

Contingency planning for rapid reduction of greenhouse gas emissions

The *International Initiative for a Sustainable Built Environment* is looking for partner governments, institutions and other large organizations to help develop effective plans for the rapid reduction of greenhouse gases and for effective adaptation strategies, under conditions of extreme climate change impacts.

Prepared by iiSBE
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Background

Many governments, institutions and other large organizations are now engaged in issues related to the causes and impacts of climate change. The area of mitigation is the subject of much public debate, goal-setting by IPCC and many national governments, but very little immediate action. Action related to adaptation and remediation is now beginning to be established as a parallel long-term activity in a few countries¹ as climate-change science has become more generally accepted.

While many governments and non-governmental organizations have developed plans to address climate mitigation or adaptation, these activities have been formulated within the bounds of currently acceptable social, political or economic boundaries, which greatly limits the intensity of these efforts². The breadth and complexity of the problem, which requires a restructuring of many aspects of modern industrial economies, is certainly one impediment to more resolute action in developed western countries. Natural disasters are outcomes with high probabilities according to the IPCC, as Figure 1 illustrates, and their onset will not always be gradual. Governments and large non-government organizations faced with such events will naturally tend to focus first on coping with the crisis, leading to the possibility that reducing greenhouse gas emissions will again be relegated to a low priority.

Figure 1: Projections for extreme weather events based on observed late 20th century trends³,

Phenomenon ^a and direction of trend	Likelihood that trend occurred in late 20th century (typically post 1960)	Likelihood of a human contribution to observed trend ^b	Likelihood of future trends based on projections for 21st century using SRES scenarios
Warmer and fewer cold days and nights over most land areas	Very likely ^c	Likely ^d	Virtually certain ^d
Warmer and more frequent hot days and nights over most land areas	Very likely ^e	Likely (nights) ^d	Virtually certain ^d
Warm spells/heat waves. Frequency increases over most land areas	Likely	More likely than not ^f	Very likely
Heavy precipitation events. Frequency (or proportion of total rainfall from heavy falls) increases over most areas	Likely	More likely than not ^f	Very likely
Area affected by droughts increases	Likely in many regions since 1970s	More likely than not	Likely
Intense tropical cyclone activity increases	Likely in some regions since 1970	More likely than not ^f	Likely
Increased incidence of extreme high sea level (excludes tsunamis) ^g	Likely	More likely than not ^h	Likely ⁱ

It is the position of this document that current climate-change mitigation plans prepared within existing boundaries of political, social and economic constraints are likely to be entirely inadequate to deal with the magnitude of events that are just over the horizon, and that contingency plans are therefore urgently needed to meet these challenges in a much more substantive and rapid way. While such plans might be too difficult to implement in the

¹ See for example the program of Natural Resources Canada at <www.adaptation.nrcan.gc.ca> .

² The relative priority of action on climate change is particularly feeble when compared to the very recent and seemingly effortless action by national governments to pump trillions of dollars into the financial sector.

³ Pg. 8, IPCC AR4 Working Group 1, Summary for Policymakers, 2007. Note that *Virtually certain* are events with a 99% probability of occurrence while *Very likely* are events with 95% probability of occurrence.

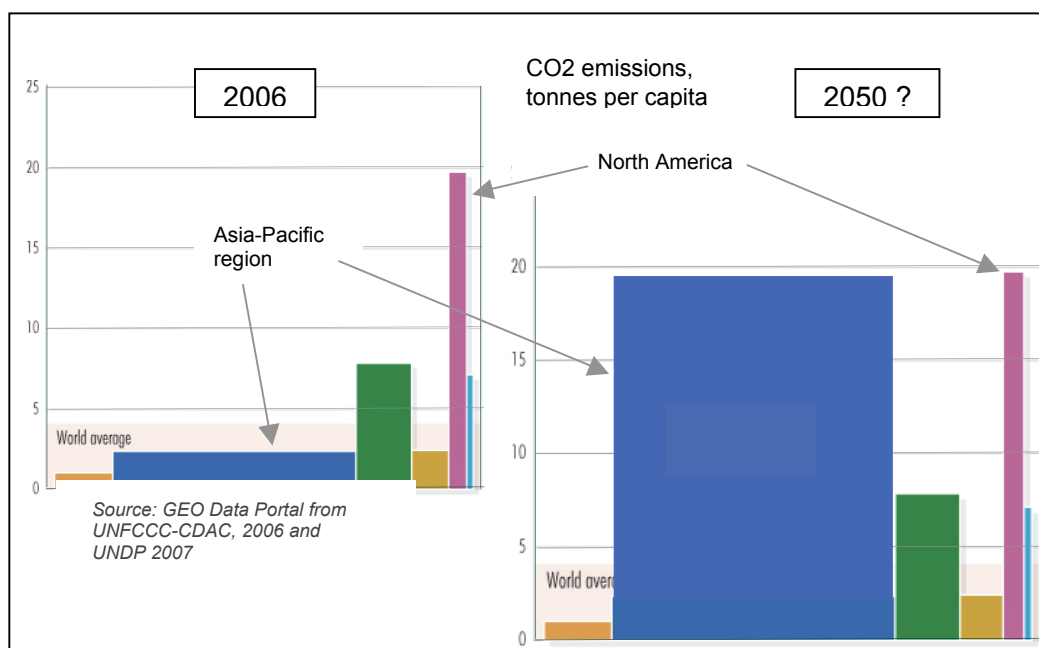
current climate of opinion, we believe that, as the full realization of climate change impacts sink in, there will be changes in social and political views that will permit such plans to be rapidly implemented as part of measures to cope with crisis conditions. IISBE is seeking organizations to cooperate in a project to produce contingency plans that will be suited to such conditions, and this document is intended to promote such planning activities.

The current GHG emissions situation and the prospects for action

In the area of mitigation of GHG emissions, current government plans are crafted at the level of national policy and seldom deal with specific initiatives or economic sectors. This is understandable, but it does leave a hole in our understanding of how individual organizations might act to reduce emissions. Further, given the slow pace of governmental action in the mitigation arena and limitations in the mandates of governments, it is certain that there will be no reduction in the global emissions of greenhouse gases at the pace and scale required to minimize climate change impacts, and it is even very unlikely that *rate of growth* in global GHG emissions will be reduced over the next decade. This should be considered in the context of targets established in the EU of limiting global temperature increases to 2 deg.C, which implies a GHG limit of 450 ppm, cuts of 40% in emissions by 2020, and 80% by 2050. Although several European countries have made substantial commitments, amongst them the UK *Energy Efficiency Action Plan 2007*⁴ and the French *Grenelle de l'Environnement*⁵, it remains to be seen if these ambitious initiatives will emerge intact from the financial crisis.

The largest current per-capita emitters have been developed countries, with USA, Canada and Australia noticeably the worst, followed by Japan, EIT (Economies in Transition) countries and other European countries. Developing countries are now catching up fast, and it is inevitable that many rapidly developing countries (RDCs) will soon have emissions in the same league as the West, with China, India and Brazil being the most important.

Figure 2: Per capita CO₂ emissions by region; adapted from GEO Data Portal original at left, modified at right to show effect of emissions in 2006 in Asia and the Pacific rising by 2050 to the same levels as current North American levels. The width of the bars indicate population.



⁴ Department of Environment, Food and Rural Affairs, 2007; see www.defra.gov.uk

⁵ See www.legrenelle-environnement.fr/grenelle-environnement/

As Figure 2 illustrates, this is a disastrous outlook and one that is likely to lead to climate change impacts that are consistent with some of the more pessimistic scenarios outlined by the IPCC and other climate-prediction bodies⁶.

Some western leaders have urged rapidly developing countries to take a more responsible attitude with regard to the rate and amount of emissions increases, but it is very unrealistic to assume that these countries will take drastic measures in the near future, considering the growth in their economies and the desire of their populations to enjoy the same benefits of industrialization as the developed countries have benefited from - cars, houses, appliances and air-conditioning. Thus, there is likely to be very little positive action by RDC governments to reduce the growth of GHG emissions unless governments of developed countries (with the USA being the most important) are willing to first implement immediate and drastic measures in their own countries, thereby setting a good example and reducing the high level of hypocrisy that now prevails. Even this will not be enough to guarantee major positive changes within RDCs, but it is certainly a *precondition* for such action. However, the current situation in the USA at the national level is a grudging acceptance that there may, after all, be a problem, but a lack of significant action.⁷

A major problem in motivating decision-makers to act is that the harbingers of climate change in North America and northern Europe have been, until now, relatively gradual and benign. This sequence may cause us to become numbed by a gradually escalating series of climate-related incidents and not act decisively until it is far too late. However, climate change may also be announced by a series of major and sudden natural disasters, an outcome that is certainly within the bounds of projections made by the IPCC. If such a series of sudden catastrophes were to have direct impacts on elites in developed countries, especially in the U.S.A. or Canada, there is likely to be a strong and immediate public demand for effective responses to mitigate the effects of the events, and this would provide a real opportunity to simultaneously deal with the greenhouse gas emissions that cause climate change. Sudden climate disasters are not a pleasant prospect, but it is one of the few scenarios that seems to offer the potential for resolute action. But what kind of response is likely, based on past experience?

The general response to catastrophes

Obviously, drastic events create a great number of unknowns, but the lesson of past catastrophes unrelated to climate change (wars, hurricanes, pandemics), is that, after an initial period of panic and confusion, such events create a short period of openness to change in the minds of the public and politicians when many types of drastic measures may be introduced with a minimum of resistance. The problem is that the confusion and panic caused by disasters are not the best conditions for logical and effective action. U.S. Government actions in the wake of the 9/11 attacks in New York, or to Hurricane Katrina in New Orleans, will long remain examples of hasty and poor policy making.

The initial response to the current global economic meltdown is a more recent example of ad-hoc reactions. Paul Krugman puts it this way⁸: *The financial system has been under*

⁶ From the website of the UK Met Office, 01 October, 2008: *Anyone who thinks global warming has stopped has their head in the sand.... The evidence is clear — the long-term trend in global temperatures is rising, and humans are largely responsible for this rise. Global warming does not mean that each year will be warmer than the last, natural phenomena will mean that some years will be much warmer and others cooler.... In the last couple of years, the underlying warming is partially masked caused by a strong La Niña. Despite this, 11 of the last 13 years are the warmest ever recorded.*

⁷ While this is true of the U.S. Government, there is significant action emerging at the State and Municipal levels and within the U.S. military..

⁸ Paul Krugman column, *International Herald Tribune*, pg. 5, 4-5 October, 2008.

severe stress for more than a year, and there should have been careful thought-out contingency plans ready to roll out in case the markets melted down. Obviously there weren't; the Paulson plan was clearly drawn up in haste and confusion...

Even when resolute action is taken in response to a crisis, it tends to be focused on remediation of the symptoms instead of mitigation of causes, understandable in view of the fact that the action required for the former will be considerably more obvious than dealing with the causes of the disaster; e.g. dealing with the complex causes of major riverine floods such as deforestation, is more daunting than is rebuilding dikes, dams or flooded buildings.

There are classic patterns in the behavior of governments following major disasters that bode ill for logical responses: government actions will tend to focus on ways of (a) minimizing immediate deaths, injuries and damage, (b) maintaining public order and (c) taking immediate steps to maintain political credibility by doing something (or anything) and finally, (d) implementing ad-hoc measures to address the immediate effects and possible remediation efforts (but not the causes). After a few weeks, the window for rapid political change closes and many current policies and programs are likely to remain, or else seriously flawed ad-hoc programs will be in place.⁹

Decades ago, the economist Milton Friedman pointed out that the availability of contingency plans could guide decision-makers towards better outcomes after disasters¹⁰....*Only a crisis - actual or perceived - produces real change. When that crisis occurs, the actions that are taken depend on the ideas that are lying around. That, I believe, is our basic function: to develop alternatives to existing policies, to keep them alive and available until the politically impossible becomes the politically inevitable.*

Similarly, Tony Blair is reported to have stated shortly after the 9/11 tragedy... *The kaleidoscope has been shaken. The pieces are in flux. Soon they will settle again. Before they do, let us re-order this world around us.*¹¹

It is evident that the catastrophes create possibilities for action, while the availability of contingency plans can improve the likelihood of rational responses to them. However, the ready availability of disaster contingency plans is undesirable if they are aimed at fulfilling hidden agendas. Naomi Klein, in her recent book *The Shock Doctrine*¹² points out that some governments and large private firms have learned to take advantage of confusion and panic to impose values of privatization in order to reduce the role of governments and to create windfall profits for firms involved in disaster management, rebuilding efforts or new development. Such an approach exacerbates income differentials and places the poor in positions that sometimes involve a great deal of suffering. Klein cites such an approach having been developed over the years in Chile, Argentina, New Orleans, Iraq and Sri Lanka¹³, amongst others.

The lesson of responses to "normal" crises is that paradigm shifts can occur and that there are opportunities to implement measures that would normally be seen as unacceptable, but that care must be taken to minimize negative social or economic side effects.

⁹ The actions of the U.S. Government in the days and weeks following the 9/11 disaster are instructive in the fact that the measures introduced were generally hasty and ill-considered, and have been shown to be only marginally effective.

¹⁰ Milton Friedman; Preface, *Capitalism and Freedom*, 1962, University of Chicago Press, reproduced 1982.

¹¹ International Herald Tribune, 18-19 October, 2008

¹² Naomi Klein, *The Shock Doctrine*, Random House Canada, 2007.

¹³ For example, the responses to the Tsunami of late 2004 led the Sri Lankan government to develop a reconstruction plan that prevented low-income fishermen from re-settling in their previous land holdings on the coast, while supporting the efforts of private investors to build new luxury hotels in the same area (Klein, pp 477-478). Similar measures were taken in the Maldives and Phuket, Thailand (Klein pg. 480 and pg. 483).

The specific case of disasters related to climate change

One of the few realistic possibilities for rapid action on climate change is that public opinion would be galvanized by a series of major natural disasters, such as hurricanes, windstorms, shoreline or riverine flooding, droughts, killer heat waves, major crop failures, major disease outbreaks or insect infestations; events that could not be explained away by causes other than climate change. If enough such events were to take place within a short period, and if the human and economic damage were to be high among elites of developed countries, their governments would certainly face enormous pressures to act quickly. Even the U.S. or Canadian governments might be moved to action.

Thus, climate-related disasters (which are probable) may provide an opportunity to table proposals for rapid and effective measures that will propose a rapid reduction of greenhouse gas emissions as well as immediate disaster relief, *if such plans have already been prepared and can quickly be implemented*. This would be very desirable, *if the plans are well focused and crafted to minimize negative social consequence, and if they are implemented in accord with democratic processes*.

Obviously climate change disasters would also provide unprecedented opportunities for harmful policies to be initiated, something that could add to the general misery. Clearly, we must devise mechanisms to limit such negative outcomes.

The international response to the current financial crisis shows that something can be done, if the pressures to act are strong and the will to succeed is present. Obviously it is too early to judge the success or failure of the response to the financial crisis, but it is useful to have a precedent of quick and coordinated action when climate change impacts finally demand attention.¹⁴

Our proposal

In view of these factors, we propose to engage key public and private organizations in developed countries to develop and maintain contingency plans for rapid and deep reductions in GHGs, in addition to remediation and adaptation issues, within sectors controlled by them and under emergency conditions. Such plans might result in negative economic or market reactions if released before conditions are opportune, and the project therefore assumes that they may be kept confidential until circumstances are compelling and a window of opportunity for action exists.

We recognize that many organizations have already developed internal plans for reducing the environmental impact of their operations, but this proposal is aimed at very rapid action under emergency conditions.

The goal of the project and the nature of required plans

We hope to identify organizations that are willing to prepare contingency plans that can be rapidly implemented under crisis conditions, plans that would rapidly reduce GHG emissions of the buildings or building-related services that are controlled or directly influenced by these

¹⁴ In fact, there are some strong parallels between the financial and climate sectors: catastrophic problems on a global scale are now evident; these conditions have been fuelled by a strong belief in unchecked growth and a dogmatic belief that markets will solve all problems; governments have been remarkably insensitive to negative indicators in both fields and have been derelict in their duty to provide strong and effective regulation; there is a danger of non-linear behaviour in both systems when tipping points are reached, with unforeseen consequences; and in both cases, a system collapse threatens the well-being of millions;

organizations, by at least 75% over a 5-year time frame¹⁵, with the actual target varying depending on the kind of organizations involved and the specific reduction opportunities.

A 75% average reduction over 5 years is an extremely ambitious target, but we are assuming that circumstances that trigger the implementation of these plans will be dire enough to make the target seem inevitable and, as Figure 3 shows, there are relatively major GHG reductions available in the building sector.

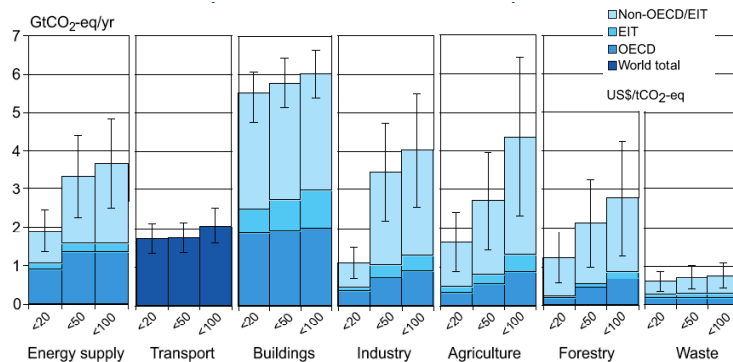
Naturally, the content of such plans will depend on circumstances, and specific strategies and plans would vary by region, but we can suggest certain generic examples of the kind of measures that might be

implemented relevant to the building sector. It should be noted that we are not aiming for complete solutions to a full range of sustainability problems in this project, but to focus on quick reductions of greenhouse gases within those parts of the building sector that can be controlled or influenced by the participating organizations. Although we focus on the GHG reduction aspect, we also assume that the plans will include measures for related remediation and/or adaptation.

Taking all these factors into account, we anticipate that the following types of plans would be of considerable value at the level of national, state or local governments:

- Immediate introduction of carbon taxes, to reduce the production of carbon-intensive building-sector related goods and to reduce the availability of carbon-intensive services; and a simultaneous and commensurate reduction in existing income taxes;
- An immediate ban on the construction of new coal-fired generation power plants and on the extension of existing ones, if significant GHG sequestration is not provided;
- Measures¹⁶ to reduce immediate negative impacts of outages and service voids (power, water, food and other supplies, communications etc.);
- In areas with housing shortages, rapid identification of empty dwellings (mainly non-primary homes), and measures to ensure that they are more fully utilized;
- Measures to ensure that facilities of critical importance, such as hospitals, public transportation systems, water and sewage treatment and pumping systems, remain provided with electrical power, heat, water and other vital services;
- Preparation of risk assessment studies of existing urban areas and building stock with regard to possible climate change impact events, such as floods, wind storms, heat waves etc.¹⁷. Such work is a necessity for post-disaster recovery.

Figure 3: Economic mitigation potentials by sector, as a function of carbon price in 2030 estimated from bottom-up studies, from IPCC AR4, SYR 3, 2007

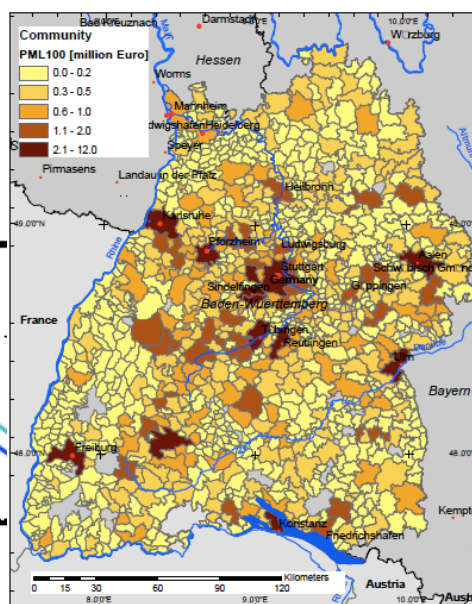
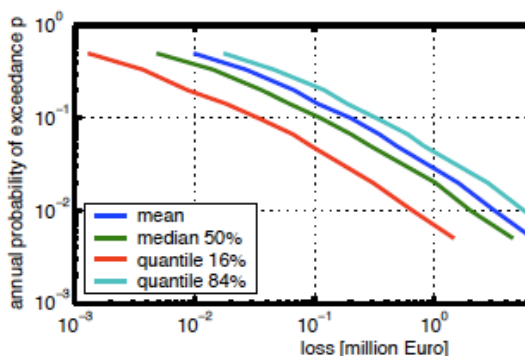


¹⁵ Lester Brown, in an interview with Gwynne Dyer, states that ...we should be cutting emissions by 80 percent by 2020, twelve years from now...; pg 121, *Climate Wars*, by Gwynne Dyer, Scribe Publications, Melbourne, 2008

¹⁶ Thomas Homer-Dixon in *The Upside of Down* notes that the degree of global connectivity among all our systems, communications and activities also contributes to rapid transmission of shocks and increases system vulnerability.

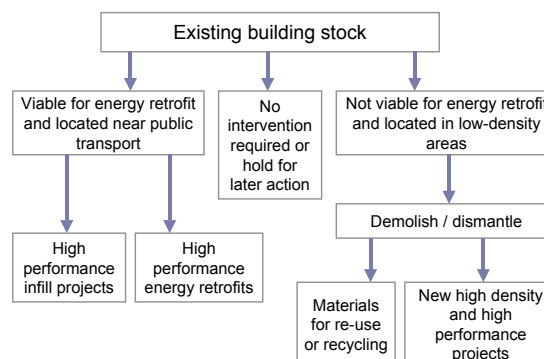
¹⁷ See for example *Methods for risk assessment and mapping in Germany*, preface to special issue of *Natural Hazards Earth System Science* 6, 721-733, 2006, and also *Winter storm risk of residential structures - model development and application to German state of Baden-Württemberg*, P. Heneka, T. Hofherr, B. Ruck and C. Kottmeier, in *Natural Hazards Earth System Science* 6, 721-733, 2006.

Figure 4, left: Example of risk curves for the number of affected buildings and loss for the city of Tübingen; Fig. 5, right: Storm risk map of private residential buildings in Baden-Württemberg; both from paper cited in (17).



- Realistic plans for rapid relocation of key facilities such as docks¹⁸ and airports, and of large populations in areas vulnerable to flooding or fire¹⁹;
- Measures to prevent the proliferation of secure and gated communities as a disaster response²⁰, unless these are socially balanced;
- A freeze on new construction in un-serviced or low-density areas or potential flood areas, and a zero operating GHG emissions requirement for new construction that is permitted;
- An immediate triage program for urban areas, as shown in Figure 6, to determine zones that would be targeted for performance upgrades or, if the potential is limited, targeted for dismantling and replaced by high-performance re-development;
- Related to this, programs for the rapid conversion of surplus office buildings to residential uses;
- In areas designated for performance upgrading, an immediate program of urban infill to increase densities and renovation of existing buildings to greatly reduce GHG emissions (by at least 80%) and to improve water performance;
- Strategies to rapidly implement passive survivability including food security²¹; transitioning²² large urban and suburban milieux to service frameworks supporting localized, small sustainable communities etc.;

Figure 6: Triage of existing buildings stock



¹⁸ The U.S. military is well aware of the dangers that many of its coastal bases are facing; see *National Security and the Threat of Climate Change*, CNA Corporation, 2007.

¹⁹ The dismal efforts at relocation and rebuilding in New Orleans are a reminder of how extensive and well coordinated the required efforts will have to be if they are to be successful;

²⁰ Klein cites the lessons drawn by security contractors from the New Orleans experience as being that there are large profits to be made by establishing secure and separate communities for the wealthy; see John Robb, *Security Power to the People* in *Fast Company*; March 2006 (quoted in Klein, pg. 505).

²¹ See <http://www.buildinggreen.com/auth/article.cfm/ID/3206/> and http://www.igreenbuild.com/cd_2752.aspx

²² Transition Town Totnes is the UK's first community in its Transition Initiative: <http://totnes.transitionnetwork.org/>

- Crash training programs for regulators, renovation contractors, simulation specialists and others needed to upgrade performance in new and existing buildings;
- Rapid implementation of public education programs to promote conservation by office tenants and residential owners or tenants in energy, water and materials;
- Prohibition of the sale of appliances and equipment that do not meet certain operating efficiency criteria (e.g. "A" label in Europe), and a program for rapid scaling up of efficiencies;
- Regulations to establish strictly enforced limits on set points for heating or cooling of buildings and to accelerate substitution of incandescent lighting by fluorescent types.

At the level of large utilities, institutions or corporations:

- Steps to reduce peak loads in electrical networks, through major financial penalties and, in some cases, the curtailment of certain industrial processes;
- Rapid implementation of measures to facilitate feed-in tariff policies from decentralized renewable power sources;
- Introduction of dis-incentives for non-essential use of private vehicles for commuting transport, and stronger support for tele-commuting and similar plans (probably introduced in cooperation with governments because of the need for related incentives or tax penalties);
- Introduction of employee ride-sharing and home-work arrangements or augmentation of existing programs;
- Substantial and immediate reductions in operating emissions in properties belonging to large property management firms, or chains of hotels and restaurants;

It is clear that the content of GHG rapid reduction plans as we propose would be a sensitive matter in some cases, where the leakage of information might pose political difficulties or harm standings in a highly competitive market. We suggest that participating organizations would not be compelled to share their plans with any outside organization, but only to report that they have completed a plan that satisfies the content criteria established in the project. The main emphasis here is to ensure that workable and humane plans are available for *rapid* implementation when circumstances demand it.

There are certain characteristics that such plans would have to be based on if they are to be effective. Most of these points will have to be developed by a committee of participating organizations, but we can anticipate some content requirements:

- Measures proposed will have to be able to be very quickly implemented; beginning within weeks rather than months;
- The scope of proposed action will have to be defined (e.g. all or part of a property portfolio, certain segments of a customer base etc.);
- Estimates of speed and amount of net reduction in GHGs emissions will have to be provided, projected on a year-by-year basis over a 5-year time frame;
- Plans will have to identify measures to minimize negative social disruption or other secondary impacts;
- Identify main obstacles or sources of likely opposition and suggest coping strategies;
- Complementary action required by governments, other regulatory authorities or financial institutions to facilitate implementation of the plan should be identified.

Advantages of participation in the project

The proposed project would provide participating organizations with very specific contingency plans and can therefore be considered to be consistent with normal strategic planning activities. Internal costs would be highly variable, but we assume that most large organizations have already done some thinking on this subject and that the further development of specific actions would constitute a modest marginal cost. There may be some public relations value in an organization being to say that it is taking part in the project. In any case, participation should be considered to be part of on-going due diligence activities.

A strategy for implementation

Some governments deny the problem and therefore are intentionally ignoring the need for coping plans and strategies. A few governments do recognize the problem but, as far as we know, have not developed strategies and plans for *rapid* implementation. The private sector mainly takes a wait-and-see approach. In such a context, how can we obtain action? We propose the following:

- We invite interested parties to join us in preparing for the inevitable. Utilities, urban transportation firms, large property management firms, state/provincial and local governments, and even some national governments may find the plan to be of interest.
- An initial workshop with interested parties is proposed for 20 January 2009, in Paris;
- An outline of suggestions for the content and structure of plans will be developed;
- Through its global network, iiSBE will identify third parties who may provide useful support to organizations preparing their contingency plans;
- A web site to explain and publicise the project will be developed;
- We are seeking seed funding for project management from global reinsurance firms and large pension funds, supplemented by contributions from participating organizations;

For further information, or to add your ideas and comments, please contact:

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