

# Chapter 4

## Critical Infrastructures and Critical Information Infrastructures: By Type

This Chapter seeks to identify issues relevant to each of the common Critical Infrastructures. Each infrastructure is looked at briefly from a general perspective; then some comments are made about each infrastructure from an international, national, and then a local and individual perspective. There are many threats to these infrastructures and so this review may seem pessimistic. However, it remains a challenge to the society to deliver solutions to problems such as these.

Geologists tell us that stocks of oil and gas are running out and there are no more to be found. If the financial markets really take this message to heart then there will be, in all likelihood, a collapse. The world's economy will become destabilized and war will replace trade as the only reliable way for nations to secure enough food, water, and energy for themselves. Unless we change our approach to the use of fossil fuels it is also the case that Global Warming may continue unabated.<sup>42</sup> A rush for coal has been predicted.<sup>43</sup> This is on the basis that there is still much of it about; it is readily accessible, and not unduly expensive to extract. Nuclear energy has been the focus of much recent attention for future sustainable energy.<sup>44</sup> However, this has well-documented dangers. Alternative energy sources such as wind, solar, tide, and wave technologies are increasingly viable but not necessarily, yet, large scale enough to deliver the required amounts of energy.<sup>45</sup>

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<sup>42</sup> Leggett, J (2006) *Half Gone: Oil, Gas, Hot Air and the Global Energy Crisis*, Portobello Books.

<sup>43</sup> Jaccard, M (2006) *Sustainable Fossil Fuels, The Unusual Suspect in the Quest for Clean and Enduring Energy*. CUP.

<sup>44</sup> Kirby, A (2005) Analysis: Is Nuclear Power the Answer? *BBC News*. Available at <http://news.bbc.co.uk/1/hi/sci/tech/4216302.stm> (Accessed: 6 January 2007).

<sup>45</sup> *Culture Change*, available at <http://www.culturechange.org> (Accessed: 6 January 2007), amongst others, limits the medium term impact of alternative sources of energy at around 30% of current consumption albeit, with the capability, in time, to take over completely.

At an international level the competition for resources is truly breathtaking in an historical context. Russia has virtually nationalized a joint venture with Shell in Sakhalin<sup>46</sup> and effectively turned off gas and oil supplies to various parts of Europe<sup>47,48</sup> in the last two years; both actions would have been the cause for war a century ago.

China is exercising a diplomatic offensive around the world in a bid to win resources from the west to meet its own requirements.<sup>49</sup> This competition is trampling on nuclear treaties, human rights agreements, humanitarian developments, and views in ways that have not been seen for decades. This is an important issue for the OECD.

At a national level in the UK, there has been a shift from self-sufficiency in energy to dependency. Self-sufficiency was based on energy resources from the North Sea and Atlantic Ocean. Now dependency is based on, clearly unreliable, energy resources from Eastern Europe and Siberia. This shift has not been well planned, nor is the contingency planning (or the resilience) in place. This is clearly evidenced by the documented gas shortages for UK industry in the winter of 2005/2006, and the discussions on contingency and resilience that followed.

At local and individual level the increasing demand for energy in all parts of the world puts increasing pressure on relatively scarce international and national resources. The sustainable use of timber, wind, and alternatives to electricity (such as clockwork, candle/natural light, etc.) are technologies and skills that have not received the same technological and developmental input as fossil fuel derived energy sources, with one or two exceptions. Thus resilience in energy is probably at an all time low.

For four decades, insurance losses have been rising at 10% a year.<sup>50</sup> If this continues by around 2060 wealth will be destroyed faster than it can be created. Global warming will be a significant issue here. The possible extent of losses caused by extreme natural catastrophes in one of the world's metropolitan or industrial centers would be so great as to cause the collapse of the world's financial markets.<sup>51</sup> At the same time the amount of capital available for

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<sup>46</sup> Macalister, T and Parfitt, T (2006) \$20bn Gas Project Seized by Russia. *The Guardian*. 12 December. Available at <http://www.guardian.co.uk/russia/article/0,,1970064,00.html> (Accessed: 6 January 2007).

<sup>47</sup> BBC News (2006) *Gas Row Sends Shiver Through EU*. 2 January. Available at <http://news.bbc.co.uk/2/hi/europe/4574264.stm> (Accessed: 6 January 2007).

<sup>48</sup> Halpin, T, et al. (2007) Russia Turns off Europe's Oil Supply, *The Times*, 8 January.

<sup>49</sup> Navarro, P (2006) *The Coming China Wars: Where They Will Be Fought and How They Can Be Won*. Financial Times Prentice Hall.

<sup>50</sup> Amongst general insurance sites that say the same thing the big trends in insurance are commented on *Insurance 2020: Innovating beyond Old Models*. Available at <http://www-935ibm.com/services/us/index.wss/ibvstudy/bcs/a1024461> (Accessed: 6 January 2007).

<sup>51</sup> See amongst others: Mills, E (2005). *On Insurance Risk and Climate Change*. 23 September. Available at <http://www.lbl.gov/science-articles/archive/sabl/2005/September/05-insurance-risk.html> (Accessed: 6 January 2007).