Planetary Emergency

The end of the year is rapidly approaching, another year almost gone. And this one too has shown us that we live in a world full of risk, one that has to cope with the hectic, multitudinous manifestations of our being in it; a world which behaves in a sometimes hostile and cruel way, as taking revenge for our own careless behaviour. The human population, now numbering 6.6 billion, brings to bear tremendous pressure on all earthâ€™s spheres, alive or inorganic.

We have to live on no more than slightly over 0.5 billion square kilometres of land surface, including desert, mountains and other inhabitable areas. That is all. Around 20% of the worldâ€™s population (1.3 billion) lives in China on nearly ten million square kilometres of land, and about 17% (1.1 billion) in India on just 30% of the land area available to its Chinese neighbours. We choose increasingly to move from rural to urban habitat. Many urbanised centres, especially in countries in transition, are growing organically and hasty construction and lack of official control result in inferior buildings and substandard roads and other networks. In January this year 67 people died after the roof collapsed at the International Exhibition Hall in Katowice, Poland and a month later, in February 2006, the same happened at a market hall in Moscow, killing 56 people.

If a building can collapse more or less spontaneously like this, no wonder so many are killed and injured when an earthquake of even modest magnitude hits a densely populated area. In March this year three earthquakes 350km south west of Tehran killed seventy people and destroyed more than forty villages. Iran, lying in one of the most tectonically active zones in the Alpine-Himalayan belt, responded to its high level of risk by in 2006 establishing a GPS monitoring network of a hundred GPS stations.

Lack of official control, paired with severe poverty, also leads people to use illegal means to retrieve what they feel has been stolen from them. In May this year 165 Nigerians lost their lives after drilling a pipeline to unlawfully tap oil, causing a dramatic explosion. More than a thousand have died in previous explosions in the country. Explosions also often occur in urban areas such as in Mumbai in India, where in July this year a series of blasts caused the deaths of at least 190 and six hundred injured. It seems that the poor in developing countries benefit the least from economic growth, yet it is they who pay the highest price in terms of health and survival.

While uncontrolled urbanisation amplifies the devastation caused by earthquakes and turns manmade failings into disasters, climate change threatens our very existence on earth by making scarcely habitable areas less so. Delta areas such as those of the Mississippi, Ganges (Bangladesh), Rhine, Indus, Mekong and Niger are vulnerable to flooding either, hurricane or submarine earthquake induced. Global sea-level rise caused by climate change will heavily increase flood risk. This is true above all for South East Asia, highly vulnerable due to poor coastal defences. Still stamped on our retina are the catastrophes of the 2004 Christmas Tsunami, and that of July 2006 which slammed into the south coast of Java, killing more than eight hundred people. July also saw tropical storm Bilis flood the Chinese provinces of Guangdong and Hunan, causing millions to be evacuated and killing more than five hundred.

Disaster management and water management are becoming important survival strategies, demanding not only huge amounts of detailed, accurate and timely geo-information but also geomatics technology and expertise. Triggered by the 2004 Christmas Tsunami, the Government of India recently launched a National GPS Programme for Earthquake Hazard Assessment. Airborne remote sensing, GIS technology and ICT played an important role in post-disaster damage assessment after Hurricane Katrina. Earth observation from space provides valuable information to feed early-warning systems. Innovative technologies such as Lidar and Interferometric Synthetic Aperture Radar Synthetic Aperture Radar (InSAR) can monitor the deformation of dikes, vital defences against rising sea level.

On 31st January 31 1998 Al Gore, then US vice-president, addressed an assembly at the California Science Center in Los Angeles. In his paper, â€˜The Digital Earth: Understanding our planet in the 21st Centuryâ€™, he advocated the co-ordinated exploration of all information available about our planet. Since much of this information is geo-referenced, he suggested the creation of a multi-resolution 3D-representation of the planet which he called Digital Earth. He drew attention to how broad and easy access to global geospatial information would enable numerous applications to relieve the burden we place on the planet, the extent of which would be limited only by our imagination. Today Al Gore may be seen acting in the movie â€˜An Inconvenient Truthâ€™, in which he crusades to halt the progress of global warming.

Having put geo-information technology on the political agenda in 1994, Al Gore is obviously continuing to do so within the framework of what he calls our â€˜planetary emergencyâ€™. And in his wake politicians are recognising more and more how indispensable are surveyors, or more general geomatics professionals, in helping solve the many problems facing the world, be they environmental, (gender) inequality or efficient and sustainable use of land. Our thanks are due to Al Gore for creating such awareness.