies of the buildings in which they live. Even without climate change, this needs rectifying; but expecting such households to contend with the colder climate predicted for Britain should the Gulf Stream fail, without government backing for home insulation, is simply unrealistic. Failure to provide that backing would restrict warm homes only to those who had the financial resources to insulate them. This would be socially divisive and morally unacceptable.

Similarly, many of the policy instruments which have been suggested for curbing carbon emissions could prove extremely regressive if they are not

set within an equity-based framework. A carbon tax, for example, has many arguments in its favour. But poorer households and local economies which were developing self-help schemes in a cash-poor environment could be paralysed by high carbon taxes, while richer households would be barely affected by them. Moreover, carbon taxes are inherently "top-down" policies, offering little scope for a sense of ownership in the collective task of reducing carbon emissions, although the funds generated could finance such reductions. If the policy is regarded as unfair, however, it is less likely to be politically acceptable.

There is, therefore, a case for considering a complementary instrument, which is particularly effective in precisely those areas in which carbon taxes are weakest. Allocating all adults in Britain an annual "carbon quota" as an entitlement, for example, would mean that equity became the fundamental basis of a carbon reduction policy. It would also give users a sense of ownership in national (or regional) programmes to reduce emissions, in addition to rewarding low users of carbon and other greenhouse gases, since they could sell any entitlement they did not use.[22]

Putting Away the Hair Shirts?

No one single instrument or measure operating by itself is likely to achieve the cuts in carbon emissions that Britain and other industrial countries are probably going to have to make over the coming century. Rather a portfolio of measures -- operating within a framework aimed at ensuring the most equitable outcomes -- will be required.

Such measures do not entail hurling citizens back to the stone age. On the contrary, many offer to make a considerable contribution to increasing employment, improving public health and hence addressing these and other causes of social and economic exclusion. The energy efficiency sector, for example, is highly labour intensive. Employment is generated in the manufacture, delivery and installation of energy-saving materials and technologies, in addition to the jobs involved in project management, marketing, advice and monitoring.[23]

A leaked report from the European Commission, for example, estimates that installing a million solar roofs throughout the European Union by the year 2010 could generate 50,000 new jobs.[24] Friends of the Earth, meanwhile, estimate that some 226,000 new jobs could be created by a climate policy aimed at reducing Britain's carbon dioxide emissions by 20 per cent by the year 2010.[25] Such a programme would include insulating some eight million homes in Britain within the next 15 years, effectively eradicating the "fuel poverty" that condemns at least 15 million people to shivering through every winter.

Moving away from fossil fuels towards renewables, energy efficiency and conservation is potentially self-financing over the longer term. However, in the short-term, it will require considerable resources up-front in terms of grants, loans, tax breaks and other incentives. Although money can be saved by measures such as the cancellation of nuclear programmes and mega-road schemes, high public expenditure will be needed if, for example, public transport is to be improved to levels where car use is dramatically curtailed. Lubricating the transition will be costly, regardless of whether the service is eventually provided publicly or privately.

Competitiveness or Sustainability?

An unacknowledged question in both the domestic and international debates on climate change, therefore, is whether the measures needed to reduce greenhouse gas emissions are compatible with the low-tax, deregulatory regimes demanded by an increasingly globalised economy. Within the South, for example, structural adjustment programmes imposed by the International Monetary Fund have slashed public spending and stripped away much social and environmental legislation. In the North, a similar process has been underway, as governments have sought to attract foreign investment and improve the competitiveness of domestic industry.

Such policies -- in particular, the emphasis on deregulation and curbing public expenditure -- pose a direct threat to attempts to curb greenhouse gas emissions. Attempts to curb future emissions of greenhouse gases through tighter regulation or increased green taxes are likely to be challenged by treasury ministers and industrial interests, which will argue that they undermine international competitiveness. As one Canadian official attending a pre-Kyoto meeting recently warned: "Although climate change is an environmental problem, all we're talking about over here are the trade and competitive implications."[26]

There is, thus, an urgent need to begin a debate about a radically different approach to organising national economies and international trade. More and more, it is being suggested that instead of policies being geared towards increased international competitiveness, the rebuilding and protection of local economies should become the basis of a new politics. Fostering neighbourhood democracy and re-rooting economic power in the local community would also reduce transport and open up the possibility of increasing public expenditure to set in place the programmes that an equity-based approach to climate change demands.[27]

A Framework for Equity

Dangerous climate change is real and it is happening. Placing equity at the heart of policies to address it is critical, not simply on moral grounds but also to gain the public support necessary to implement the needed cuts in emissions. At the international level, Britain should press for policies based on the principles of contraction and convergence. Within this:

- **A global ceiling should be agreed on CO2 concentrations in the atmosphere;**
- **Countries should agree a global "carbon emissions budget" consistent with not exceeding that ceiling; and**
- **Countries should agree to share that budget on the basis of convergence to equal per capita entitlements globally.**

Within Britain, the issue of equity is just as central. In order to achieve reductions in carbon emissions on the required scale, the British government should set a human rights based framework that would place equity at the heart of any programme of emission cuts. Within that framework, a portfolio of measures should be given urgent consideration:

- **Detailed measures to implement a transformation in energy use (technologies, standards, removal of subsidies for energy wastage, changes in planning regulations);**
- **Carbon taxes, which could be quickly imposed; and**
- **Tradable quotas based on an entitlement to all adults; low users would have the positive reward of being able to sell their entitlement. Companies would tender for quotas.**

More widely, there is an urgent need for public debate on the direction of current economic policies and, in particular, the priority given to international competitiveness. Policies aimed at reducing public expenditure and cutting back social and environmental regulations in order to improve competitiveness directly threaten the possibility of implementing an effective greenhouse gas reduction programme.

A new politics, based on co-operative efforts to protect climate through rebuilding and protecting local economies is urgently required.

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