Many Hazards, One Caribbean

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1 INTRODUCTION

The Caribbean is an area "blessed" with an uncommonly high incidence of natural hazards. The use of the word "blessed" is not entirely frivolous. History has shown that the fine arts and creativity flourish in areas of natural "dangers". It is as though living with danger provides a stimulous for inventiveness and an inspiration for grand designs. It is not clear that the golden era of the Caribbean is at hand but we must not think that it will never come. Getting back to the main subject, we must aim to experience the great events of nature in the future as fascinating, wondrous and awesome occasions which nevertheless do not cause insupportable damage, destruction, injury and death as well as unaffordable setbacks to our economies. It must be obvious to everyone here that the goal of sustainable development of our region cannot be achieved if we continue to suffer avoidable damage and destruction from natural hazards.

The goal of experiencing natural hazard events without the accompaniment of severe damage and destruction is achievable in the foreseeable future. It is almost achievable with our present scientific and technological knowledge but not with the present shortage of financial resources. At the same time we must not be misled into accepting that success is only possible at great cost. What is certainly lacking now is the clearly-stated and honest intention to succeed. Success is only possible if we really desire it.

The political leaders do not organise our societies in such a way as to achieve success in this area because the people do not demand success. Our societies are still fatalistic about disasters accompanying natural hazards. These catastrophes are still largely blamed on God rather than on the inadequacies of mankind. The phrase "act of God" is still used in commercial contracts in most of our countries and, indeed, even in the metropolitan countries that we look to for a lead. The very name of this Decade (International Decade for Natural Disaster Reduction) is a misnomer. It suggests strongly that disasters from natural hazards are natural. They are not. The disasters are largely manmade. It is too late now to change the name of this Decade

but it is not too late to stop using the phrase "natural disasters" at this meeting. In 1995, at a week-long workshop in Costa Rica on the impact of natural hazards on the energy sector, it was interesting to me that the Spanish phrase "amenazas naturales" was almost always used where the English phrase "natural disasters" would have been used.

There is a good analogy with health and medicine. In the 19th century the people of the Caribbean accepted that certain diseases would lead to epidemics. It was expected that thousands would die if cholera struck a community, as happened in Barbados for example. Now, we do not accept the inevitability of wide-scale epidemics even when new diseases strike. Now, in Barbados for example, the government would fall if an epidemic broke out and killed hundreds of people. The populace expects the public health services and our water supply to be of such standards that we would not have a cholera epidemic. The people now demand success in the field of public health. We need a paradigm shift with respect to natural hazards. We need to persuade the people to demand success from engineers, architects and other decision makers in the area of our built environment.

2 A DISASTER-FREE ZONE

Let us make the Caribbean a disaster-free zone. The phrase "disaster-free" is a bit of an exaggeration. But it is inspiring so it will be used in this paper to mean a "nearly-disaster-free" zone. The goal is to make the Caribbean into what the insurance industry calls a "highly-protected risk" - not so vulnerable as to be a problem for Lloyds names and not so safe as too eliminate the need for any insurance. Put another way, natural hazards should not cause intolerable losses in our communities but since we cannot have perfection we will still need preparedness and response mechanisms. Next year the Insurance Association of the Caribbean will hold its annual conference in Barbados. The theme of the conference will be "The Caribbean - an area of disasters. Let us all evacuate." It is up to us to make such themes and thoughts laughable. There is one group of companies within the insurance industry that exploits the "highly-protected-risk" approach to underwriting. It is the Factory Mutual Group of companies with headquarters in Massachusetts, USA. For over a hundred years Factory Mutual has been known for aggressive risk reduction and exceedingly low premium rates. Factory Mutual has as customers such well-known international companies as Ford Motor Company, Intel and Marriott Hotels. Theirs

is a process of monitoring the design, construction and maintenance of their customers' properties. It is a system that works because of the long-term benefits to both the insurers and their customers. We can and should aim to make the whole of the Caribbean an area where Factory Mutual would love to do business.

3 REGIONAL PROGRAMMES

There are many strategies for reducing the vulnerability of the Caribbean so as to convert our area into a "disaster-free" zone. All of these tools and strategies cannot be addressed at this final ICAROS meeting but a determined start can be made with some new initiatives. Influencing all of my proposals is a recognition that natural hazards are not conscious of political and language boundaries. All of the peoples of the Caribbean must cooperate in this campaign. Several collaborative programmes are proposed for the consideration of this meeting.

To a greater or lesser extent the five proposals which will be outlined have had antecedents. But, it would appear that there is a need to articulate in a more deliberate way the issues presented in this paper. There is also the need to see these programmes as regional Caribbean exercises so as give them a clearer focus.

4 POST-DISASTER DIAGNOSTICS

My first proposal has to do with post-disaster diagnostics. Lessons are always there to be learned when disaster strikes. However, in the immediate aftermath of a disaster the diagnostic surveyor is not welcomed. He seems to get in the way of the relief worker. The diagnostician may get a better reception and receive more cooperation in the stricken territory if he were part of the relief group. What is being proposed here is the routine inclusion of diagnostics in post-disaster response programmes.

The time to carry out diagnostic surveys is immediately after the damaging event. Time is of the essence in these exercises since the evidence is soon tampered with and often cleared away completely. Because of this, prepositioning of diagnostic teams is desirable, and it is sometimes possible with meteorological events.

If this proposal for post-disaster diagnostics were accepted these surveys should be organised and formalised regionally. This would provide a wider net from which to draw expertise. Also, the regional approach would facilitate the dissemination of the results of such diagnoses throughout the Caribbean. This is most important. The lessons to be learned are mainly of broader applicability than merely national. Although humans tend to learn best by making their own mistakes, some lessons will be absorbed even if the mistakes were made by others.

Thus, it is proposed that a regional register of port-disaster diagnostic surveyors be put in place.

5 RECONSTRUCTION WITH MITIGATION

My second proposal addresses the issue of mitigation as part of reconstruction. Immediately after a disaster, repair and reconstruction is often carried out to worse standards than were used in the original construction of the damaged facilities. Avoiding these occurrences requires preplanning and an institutionalised approach to monitoring standards during the periods of reconstruction following disasters.

The pressures to repair and rebuild are significant. In such circumstances it is understandable that much repair and reconstruction is expedient and sub-standard. The best way to avoid (or reduce) such situations would be to have independent monitors who would provide support and encouragement to those involved directly with repair and reconstruction and who would provide guidance to the owners or custodians of the damaged facilities. The effectiveness of such support, encouragement and guidance could be enhanced by a degree of neutrality and objectivity on the part of the monitor. And such neutrality and objectivity is more readily obtained by selecting monitors from a regional register.

Thus, it is proposed that a regional register of port-disaster monitors be put in place.

6 RESEARCH INTO NATURAL HAZARDS

My third proposal is about continuing research into natural hazards. We know a lot about the hazards of our region but not nearly enough. The research effort required

is considerable. The information being sought often overlaps our individual boundaries. Progress is hampered by duplication of effort. Some of this duplication is deliberate and has to do with competing agencies and competing researchers. This is inevitable. However, on many occasions duplication happens because we simply do not know what our neighbours are doing. A mechanism must be established to reduce involuntary duplication.

Areas which come to mind for regional cooperation include:

- research into the tectonic earthquake hazard;
- the setting up of networks of strong-motion accelerographs throughout the region;
- the setting up of networks of anemometers throughout the region;
- the setting up of networks of recording rain gauges throughout the region.

If these exercises are done regionally not only would the results be more comprehensive but also the chances of duplication of effort would be less.

Inevitably there must be sub-regional, national and district programmes as well. I such cases it would be invaluable if the existence of these programmes could be known by reference to some central agency.

Therefore, the setting up of a central information agency for natural hazards in the Caribbean is proposed.

7 SHARING TECHNOLOGY

My fourth proposal is about sharing technology. A counterpart activity to that related to research into natural hazards is also warranted on the implementation side of the problem. We can learn a lot from our neighbours. Here are some examples of Caribbean countries possessing expertise in particular areas:

earthquake engineering	Mexico and Venezuela

seismic retrofitting	Costa Rica and Mexico
wind engineering	Commonwealth Caribbean
storm surge	French Antilles and OAS programmes
volcanic hazards	Costa Rica and the French Antilles
multi-hazard design	Commonwealth Caribbean

The above list is not exhaustive and is not meant to generate debate. It is only meant to illustrate the considerable range of resources available in the region and to encourage their use regionally. Mechanisms should be established to facilitate the exchange of technology.

One possibility is to establish a Caribbean Academy of Engineers, Architects and Scientists whose members would be particularly skilled and knowledgeable in the fields of natural hazards and their effects on the built environment.

8 CONTINUING PROFESSIONAL DEVELOPMENT

My last proposal has to do with the education and post-graduation training of engineers and architects. The skills required for designing against natural hazards need to be broadened and deepened regionally. The levels of these skills in our professionals need to be raised so that Caribbean engineers and architects are recognised as having a higher general level of proficiency in these fields than others worldwide. What we have at the moment is a minority of our professionals with outstanding experience, skills and knowledge and a majority who are found to be short of the required levels of skills and knowledge.

In many of the institutions of engineering education, designing against natural hazards is only an optional course. Therefore, many engineers graduate with little or no specific knowledge in this field. Nevertheless there are no projects in the Caribbean which are not impacted by considerations of natural hazards. This gap in engineering curricula should be eliminated.

We also need a more structured approach to the post-university formation (and testing) of our professionals. This would also serve to ease some of the tensions being experienced when negotiating reciprocal agreements in NAFTA and the other trade blocks that exist or are being contemplated. The Caribbean Community

(CARICOM) has recently taken a positive decision on freedom of movement of university graduates between member countries. Some of these countries have registration requirements for engineers and architects. Reciprocity could well become a difficult issue.

It is proposed that there be Caribbean regional standards for the registration of engineers and architects so as to facilitate reciprocity. In developing such standards, knowledge and experience in dealing with natural hazards should be mandatory. After all, these hazards (at least one in each instance) affect all projects in the region.

9 CONCLUSIONS AND RECOMMENDATIONS

The economic and social development of many Caribbean countries have been adversely affected to a significant extent by the occurrences of natural hazards. What we see is a pattern of "two steps forward and one step backward". That, in fact, is a verse from a recent calypso describing a dance routine. It also describes the economic development of many of our countries. Although colonial history has kept us apart, the hazards of nature have always regarded the Caribbean basin as seamless. It is logical, therefore, to seek regional solutions to the continuing problem. Regional solutions have the potential to make better use of limited financial and technical resources. This paper suggests some areas where the needs are clearly evident, where the results would be meaningful additions to the mitigation process and which are likely to be affordable.

In summary, therefore, my five proposals are:

- establish a regional register of specialists who are prepared to undertake post-disaster diagnostic surveys;
- establish a regional register of specialists who are prepared to undertake monitoring of reconstruction standards;
- establish a central information agency for natural hazards in the Caribbean;
- establish a Caribbean Academy of Engineers, Architects and Scientists focussing on natural hazards;

- establish regional standards for the registration of engineers and architects.

Half way through the United Nations International Decade for Natural Disaster Reduction (IDNDR) the mitigation initiative is gathering momentum. If the effort is maintained (and increased) over the remainder of the Decade, the Caribbean could look forward to a 21st century when great hurricanes, earthquakes and torrential rains would be experienced as fascinating and awesome events which, nevertheless, do not lead to disasters.