

Global Cooperation for Hydrocarbon Technology

By Paul Tempest*

Summary

New technology has, throughout the history of mankind, been a key which opens the door to economic development and growth. Technological breakthroughs and their effective application cut costs, achieve higher efficiencies and, above all, open up wide new options. Herein lies the strongest and safest route to affluence, enhanced welfare and enhanced competitiveness, the most robust protection against economic deprivation, inertia and decay, and, in the longer term, hopefully, the path to a transition to non-fossil-fuel energy and non-pollutant industry.

Precisely how individual genius has to interact with favourable economic and social circumstances to generate new and highly useful technology and how commercial and financial mechanisms can translate these breakthroughs most effectively into new machines, new industries and new markets still remains a matter of conjecture, lively debate and divided opinion. Clearly demand pressures, supply constraints and the availability of capital are significant factors.

In any analysis of the global economy or of any single national economy within the global total, it soon becomes abundantly clear that there is also a very wide range of obstacles blocking or inhibiting the transfer of new technology and that there are many vested interests and rigidities which resist the displacement of old and out-of-date tools, machines, systems and practices.

Advances in tele-communications have, in recent years, accelerated the transfer of new technology by disseminating it more widely, by illuminating and exposing inefficiencies and by facilitating international co-operation. Indeed globalized science and technology enhances political and commercial co-operation. The harnessing of scientific and technical research world-wide brings massive economies of scale and progress to many parts of the world simultaneously. At the forefront of this process is the energy sector.

As regional and global markets expand, many new issues are uncovered concerning the involvement of government, the accountability of industry and new patterns of international competition. Global standards, regional patterns and national regulation of industry all require continuous adjustment.

Yet many of the obstacles of administrative inertia, legal complexities, infrastructure bottlenecks and public ignorance could be gradually eliminated if we all had a clearer description of what globalized markets need to thrive in free competitive conditions.

In 2002, a major effort has been made by asking many of the leading international agencies such as The World Bank, the International Monetary Fund, the United Nations Devel-

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opment Program and the World Health Organization to identify those key elements favouring an acceleration of technology generation, of technology transfer, of economic growth and of national competitiveness within the global economy.

The World Economic Forum, Geneva, has over the past few years developed, in its Global Competitiveness Report, a massive study to apply these key elements to 75 states world-wide and to rank those states according to their current performance and prospects in each of 175 separate categories. These 175 surveys are clustered into eleven groupings:

- Aggregate Country Performance Indicators
- Macroeconomic Environment
- Technological Innovation and Diffusion
- Information and Communications Technology
- General Infrastructure
- Public Institutions – Contracts and Law
- Public Institutions – Corruption
- Domestic Competition
- Cluster Development
- Company Operations and Strategy
- Environmental Policy

Using this material which relies largely on company sources and that supplied by governments and the international agencies, a National Competitiveness Balance Sheet is constructed for each state. Notable Competitive Advantages and Disadvantages are identified and graded under three main headings:

- Growth Competitiveness Rank
- Current Competitiveness Rank
- Other Competitiveness Rank

These markings and rankings are then aggregated and an overall global ranking is established for each state.

The Global Competitiveness Report 2001-2002 has also been supplemented by two detailed specific studies covering the countries of Europe and the 22 member-countries of the Arab League.

My conclusions, having been closely involved in this process over the past year, are that this is a very valuable exercise, which has shed much new light on the mechanics of economic growth and the differing relative strengths of regions and individual states.

However, the Global Competitiveness Report is unlikely to provide a satisfactory template for governance in all parts of the world. Just as the IMF has been unable to impose its own standard criteria in many parts of Africa, Asia and Latin America, the current pursuit of an ideal formula for competitiveness through free market principles is likely to be very widely frustrated. Within Asia, for example, there are many patterns of mixed economies where governments will find their own routes to enhanced growth through developing their own technologies and absorbing technology from external sources in their own way, routes and patterns which are not at all easily captured by sets of global principles, however detailed.

The Gulf States

The Gulf states have, of course, a central pivotal part to

play in the global economy through the provision of adequate oil and gas for the next fifty years at least – with probably a doubling of current Gulf aggregate production levels necessary to meet global demand. Even by 2030, the global economy will need 66% more energy (says the International Energy Agency) and in the key energy commodity, oil, the OPEC countries are expected to have increased their market share of global production from 39% to over 50%

In technology transfer terms, these states have a marked advantage in long-standing exposure to the international oil industry. Yet despite massive revenue from oil and gas exports, the leading Gulf producers still need to diversify their economies and to attract new foreign technology and external capital on a scale to give themselves self-generating new technology capacity and an adequate rate of economic growth to match or surpass their high population growth, employment needs and welfare expectations.

Gulf and Asia/Pacific Region Symbiosis

Already the bulk of oil and gas exports from the Gulf flows to the Asia/Pacific countries. This switch from the time when the bulk flowed to the Atlantic Basin is not likely to be reversed. The Asia/Pacific share is rising steadily.

We can be sure that this growing interdependence between the Gulf states and the leading Asia/Pacific states will be expressed in close bilateral trading and political relationships, such as those already established on a firm footing by China, Japan, Korea and India.

Background

Through the summer of 2002 I have been working on the 400-page report of the World Economic Forum (WEF), *The Arab World Competitiveness Report*, covering the 22 member states of the Arab League and drawing on substantial inputs from all Arab governments, the Arab League, OPEC and many other pan-Arab organisations.

My own assignment was simply to examine in detail the competitiveness of the Hydrocarbon Sector – almost entirely Oil and Natural Gas – and to come to a set of Conclusions and Probabilities for the Medium (to 2010) and Longer term (to 2050).

The Arab World Competitiveness Report has now been published as a follow-up to the WEF *Global Competitiveness Report 2001-2002* published earlier in the year. This latter study ranks 75 leading economies according to their current and potential growth, the stability of their infrastructure, their degree of globalization and their ability to attract and self-generate new technology.

Not a single Gulf state features in the *Global Competitiveness Report* which in my view is regrettable as this omission and the omission of the Central Asian states represent a substantial distortion of the global view represented. The *Arab World Competitiveness Report* goes some way to remedy this omission, but, of course, there is still no analysis of the standing and ranking of one major Gulf state, namely Iran.

A Significant Caveat

The more I think about these matters, the more doubtful I become about whether the criteria used by the World Economic Forum and the World Trade Organization are necessarily the right ones for the Gulf states or, for that

matter, for India, China and Asia in general.

At first sight, it appears rather naïve to identify the free market characteristics of the most affluent industrial states and then to expect all the rest of the world to emulate that pattern, and to be ranked accordingly (in 175 separate categories), come what may. It is rather surprising that many small affluent industrial states, some very small, come out at the top of the WEF list as shown below:

World Economic Forum Global Competitiveness Report 2001-2002

Overall Competitiveness Index Ranking

- | | |
|--------------------|-------------|
| 1. Finland | 17. Germany |
| 2. United States | 20. France |
| 3. Canada | |
| 4. Singapore | 21. Japan |
| 5. Australia | 23. Korea |
| 6. Norway | |
| 7. Taiwan | 39. China |
| 8. Netherlands | 57. India |
| 9. Sweden | |
| 10. New Zealand | 63. Russia |
| 11. Ireland | |
| 12. United Kingdom | |

My conclusion is that while the WEF report is rigorous in discerning the great variety of economic mechanisms world-wide, its surveys and rankings are more concerned with political attitudes and conformity to a broad North American/European model than to the economics and to the reality of where the major advances in new technology are being generated and developed.

Most observers would agree that, while the United States retains the top position as technology generator, South China is now laying claim to the global lead in manufacturing and international trade. These fundamentals are rather obscured in the mass of detail in the WEF reports and rankings.

Clearly, it is very difficult to aggregate all this disparate material into one table of results in any meaningful way. We would also have to examine the statistical reporting in detail to determine whether this was objective and appropriate or whether it relied on a judgmental view of a limited number of economists and other experts, many without experience on the ground. And we would need to review the weights assigned by the WEF to the various components.

The results seem to imply, for example, that Finland (No.1) makes a stronger contribution to new global technology than Japan (21st), Korea (23rd), China (39th), India 57th, or Russia (63rd). This, of course, would be nonsense. All that we can learn from this WEF analysis and ranking is that tiny Finland may fit the “ideal” globalization model more closely than any other state.

Where, we might ask, has been the predominant region of the world for the last decade or so in terms of the largest share of global economic growth and the largest share in new international trade. The answer, of course, is Asia led strongly by China and India.

If, by contrast, we were to evaluate all the new technology developed in China and India in the last decade under conditions of strong economic growth and stable political governance and if we were to go on to calculate a

total or index for China, Japan and India, each would probably be at a level well in excess of nine of the top ten states listed in the overall growth competitiveness index of the World Economic Forum.

China, for example may not have developed all its new technology by subscribing to free market principles and, without doubt, it has its own ways and techniques for stimulating infrastructure development. In the decades ahead, we may well find that the Chinese development model and the pan-Asia model first pioneered by Japan and Korea and the experience of India and other Asia Tiger economies may be more attuned to the needs of the rest of Asia, where they may be, therefore, more comprehensible and probably more effective.

Consider India with its vibrant new technology centered in Bangalore, Mumbai, Dehra Dun and a dozen other major cities, the second largest economy in population terms in the world and a key leader in world trade, clearly far more important for the future than the likes of Finland.

Conclusion

It seems to me, therefore, that China, India, Japan and much of the rest of the Asia-Pacific area are already developing strongly, each along their own lines. Their already high and growing dependence on energy supply imported from the Gulf may quickly express itself in bilateral trading patterns and commitments of a geo-political nature which will substantially challenge the assumptions of global free trade in Gulf oil and natural gas and the concept of homogenous global product and petrochemical markets as so vigorously espoused at present in North America and Western Europe.

Of the vital importance of the Gulf states to the global economy over the next fifty years, there is no question. It will be in the primary interest of both East and West, of both the industrialized and the developing world, that the Gulf area remains a stable and secure source of global energy supply.

A Note on Globalization

Successful economic development is defined in the Executive Summary of the *WEF Global Competitiveness Report* as follows:

“Successful economic development is a process of successive upgrading, in which businesses and their supporting environments co-evolve, to foster increasingly sophisticated ways of producing and competing.”

High levels of investment and the acquisition of new technology are seen as the key to this process:

“As economies move from low- to middle-income status, global competitiveness becomes Investment-Driven, as economic growth is increasingly achieved by harnessing global technologies to local production.”

“Foreign direct investment, joint ventures, and outsourcing arrangements help to integrate the national economy into international production systems, thereby facilitating the improvement of technologies and the inflows of foreign capital and technologies that support economic growth.”

A Note on Oil Market Fundamentals

I would like to remind you of four of the fundamentals of the oil market today and of their consequences in any examination of future prospects for global economic growth

and consequences for global energy demand.

Population Growth

UN estimates indicate a global population rising strongly with very severe employment strains over at least the next thirty years, as the recent “bulge” of high birth-rates (hopefully) works itself out. The move from country to town is expected to continue with 80% of the global population living in towns by 2050.

Energy Demand Growth

A predicted real economic growth rate of 3.5% p.a. to 2050 (less than the growth rate over the last 50 years) would indicate, on current growth/energy elasticities, a tripling of global energy demand by 2050.

Increasing efficiency of energy use might cut this growth to a doubling by 2050, but is unlikely to achieve much more. Pessimistic scenario builders point to dislocation by terrorism, regional struggles and environmental problems on a global scale but even they, in their darkest moments, concede that energy demand will continue to grow, even if irregularly and more slowly.

Energy Supply

It is widely accepted, given the characteristics of the capital stock and long-term character of energy investment, that the bulk of incremental energy will have to come from oil and natural gas, at least over the next thirty years. Also, that the bulk of that incremental oil and natural gas will have to come from the Gulf States, who already control over 60% of proven global reserves of oil and 35% of natural gas.

International Trade in Oil

In the international trade in oil, the Gulf states have current dominance of the oil market, being the source of about 50% of global crude oil exports. Whereas one-third of their production used to go East and two-thirds West, the ratios are now reversed with two-thirds going East. This is a structural change in the market of major significance. It is not likely to be reversed and indeed the large share going East will probably continue to rise.

The Canada-U.S. Energy Relationship *(continued from page 14)*

Footnotes

¹ The information contained in the last three paragraphs is based on data available in publications and websites maintained by the U.S. Department of Energy’s Energy Information Administration and Statistics Canada.

² This situation would be even worse but for efforts by Aboriginal groups to cooperate with another, thus reducing the number of distinct interveners.

³ Gary Horlick, Christiane Schuchhardt, Howard Mann (2002) “NAFTA Provisions and the Electricity Sector”, background paper prepared for the Commission for Environmental Cooperation of North America, Montréal, June.

⁴ This proportion is up from about 76% in 1991, according to the U.S. Department of Commerce’s Office of Trade and Economic Analysis.