Global security and economy

EMERGING ISSUES REPORT

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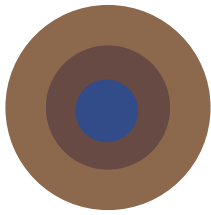Principle Author: Ilmas Futehally
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Research Intern: Jessyca Keil

Preface

This report identifies emerging issues that in our view will have an impact on global security and economy during the next decade. The objective of the report is not to anticipate developments in all sectors and all geographies. Rather our effort is to identify the most important issues across sectors and geographies that will influence the period approximately from 2011 to 2020.

The report builds on similar efforts made by other institutions. Our team undertook a survey of surveys to understand emerging issues identified by credible institutions around the world, using a variety of methods including workshops, conferences, polls, and in-house research. In addition, we took into account signals of change noticed by us in the course of our interactions around the world. We analysed findings from our external and internal search efforts to focus on issues that will most significantly impact our life in the foreseeable future.

While we have tried to rank the identified issues in terms of their impact and probability, to some extent such ranking is artificial. All issues are so interlinked that a major development with respect to one issue can drastically upset calculations on all other fronts. The complex web of linkages leads to one simple conclusion: We live in a world where globalisation of opportunities and risks requires global norms, a global institutional framework and a shared global philosophy. The report therefore raises a critical question: are we, the people of the world, willing to create a global architecture of security and economy that can deliver fairness, freedom, justice and happiness to most people in the world?

The objective of this report is not to search answers to the emerging dilemmas. Our intention is confined to draw attention to signals that may miss the attention of policy makers, since they are normally over-occupied with their daily concerns. The nature of our work provides us the luxury of looking ahead. We have used this opportunity to raise questions that will seize us before long. If this exercise inspires policy-makers around the world to review some of their assumptions, it will have made a contribution to policy discourse. If it leads to the search for answers to some of the key concerns, it will be a bonus.

1 January 2008

Sundeep Waslekar
President
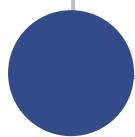
Executive Summary

Strategic Foresight Group has identified 20 emerging issues that will influence global security and economy in the next decade, approximately from 2011 to 2020. The first five are ranked on the basis of impact potential and probability. The remaining 15 are mentioned thematically.

Most Significant Issues

1. **Prosperity of the Periphery:** Globalisation has enabled wealth creation at a fast pace and will continue to do so in the next two decades. The question is whether prosperity will be concentrated in urban centres, coastal areas, and certain other privileged geographies or whether it will spread to the periphery.

2. **Competitive Extremism:** The world is entering an era of competitive extremism where extremist belief systems – based on religion, ethnicity, nationalism, sub-nationalism, and ideology – compete with one another in all parts of the world, gradually replacing the threat of terrorism, but creating a much, much larger monster in its place.

3. **Rise of Multi-Polarity:** The United States, which has been at the centre of global affairs for much of modern history since Second World War, will still continue to occupy the centre-place but will see its role as a single great power being replaced by a multi-polar world driven by the resurgence of Russia, China, Iran and independence of the European Union.

4. **Global Financial Crisis:** The financial imbalances between major debtor and creditor nations pose the risk of the collapse of the global financial system, leading to extreme protectionism, autarchy, trade wars and perhaps a worldwide military confrontation.

5. **Water Scarcity in Emerging Economies:** The scarcity of water in emerging economies like China, India, South Africa and Turkey may put breaks on their growth, create food insecurity, have a destabilising social impact and impair the world economic growth.

Technologies and Resources

6. **Revolution in the Cell:** Will major breakthroughs in biology, biotechnology and genetics, initially in North America and Western Europe, spread to emerging economies through a high rate of technology diffusion? Or will they provide a new platform for North-South politics, new political debate based on bio-ethics and bio-terrorism?

7. **Spread of Clean-tech:** Climate change is an established concern. The debate of the future will be about sustainable response to climate change, with Clean-tech leading the way. Currently concentrated in North America and Western Europe, will the new economies leap into the new economy with astute investment strategies and R&D efforts? Or will there be a North-South divide on this issue?

8. **Fear of Pandemics:** The sensitivity of political leaders to the fear of one or more pandemics breaking out globally is expected to be heightened. Will such a pandemic ever happen crippling the world economy or will the fear divert health budgets from chronic diseases affecting millions of people to an unknown future disease that might never threaten humanity in any case?

9. **Critical Information Infrastructure:** With global networks integrating critical information infrastructure, the security of our information systems is crucial.The consequences of an accidental or a planned attack on critical information infrastructure will be monumental.

10. **Competition in Space:** Will space be a sphere of competition between the United States, Russia, European Union and China, along with new entrants like Japan and India? Or will we rather see cooperation in our celestial exploration?

11. **Spread of Nuclear Weapons:** With the spread of nuclear energy and an increase in illicit trade in fissile material and technologies, the proliferation of nuclear weapons will be a natural consequence.

12. **Energy Security:** As not only hydrocarbon resources but also uranium reserves face the risk of depletion in the next three or four decades, energy security, already in pubic discourse, will occupy a much more significant place in global politics.

Troubled Geographies

13. **US-Iran Strategic Cooperation:** The hostile relationship between the United States and Iran may see a gradual thaw, rapprochement, development of strategic cooperation, if a war does not provide a permanent setback in the meanwhile. Just as the US-China relations suddenly made a U-turn, similar breakthrough in the US-Iran relations might be on the anvil.

14. **Arab and Islamic Renaissance:** Despite apparent despair, many new initiatives may turn the Arab and Islamic countries into spheres of dynamism, progress, knowledge, providing a new win-win basis for relationship between the Western and Islamic countries.

15. **Middle Eastern Drama:** Until a decade ago, the conflict in the Middle East was between Israel and the PLO. Now new players (Hamas, Hezbollah) have entered the arena and Iran is moving from margins to the centre. China and Russia are also likely to join the fray. The drama seems set to get more and more complicated with the entry of new actors.
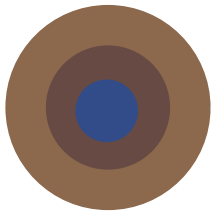
16. **Chinese Countryside:** China's history is replete with examples of how peasant revolutions have brought down the empire from time to time. Will the simmering discontent in the farm sector in today's China lead to the repetition of history? Or will the policies of 'harmonious society' articulated by the current leadership be able to pre-empt such a risk?

Concepts and Ideas

17. **Demographic Imbalance:** Since rich countries will experience an ageing problem and poor countries will have youth bulge, innovative global policy tools, including managed migration, will be significant.

18. **Erosion of Sovereignty:** The concept of sovereignty of state, carefully nurtured since the Peace of Westphalia in 1648, is undergoing change – due to assault from above and below and due to voluntary surrendering of sovereignty at the horizontal level.

19. **Spread of Soft Power:** Since most countries realise the devastating consequences of military confrontation – especially one involving nuclear weapons – there will be dramatic increase in the use of soft power to further national goals. While advanced and industrialised countries are familiar with this strategy, in the future we will see emerging countries like China, India, South Africa, Turkey, Saudi Arabia, and others using it.

20. **Dominant Global Philosophy:** For decades socialism Vs capitalism dominated the global philosophical debate. Since the early 1990s, the clash of civilizations theory influences intellectual basis of the current policy discourse. Will it be relevant in the future? Or will there be return to socialism-capitalism discourse? Or will there will a new philosophical framework, such as Nature Vs Machine, or humans Vs post-humanism? The basis of our philosophical debate will underpin the architecture of global governance, security and economy.

Contents

Introduction

The period since the end of the Cold War has created a conceptual void. In an era marked by the fall of the Berlin Wall and the Allied victory in the First Gulf War, some social scientists rushed to declare the end of history while others proclaimed an era of clash of civilizations. Fifteen years later, we find that neither of these theories correctly explains the key challenges facing humanity in the twenty first century.

Therefore we lately see a rush by several reputed institutions to identify key challenges facing us and derive the underlying theoretical framework from them to explain the shape of things to come. Such efforts have been undertaken by intergovernmental organisations, government bodies and private sector institutions. The United Nations took the lead in these efforts by defining Millennium Development Goals. The UK Ministry of Defence has undertaken trends analysis of social, economic, political and security variables for the next thirty years. Pew undertook a global survey of emerging concerns, while Bertelsmann Foundation commissioned an international survey to explore the concept of power and emerging issues around the world. In Russia, Germany, United States, several organisations have initiated a similar exercise. World Economic Forum has newly established a risk analysis division, which identifies global risks through workshops and consultations.

Much of the effort to identify emerging issues, and underlying conceptual framework of global security, has been undertaken by institutions in North America and Europe, including Russia. Strategic studies institutions in Africa, Asia, the Middle East and Latin America tend to concentrate on bilateral and regional security issues. However, it is necessary for institutions outside the West to make active efforts to explore changes that will influence our world. According to some estimates, the world population will increase from 6.6 billion in 2007 to 8.5 billion twenty years later. At that time only 1 billion people will live in North America, Europe and Russia. Thus, an overwhelming majority of the world population will live outside the industrialised West. It is therefore necessary to identify emerging issues from an independent perspective, which is not influenced by the Western discourse.

This report has undertaken precisely this task. It identifies 20 emerging issues that are likely to develop to such a state that they will have a significant impact on global security and economy in the next decade i.e. from approximately 2011 to 2020.

SFG believes that foresight involves forecasting with insight.

It is possible to identify trends and then to use quantitative tools to extrapolate them and forecast expected developments in a given sector. However, a trend is accelerated or attenuated by drivers, and altogether modified by discontinuities, so that without identifying these and taking their influence into account, no forecast can be made with any confidence. The difficulty is that these factors, by their very nature, cannot be quantified into the trend equation. Identifying the relevant ones and judging their effect upon a given trend can only be a matter of an informed guess, or insight. Insight itself is a product of expertise, knowledge, intuition.

The future is often about discontinuities rather than trends. Therefore, we place great emphasis on identifying and assessing discontinuities. This is not to say that we discount trends. However, since trends are easy to detect, the main value of this report is in identifying discontinuities. In this context, a "discontinuity" is defined as a developing phenomenon, which will dramatically influence (positively or negatively) an

already established trend or situation, quite possibly in a different field.

In preparation of this report, Strategic Foresight Group decided to seek input from two main sources:

1. Survey of Surveys- External sources in the form of studies and polls prepared by other institutions with a view to identify emerging issues;

2. SFG Insights- Internal sources in the form of findings of the SFG itself in the course of its various activities, which may or may not have been published in the past.

The reference to external sources was confined to reports prepared on the basis of extensive consultations, workshops or polls by credible institutions. In other words, personal views of individuals were not taken into account. The findings and statements of following institutions were considered as relevant for the purpose of external environmental scan.

- United Nations and its specialised agencies
- Organisation for Economic Cooperation and Development (OECD)
- Pew Global Survey
- World Economic Forum
- World Future Council
- World Future Society
- European Commission.

We chose these findings because they reflect processed thinking of a large number of individuals in leadership roles. The United Nations Millennium Development Goals were reached through negotiations between diplomatic representatives of all countries in the world, who had to foresee and agree on major developmental challenges of 2015. The risk reports of the World Economic Forum were produced based on a series of workshops. The Pew Global Survey was based on opinion polls involving thousands of people in different parts of the world. Thus, SFG conducted a survey of surveys to benefit from the processing of primary information collected by credible institutions in the world.

Strategic Foresight Group places a high value on policy oriented academic research, which may not necessarily involve a large number of leaders as in the case of institutions mentioned earlier. However, systemic research undertaken by reputed institutions

in different parts of the world reflects intense application of mind by research teams. Therefore, we also considered the reports on global issues prepared by the following reputed research institutes:

- Futuribles International, based in Europe
- Futures Foundation, based in Australia
- International Food Policy Research Institute- its project based in Africa
- Institute for Security Studies, South Africa
- Bertelsmann Foundation, based in Germany
- Council on Foreign and Defence Policies, based in Russia
- Shell International, based in UK and the Netherlands
- Development, Concepts and Doctrine Centre, Ministry of Defence, UK
- Goldman Sachs
- Rand Corporation
- Red Herring Magazine
- Institute of Alternative Futures.

The following issues appeared most frequently in the Survey of Survey of the above identified institutions:

1. Disparities between the rich and poor
2. Climate change
3. New and infectious diseases
4. Terrorism
5. Water scarcity
6. Weapons of mass destruction
7. Trade talks
8. New developments in biology and biotechnology
9. Trans-national organised crime
10. Democratic governance
11. Energy security
12. Clean technologies and green policies
13. Uncertainties in China
14. Demographic imbalance, including issues of ageing
15. Breakdown of critical information infrastructure.

Discussion on internal findings by SFG over the last few years led to the identification of the following issues:

1. Prosperity of the periphery
2. Decline of the United States as a centre of power and growing multi-polarity
3. Changing concept of sovereignty
4. Growing complexity of the conflict in the Middle East
5. Competitive extremism
6. Fault lines in the global financial system
7. Competition for global commons such as space and seabed
8. The spread of soft power
9. Arab Islamic Renaissance
10. US-Iran strategic cooperation
11. Global debate on basic philosophical concepts governing the world

For the purpose of this study, an emerging issue refers to a phenomenon potentially affecting global security and/or economy, about which signals of a significant change are just becoming discernable or based on analysis, are expected to become unambiguous during the next few years.

Classification of issues between those seen as emerging for the next decade and the ones already emerged as of 2008.

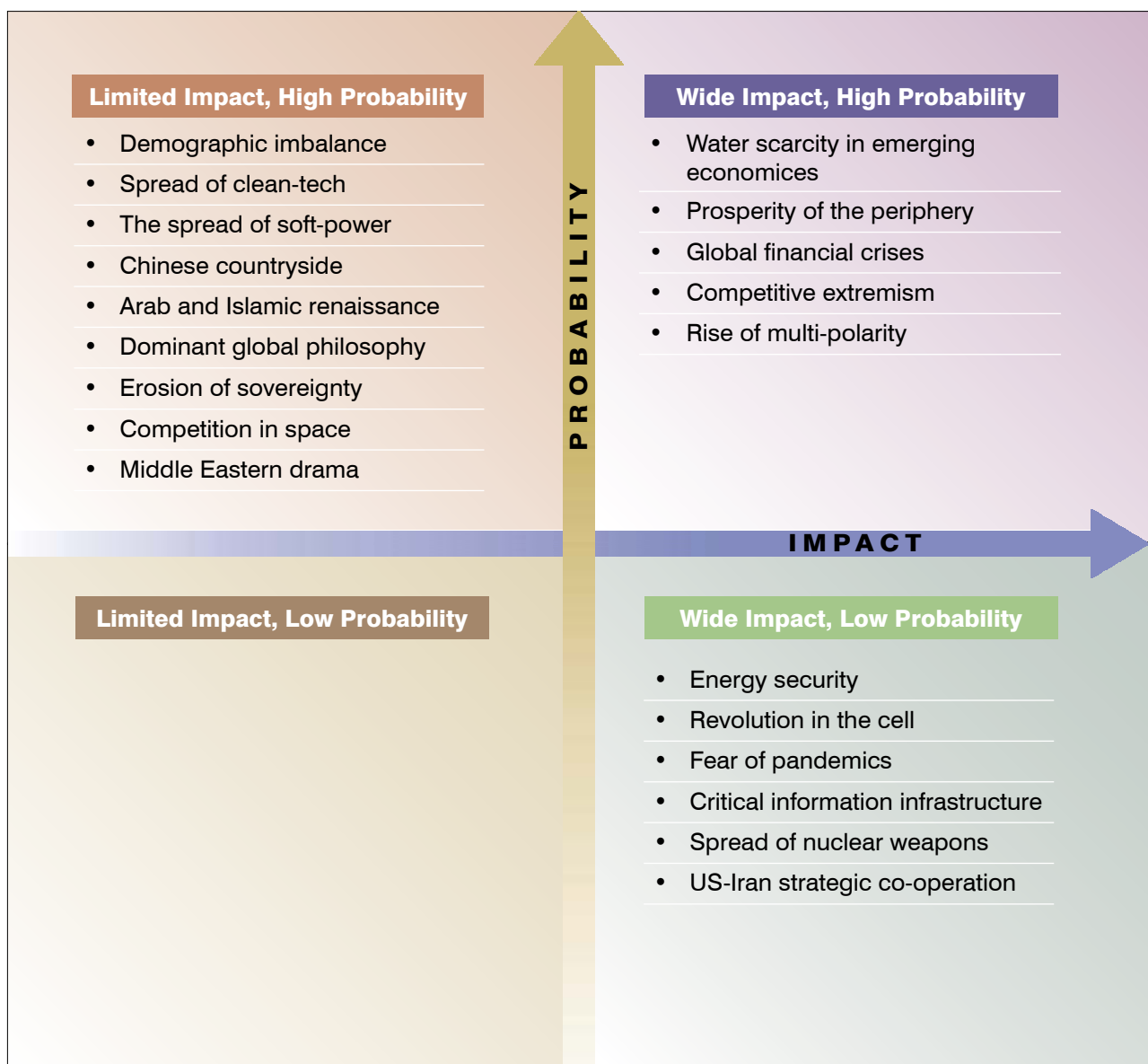| Issue	Emerging	Already emerged
Disparities between the rich and poor		Trend
Climate change		Trend
Fear of new and infectious diseases	Trend	
Terrorism		Trend
Water scarcity	Trend	
Spread of nuclear weapons	Trend	
Trade talks		Trend
New developments in biology and biotechnology	Discontinuity	
Trans-national organised crime		Trend
Democratic governance		Trend
Energy security	Trend	
Clean technologies and green policies	Trend	
Uncertainties in China	Discontinuity	
Demographic imbalance, including issues of ageing	Trend	
Breakdown of critical information infrastructure	Discontinuity	
Prosperity of the periphery	Discontinuity	
Decline of the United States as a centre of power and growing multi-polarity	Discontinuity	
Changing concept of sovereignty	Discontinuity	
Growing complexity of the conflict in the Middle East	Discontinuity	
Competitive extremism	Discontinuity	
Fault lines in the global financial system	Discontinuity	
Competition for global commons such as space and seabed	Discontinuity	
The spread of soft power	Discontinuity	
Arab Islamic Renaissance	Discontinuity	
US-Iran strategic cooperation	Discontinuity	
Global debate on basic philosophical concepts governing the world	Discontinuity	

The following issues are very high on the public policy agenda in 2007 and will continue to occupy a prominent place on the global public policy agenda in the next few years. We chose not to include them in our study, since we treat them as issues that have already emerged in the debate on global security and economy.

- Disparities between the rich and poor – chronic issue

- Climate change – a new issue that will continue to be debated. We have however looked at the response to climate change- i.e. the emergence of clean and green technologies.

- Terrorism – a new issue in this decade that may be irrelevant in the next decade (and replaced by competitive extremism, covered in our report)

- Trade talks - new issue in this decade that may be irrelevant in the next decade

- Trans-national organised crime – chronic issue

- Democratic governance- a trend that has already begun.

The 20 issues identified are issues that are either emerging on the horizon, or the status quo on them is likely to change in a significant way.

The 20 emerging issues identified were categorised as per impact and probability of their occurring in the next decade.

Limited Impact, High Probability

- Demographic imbalance
- Spread of clean-tech
- The spread of soft-power
- Chinese countryside
- Arab and Islamic renaissance
- Dominant global philosophy
- Erosion of sovereignty
- Competition in space
- Middle Eastern drama

Wide Impact, High Probability

- Water scarcity in emerging economics
- Prosperity of the periphery
- Global financial crises
- Competitive extremism
- Rise of multi-polarity

PROBABILITY

IMPACT

Limited Impact, Low Probability

Wide Impact, Low Probability

- Energy security
- Revolution in the cell
- Fear of pandemics
- Critical information infrastructure
- Spread of nuclear weapons
- US-Iran strategic co-operation

The top 5 issues were further ranked on the basis of impact and probability, ascribing values ranging from 1 to 10. The final ranking is as follows:

1. Prosperity of the periphery
2. Competitive extremism
3. Rise of multi-polarity
4. Global financial crisis
5. Water scarcity in emerging economies

The overview of the 20 issues indicates that we live in times of unprecedented opportunities and risks. Underpinning our response to the opportunities and threats would be our ability to extend prosperity to the periphery of humanity. Indeed, the greatest challenge of our time is how to include the periphery, or marginalised people, into the process of globalisation of opportunities. If we succeed in extending prosperity to most people in most countries, we will live in a better world. If we don't, we will see the rise of competitive extremism driven by relative deprivation. Currently, extremism is manifested narrowly through acts of terror. However, if the periphery remains outside the sphere of prosperity, extremism will find other expressions, which would involve mobilising large sections of populations rather than mere networks of terrorists.

How we respond to the emerging opportunities and threats will to a certain extent depend on behaviour of the United States, currently the single most important power. Our report reveals that the United States will continue to be an important power, though a declining one. It will encounter geopolitical competition from others. However, it will very much be at the nerve-centre of financial and technological

development. A key challenge of our time is for the United States and others to build a co-operative global security and economy architecture, recognising the inevitable leadership of the United States in the realm of technology and its relative weakening in the realm of security and moral authority. In order to facilitate transition to such a cooperative world order, the future leadership of the United States will need to appreciate the value of a collaborative problem-solving model, in place of the current model of unilateral enforcement of values and priorities. It is also imperative for other countries to work with the United States in a constructive spirit. If we nurture a cooperative spirit, we will be able to manage future crisis. Otherwise, the world will be living under the threat of systemic global collapse – arising from financial, environmental or technological accidents and aberrations.

Our willingness or failure to develop a co-operative global approach to interlinked global problems will depend on the dominant global philosophy that will emerge in the next decade. The world was dominated by the contest between freedom and fascism, and later on between capitalism and communism. The framework of 'clash of civilizations' has proved to be inadequate to understand our main challenges. We live in an age of conceptual void. Will we return to the era of contest between Left Vs Right or West Vs Islam in the next decade or will the new philosophical debate be about the relative merits of nature Vs machine or human Vs post-human living systems? In the ultimate analysis, the dominant global philosophy, or at least the dominant philosophical dilemma, will shape our approach to how we will respond to the emerging issues.

Part I – Most Significant Issues

Prosperity of the Periphery

Currently half of the world's 6.6 billion population is in the market, while the other half (around 3.3 billion) lives in the periphery where people are unable to afford even the basic amenities of life. In the next two decades, prosperity will spread to bring in almost 5 billion (additional 2 billion as compared to today) people into the market, shrinking the periphery to 40 per cent. However, in absolute terms, there will still be 3 billion people in the periphery, as overall population will also increase to 8 billion. Are there any non-linear policies, technology, instruments that can draw more people out of the periphery into the market, or bring prosperity to the periphery? Or will the sense of helplessness and despair cast a gloom on the future of the world?

Signposts

- The current population of the world is 6.6 billion with 50 per cent of the population in the market and 50 per cent outside the market- in the periphery. By 2025, the population is expected to be 8 billion with 60 per cent in the market and 40 per cent in the periphery (on the assumption that 7-8 per cent growth continues in India and China).

- Only 10 countries account for 60 per cent of global merchandise trade. Another 40 countries account for 30 per cent of it. The remaining 150 odd nations of the world share 10 per cent of world trade. Thus, so-called globalisation is not reaching many of the smaller and poorer countries in the world. There is thus tremendous scope for prosperity to spread to several countries by inducting them into world trade.

- According to the UNDP Human Development Report, the gap between the incomes of the richest countries and the poorest countries was about 3 to 1 in 1920, 35 to 1 in 1950, 45 to 1 in 1975, 75 to 1 in 1992 and almost 100 to 1 in 2002.

- The contemporary world economy produces enough material means for the whole of humanity if people in all countries were to enjoy a standard of living at levels that match Belarus, Brazil, the Czech Republic, Lithuania, Mexico or Uruguay.

- Income inequality has reached near record levels in many countries. The distribution of the world's wealth - things like stocks, bonds or physical assets like land - has become even more narrowly concentrated than income, according to a report by the World Institute for Development Economics

Distribution of Population in Billion between the Market and Periphery

	2007	2007	2007	2025	2025
	Market	Periphery	Total	Market	Periphery
Western*	0.7	0.3	1.0	1.0	0
Non Western**	2.6	3.0	5.6	4.0	3.0
Total	3.3 (50 %)	3.3 (50 %)	6.6 (60 %)	5.0 (40 %)	3.0

(*Western= North America, Europe, Russia, **Non-Western = Asia, Africa)

Research. Wealth is more unequally distributed than income across countries.

- China has moved at least 600 million people out of poverty thanks to the economic boom. But this still leaves almost 700 million relatively deprived. Rural incomes in China are only 40 per cent of urban incomes. There is also significant disparity between coastal and inland provinces. Almost all the investment that has come to China, particularly since the country went in for state-controlled liberalization has gone to the eastern region.

- In India, in the last six years, 7 per cent of the population (corresponding to 100 million people) from the periphery has been brought into the market. By the year 2025, it is expected that a further 150 million people will be brought into the market. However, at that time there will still be between 800-850 million people out of the market in 2025, comparable to 858 million today.

- At a time when India has the largest number of billionaires in Asia, a report by the National Commission for Enterprises in the Unorganised Sector has said that 836 million (77 per cent of the population) earn less than Rs 20 per day (50 cents). It states that India's growth has benefited the middle and high-income groups and the poor have been bypassed. While the numbers of poor and extremely poor have reduced in the last decade, the marginal and vulnerable segments of the population have increased from 51.2 per cent to 55 per cent. These figures tally well with

SFG's research that reached a similar conclusion by analysing consumption patterns.

- In South East Asia, despite the recent economic boom, the periphery remains neglected. Inequality in Vietnam runs along multiple dimensions: the historical division and separate economic systems of North and South; rural-urban; altitude and agro-ecology (the interior highlands vs. the fertile coastal lowlands); farm vs. non-farm occupations; and ethnic groups. The richest region, the South-East has an average income (833,000 dongs/year) that is four times that of the poorest region the North-West (265,700 dongs/year). Cambodia has 77 per cent of its population living under a dollar a day. The bulk of its prosperity is concentrated in the capital Phnom Penh. In Indonesia, the greatest concentration of incomes is around the capital city and a few resource-based centres. Java, with 6 per cent of land area, dominates Indonesia's economy. In Malaysia, too, there is great concentration around the capital. In Thailand, the regional divide is particularly pronounced between Greater Bangkok and the rest of the country. The former dominates the economy, generating over half the national GDP, even though its population is less than 15 per cent of the total.

- In Africa, while the proportion of people living on one dollar a day or less has declined from 45.9 per cent to 41.1 per cent since 1999, reaching the MDG target of halving the extent of extreme poverty by 2015 requires that the current pace of growth be nearly doubled.

A Brief Look at World Population

Region	Population (millions) 2005	Population (millions) 2025	<$1 (%)	<$2 (%)	Per capita income ($)	Unem-ployed (%)	Growth Rate (%)
World	6375	8000	19.4	50	6987	6.5	3
East Asia	1954	2400	11.6	40.7	1627	4.4	9
Latin America	549	689	8.9	23.4	4007	9.5	3
Middle East and N Africa	344	486	1.6	19.8	2241	13.6	4.5
South Asia	1426	2000	31.2	77.8	684	4.5	7
Sub-Saharan Africa	720	1175	44	74.9	745	…	4

Drivers

- A shift in the policy priorities to focus on food and agriculture, biotechnology and health care in the periphery, combined with visionary leadership.

- Improvement in primary health, access to clean drinking water, improvement of conditions for survival and healthy growth of children.

- Broad based and sustainable growth policies, including information and training to rural entre-preneurs.

- Creation of jobs outside the traditional agricultural sector, such as agro-processing, small-scale industry, partnerships between government, entrepreneurs, civil society and international community. For example, in 2007, there are 348 million youngsters in sub-Sahara Africa under the age of 14. The number is expected to reach 403 million in 2015. Unless suitable employment can be found for them, the repercussions would be formidable.

- The spread of mobile and wireless technology to rural areas, where currently 3 billion (or half of the world's population) live and work will be critical to their economic progress. A study by the London School of Economics shows that increase in 10 mobile phones per 100 people is translated into 0.6 per cent increase in the GDP. Mobile phones are already helping farmers in India, Africa and Latin America to receive the best prices for their produce.

- Greater political participation for marginalized groups, including rise of new political parties addressing the concerns of the periphery leading to greater economic and political inclusion.

- Sense of exclusion created by resources being controlled by outsiders (such as in North East Sri Lanka, North East India, South Sudan).

- The rate and scope of globalisation to include smaller countries and the periphery of larger countries.

- Corruption in developing countries is an important factor in preventing the funds and schemes instituted by central governments in reaching their target communities. If corruption can be brought down significantly, it could have a major impact on development of the periphery.

- Corruption and inefficiency in the periphery leads to migration from rural to urban areas forcing the migrants to live in inhuman conditions in slums. Disenchantment of the system creates an attraction to criminal and terror groups.

Uncertainties

- The ability of countries to be able to create rural employment, which provides both income and esteem to the people. The return on labour and inputs is directly linked to stability. If people are gainfully employed they would be less attracted to crime and terrorism.

- Conflicts caused by grievances in the periphery on the basis of economic and political exclusion could lead to a cycle of violence.

- The ability of the periphery to be able to compete in the global marketplace with highly productive agricultural economies such as Australia and New Zealand and to be able to conform to international hygiene and sanitary standards.

- Land reforms are politically very sensitive. However in a country like India with decreasing land holdings per generation, it is very hard to increase productivity on small farms.

- Water availability for agriculture is essential. Emerging economies like India, China, South Africa, Turkey may face water scarcity in the future. This may have a negative impact on prosperity of the periphery.

● The discovery of strategic resources such as gold, diamonds, and uranium could change the future of regions where they are found. The discovery of uranium in Kazakhstan, Namibia, Niger could change their fortunes as much as oil resources led to the prosperity of countries in the Middle East. Whether the distribution of wealth is equitable will determine whether the country will prosper in the long term or be ravaged by conflicts.

Impact

If policies of inclusion can expand the circle of growth to an extent that it produces hope among populations living in the periphery, the world can enter into a period of peace, productivity and prosperity. However, if the periphery continues to be neglected by policy measures and development, it could create a tremendous unleashing of the forces of extremism, crime and hopelessness.

2

Competitive Extremism

The problem of terrorism is slowly transforming into the problem of competitive extremism. While terrorism implies politically or ideologically motivated violence, which constitutes criminal acts, extremism is more about arming minds and mobilising large sections of population to create absolutist societies. Since the latter does not necessarily construe crime, it is much more challenging to address. With international cooperation rendering acts of terror difficult, extremism is on the rise in all continents of the world. No belief system – religion, ideology, political philosophy – has monopoly over extremism. In fact, the competition between different kinds of extremism is on the rise, raising the risk of a worldwide military confrontation in the next decade or two.

Signposts

(A quick tour of the world)

- In the Philippines, the New People's Army, advocating communist ideology, is spreading its tentacles in the rural areas of prosperous Luzon province, while Moro Islamic Liberation Front, in southern Mindanao, is still active, though much weaker than earlier.

- In Indonesia, Mujahideen Kopak, based in the southern Sulawasi, Lashker Jihad in Maluku and Jemmaiah Islamia, dispersed in different parts of the country spread militant Islamic ideology. Extremist groups in southern Thailand do the same.

- In Sri Lanka, the Tamil sub-nationalist movement is growing in its determination to separate from the Sri Lankan state.

- In Nepal, central and northern India, and parts of Bangladesh, violent communist movements have spread at a fast pace since the mid-1990s and aim to disrupt local and national governance.

- In Pakistan, Baluchi sub-nationalist groups and in India sub-nationalist groups in Jammu & Kashmir and in the north-eastern region advocate extremist sub-nationalism.

- In Bangladesh, Pakistan, Afghanistan, parts of Central Asia, and parts of Russia, groups promoting extremist versions of Islam are growing in strength. Some of them have created bases among migrant communities in UK and Western Europe. They include terrorist groups as well as groups like Hizb-ut-Tehrir that do not necessarily engage physical acts of violence, but promote extremist version of religious orthodoxy.

- In Iran, a force promoting theocratic extremism is in power and gaining strength from time to time.

- In Iraq, more than 50 terrorist groups have taken birth since 2003, including some which have extended to other countries in West Asia.

- In Lebanon and the Palestinian territories, groups that promote theocratic national order have been strengthened, while in Israel extremist Jewish groups continue to have a strong base.

- In Yemen, Turkey, Morocco and parts of North Africa, several ethnic groups have been engaged in ethnic violence, with no sign of abatement of the same.

- In Egypt and Algeria, extremist religious groups have moderated their stance and sought the electoral route to power, but their basic philosophical commitment continues to be to an absolutist future of the society.

- In Sudan, sub-nationalist extremism in the south has given way to religious and tribal extremism in western parts of the country.

- In Uganda, Lord's Resistance Army has agreed to a ceasefire but there is no guarantee that it will not resurface again (like Tamil extremism in Sri Lanka that had accepted ceasefire for three years).

- In many parts of Africa, tribal and ethnic extremism has taken a violent form.

- In Southern Europe, sub-nationalist extremism in Serbia, Kosovo and Cyprus has fomented.

- In Central and Eastern Europe, ultra-nationalist extremism has experienced limited electoral successes.

- In Russia, extremist nationalism is on the rise as reflected in popular support to nationalist decisions taken by the leadership.

- In Colombia, narcotics trade, organised crime and ideological extremism have blended to create a Frankenstein.

- In the United States, evangelical Christianity - particularly Pentecostal Christianity - with several groups advocating eschatology is on the rise. FBI has curtailed racist extremist groups like National Alliance and Aryan Nation, but they could be dormant - waiting to be organised under fresh and effective leadership.

- Globally, Al Qaeda has emerged as a violent force, promoting both terrorism and extremism.

- Also, globally while purely terrorist groups (e.g. Lord's Resistance Army) seem to be waning in influence, the groups that combine terrorism with extremism (e.g. Al Qaeda) and movements that promote extremism without necessarily resorting to terrorism (Hizb-ut-Tehrir, evangelical Christianity, European racist groups) are spreading their tentacles.

Drivers

- On the demand side of extremism, so long as there are determined and organised vested interests that create demand for young people by providing vocations in practising ideological, religious or political violence, the possibility of extremism growing will remain high.

- The effectiveness of national law and order machineries and international coordination will help to curb the growth of extremist forces and terrorist groups.

- On the supply side, success of governance in restricting deficit of development, democracy and dignity can reduce the supply of young people to the extremist ranks.

- Education, awareness, esteem, and delivery of a vision that is a genuine alternative to corrupt governments and orthodox groups can curtail the supply of young volunteers to extremism.

Uncertainties

- Iran and Pakistan are two high profile examples of states created with sharing of power between security apparatus and extremist ideology. Both states are susceptible to failure or reform on account of internal contradictions. If these states fail, it will be a body blow to extremist ideology. On the other hand, if they persist, they will inspire other societies to follow them.

- If Afghanistan, Bangladesh and Iraq eventually fall to the extremist forces, they will be able to provide a material base for worldwide export of their new ideologies.

- If there is revolution in Egypt, it will have the potential to destabilise many other states in the Middle East.

- If the United States and Israel adopt intransigent strategies, they will strengthen extremism. On the other hand, out of box thinking by the two players can weaken extremism.

- If economic and social disparities in the United States, Europe, China, India and Brazil increase, they can all become hosts to extremist groups of a different kind. If established and rising economies go on the extremist path, there will be global psychological impact. On the other hand, these countries have several instruments of governance that they can use with ingenuity and discredit forces of extremism. It is uncertain to say which route they will travel by since their policy mix will depend on the quality of leadership in the next decade.

Impact

- If a large number of countries in the Middle East and Asia fall prey to forces of religious orthodoxy, if Russia and China resort to ultra-nationalism, and if evangelical groups in the United States and rightist groups in Europe acquire adequate electoral clout, they can all influence the policies of their countries. The states under the influence of such groups and forces are least likely to pursue collaborative problem-solving approach to the world. They are likely to take to isolationist behaviour at the slightest appearance of economic and social fault-lines. Together they will create a world, which is characterised by lack of mutual trust and cooperation.

- In extreme cases, when the world has even 15-20 governments either formed by or politically dependent on extremist groups, the chance of conflict between is them is high. If there is a significant provocation, such as currency collapse or trade wars or terrorist attacks, they may even resort to military confrontation.

- In brief, in a world of competitive extremism, cooperation, welfare and global security will be at discount. Such a world is at some stage bound to end up in a major war.

3

Rise of Multi-polarity

The contemporary uni-polar system will gradually become a multi-polar one by 2020. Japan, India, Australia and some of the East European countries will help consolidate the American power in different parts of the world; but China, Russia and others will challenge it. The European Union may formulate an independent, though not a rival, worldview. Furthermore, the Latin American Socialist countries with the support of Iran, Russia and China, seem set to challenge the American dominance of world politics. The Islamic societies will in particular oppose the American role in the world, though their governments depend on the American security guarantees. The growth of extremism and the weakening of friendly governments in the Middle East will further erode the unitary power structure and contribute to making the world a multi-polar one.

Signposts

Decline of the United States

- The United States continues to be a world leader in military strength (accounting for half of the world's military expenditure), technology (home to invention of most technologies since the late 19th century, including future technologies such as bio-technologies, green technologies, robotics, nanotechnologies, among others. However, its moral authority has declined all over the world as reflected in various opinion polls.

- It has consistently faced military defeats since the beginning of the 21st century. These include return of Taliban in most of the southern and eastern Afghanistan, failure in Iraq, failure of

Israel (with strong American support) in the missile war against Hezbollah, and the defeat of Al Fatah (with military and diplomatic support of the United States) against Hamas in Gaza.

- It is facing internal and external economic erosion. The US public debt has risen from $4.5 billion at the beginning of the decade to $9 billion by the end (expected) and the dollar has declined from 0.9 per euro in 2000 to 1.4 in 2007, with market fears of further decline. The American share in global industrial output is on decline.

Independence of the European Union

- The European Union has developed a somewhat independent approach to the Middle East pertaining to Iraq, Iran and Syria, though it broadly shares the American view of the Israel-Palestinian conflict.

- It has launched GALILEO, a rival satellite system to GPS, signalling independence from US in military manoeuvres and civilian matters by 2011; China and Russia have both stakes in the project.

- EU could enforce coming into being of the International Criminal Court, with the US in opposition.

- But, the EU has also many areas of cooperation with the US, reflected in hundreds of economic and strategic treaties, and almost $18 trillion of trans-Atlantic investments. Moreover, the European countries share the philosophy of democracy and human rights with the United States, which will help evolve common positions on global issues, though the EU would comparatively be more independent than earlier on specific issues.

Russia's Resurgence

- Russia's emergence as the second largest producer of oil and the largest exporter of gas has placed it in a strong negotiating position with its neighbours and other countries in Europe. It has already used its monopoly against Belarus, Ukraine, and Georgia, in order to impose its political will, and has the capability of doing this vis-à-vis the EU as well, as the latter buys 3/5 of all of Russia's gas exports.

- Russia has undertaken an ambitious modernization programme of military to be completed by 2015. It is considering defence exports as an important tool for its overseas economic and political objectives.

- Russia has undertaken a flag march on the seabed under the Arctic, opposed NATO plans for anti-missile shield in Eastern Europe and proposed to strengthen its space programme.

- Russia has successfully eroded American influence in Central Asian republics, despite initial US collaboration with Uzbekistan and Kyrgyzstan.

- Russia is forging its relationship with China in the energy market, regional security arrangement (SCO) and a common diplomatic position on many global issues.

China

- China's growing economy has helped it to create political space in Southeast Asia, Central Asia, Africa and possibly in the future in the Middle East. It has established diplomatic relations and special partnerships with many states which the US has sanctioned (Zimbabwe, Sudan, Iran), narrowing American diplomatic options in world politics.

- It has led peace initiatives with regard to North Korea, and is likely to do so for Burma.

- China is modernising the People's Liberation Army, particularly in high technology areas such as cyber warfare, critical information infrastructure and space.

Others

- The Latin American Socialist Block has established the Bolivarian Alternative for the Americas (ALBA), countering US-plans for Free Trade Area of the Americas (FTAA). Venezuela, Cuba, Nicaragua, and Bolivia are members; and they have offered Iran an observer status.

- Venezuela has struck 180 economic and political agreements with Iran, increasing leverage power on the global scene, entered into arms deals with Russia, is structuring a special energy relationship with China and leading an ideological drive against the United States in the Western hemisphere.

- The governments in the Middle East enjoy American security guarantees. However, large scale opposition to the American worldview in the streets of the Middle East has led to terror attacks against the US and its allies and mobilisation of large sections of population to bring down pro-West governments in the region. It has also foiled American strategic plans in Afghanistan and Iraq and will work against potential US military attack in any country in the region.

Drivers

- Much of the antagonism towards the United States, as well as America's own economic and moral erosion, stems from specific characteristics of the Bush administration's global policies. With a change in the US administration at the beginning of 2009, the future architecture of the US foreign and economic policies can have significant impact on the response of other countries.

- The resurgence of Russia, Venezuela and Iran depends on growing economic strength and the prices of energy prices. Shocks in energy market, pushing the prices either up or down in a significant way, will determine the confidence and competence of those countries to intervene in the world stage.

- The United States retains technological superiority. Russia and China have a potential to match it, depending on the policy mix they evolve and supply side constrains they face. However, if they are able to develop a competing technological base, they will constrain the American power and help develop a multi-polar world.

- If American partners such as Japan and India do not encounter substantial domestic opposition to a strategic partnership with the United States and if their own economic and strategic strengths are consolidated, they will dilute the moves towards multi-polarity and help evolve a world, which is dominated by one power, or at least a multi-polar world with one unequal coalition leading it. Similarly, EU can tip the balance of power.

- The Arab world is going through turmoil. The net result of the current dynamics in the region will determine the nature, orientation and policies of the regimes to come and their comparative perspective on alliances with the United States, Russia and China.

Rise of Multi-Polarity
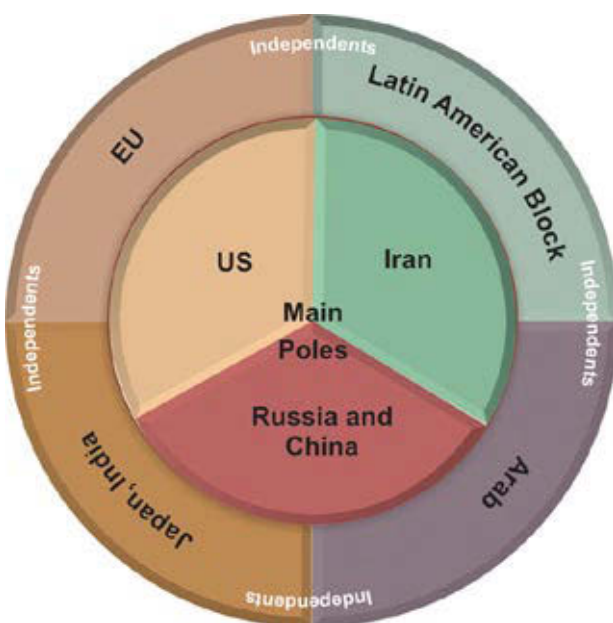
Uncertainties

- Shifts in leadership in the case of Russia, China, Iran, and Venezuela could bring about shift in ideology.

- Sudden technological breakthroughs capable of reducing dependence on hydrocarbon resources can make today's geopolitical calculations irrelevant.

- Change in internal political dynamics may render Brazil, India, Japan and South Africa no more US allies but opponents, thereby challenging US interests.

Impact

- The world will be divided into three camps with some important independent players. There will be constant negotiations between the main poles of the multi-polar and independent players, with an ever uncertain outcome.

- A multi-polar structure will lead to the reform of the United Nations Security Council, the World Bank, IMF and the WTO. As the first step, the G-8 could be extended to G-15 or G-20 to accommodate other new powers. The consultations in such a form can help create stable and cooperative global security architecture. The failure to create such a global security architecture reflecting multi-polarity is bound to lead to competition for power and military rivalries.

4

Global Financial Crisis

In the next decade, fault-lines in the global financial architecture will raise the risk of a worldwide financial collapse. Major holders of foreign exchange – particularly China and Japan – may switch their holdings from US dollar to other currencies, and some of the oil exporting countries – particularly Iran, Russia and Venezuela – may shift oil contracts from US dollars to other currencies. The downward pressure on the US dollar could lead to increase in interest rates, protectionism, trade wars and perhaps military confrontation between major global powers.

Signposts

- Euro has appreciated against US dollar from 0.9 in September 2000 to 1.4 in September 2007 and is expected to rise further to 1.5 or higher.

- US public debt has increased from $4.5 trillion in 2000 to expected $9 trillion in 2008.

- Chinese officials are beginning to threaten that they may consider switch from US dollar to other currencies. In August 2007, Xia Bin, former senior official of the Development Research Centre and He Fan, a senior official at the Chinese Academy of Sciences, dropped hints to this effect.

- Iran has started demanding payment for its oil in other currencies. In 2007, Iran asked China to pay for its oil purchases in euro and Japan to pay for its purchases in yen. Zhuhai Zhenrong Corp of China and Nippon Oil of Japan have already transacted in euro and yen as per the demands of the Iranian authorities.

- Iran has announced a plan to establish an oil bourse quoting in euros, though it keeps post-poning the actual launch of such a facility.

- In 2006, President Putin of Russia announced plans to establish a Russian oil and gas bourse for trading denominated in roubles.

- Venezuela has given indication that it wants to price oil in euros or barter deals.

- There are significant imbalances in foreign exchange reserves held by different countries.

Current Account Balances 2006

Country	Current A/C ($ billion)
China	238.5
Japan	170.5
Germany	147.0
Russia	94.5
Saudi Arabia	95.5
Switzerland	63.5
United Kingdom	-80.0
United States	-869.1

Source: UNCTAD Trade and Development Report 2007

Drivers

- Political rivalry between the United States on the one hand, and Russia, Iran and Venezuela on the other hand will motivate the latter group of countries to consider steps to counter the global interest of the United States, either separately or collectively, including the undermining of the US currency by switching to other denominations for the oil trade. Conversely if there is a surprise turn-around in the US relations with Russia and/or Iran, such a threat will disappear. In such a scenario, Venezuela is too insignificant to pose a challenge.

- China and Japan may switch from the US dollar to other currencies merely out of economic rationale. China may do so even under certain political conditions.

- The European Central Bank may not be able to print euros in a large quantity, creating scope for rouble and renminbi to rise as international currencies. However, since the shares of China and Russia in global trade are relatively limited, such a basket of currencies competing to replace the dollar in partial role as reserve currencies will prove to be inefficient. The financial markets may then turn to the dollar again, restoring stability. Or there could be chaos.

- If successive US administrations are not be able to pull out of Iraq and Afghanistan, or if there is a new theatre of warfare – in either or both cases leading to significant increase in defence expenditure, it will be difficult to contain the growth of current account deficit and public debt. This will bring the dollar under market pressure at some stage.

- If the US, European and East Asian nations come together for an internationally coordinated initiative to prevent crisis, their efforts may yield results. The threat of hostile oil exporting countries switching from the dollar to other currencies may still remain but without the risk of panic reaction by China, Japan and European countries, its impact will be too insignificant to bring about the collapse of the global financial system.

- If G-8 is expanded to include major exporting countries including China, India, Saudi Arabia and others, their regular consultations might provide long term stability the way G-7 (G-8) has provided from the 1970s until now.

Uncertainties

- The markets are not clear about the precise location of the tipping point. Many observers believe that the markets may press the panic button when the dollar slips to 1.50 or 1.60 per Euro, but nobody knows for certain if indeed that would happen or markets might be able to absorb even greater decline in the value of dollar. It is almost certain that the markets will not be able to accept the rate of dollar below 2 per euro. However, major trading nations may come together to prevent crisis much before the dollar reaches such catastrophic levels.

- It is not clear if some other fault-line, such as the mortgage market, will snowball into currency crisis and the subsequent consequences or whether it will be confined to a specific sector.

- It cannot be assumed that Russia, Iran and Venezuela will find it in their interest to act collectively since they have their separate agendas in international politics. Single actions will not force any crisis.

Impact

- If there is a run on the dollar in the international markets on account of any or more drivers mentioned earlier, the US interest rates will go up forcing recession on the economy. The US assets, mainly companies and properties, will lose their value and attract hostile takeovers from China, Russia, reserve surplus countries in the Middle East and others. The US will pass urgent laws to protect its assets from overseas takeovers and introduce capital controls. Other countries will be forced to follow suit. In a few days, international financial system will be replaced by competitive national financial systems. This will in turn lead to protectionism in terms of trade in services and merchandise goods. Eventually the world will return to autarchy.

- Once economic crisis take place, it will be for the world's leaders to come together to explore possible joint actions to contain damage and consciously prevent the spill-over of the economic crisis into political conflicts. If this does not happen, moderate governments all over the world will collapse and make way for ultra-nationalist regimes. It will be a matter of time before competitive ultra-nationalism and competitive extremism lead to a worldwide military confrontation.

5

Water Scarcity in Emerging Economies

Emerging economies – particularly China, India, South Africa and Turkey – are expected to face shortage of fresh water, undermining their food security, social stability and in some cases raising the potential of regional conflicts. These dynamics can cause diversion of these countries from growth trajectories to reduced role in global economic expansion and an uncertain attitude to regional and global politics.
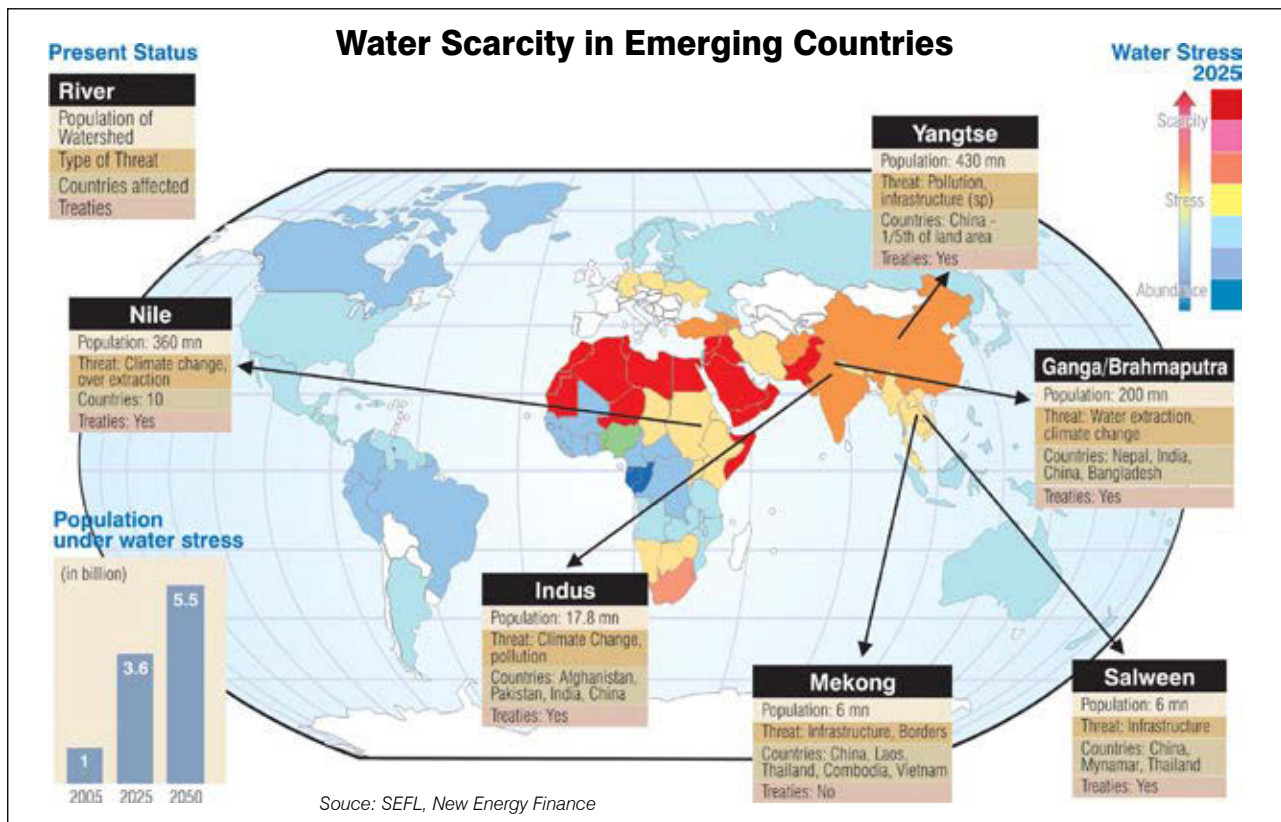
Signposts

- The global availability of fresh water is estimated at 4,400 cubic meters per capita per annum. However, in growing economies such as India (1800) and China (2200), it is much lower, with further discrepancies within these countries. It is further expected to decline to 1340 cubic meters in India and 1700 cubic meters in China in the next two decades.

- The 33,000 sq km of Himalayan glaciers form the largest concentration of glaciers outside of the polar ice caps – release an estimated 8.6 million cubic meters of water annually, and supply the seven great rivers of Asia — Ganga, Indus, Brahmaputra, Salween, Mekong, Yangtze, and Yellow. The main glaciers of this region are Siachen (72 km); Gangotri (26 km); Zemu (26 km); Milam (19 km) and Kedarnath (14.5 km). Several reports indicate that the Himalayan glaciers are melting at a fast pace due to global warming. In the short run, this will cause floods. However, in the long run, important sources of water will dry out in industrialized and populated parts of Asia.

- South Africa is already very close to the threshold level of 1200 cubic meters per capita per annum. Its water level is expected to drop to 800 cubic meters per capita per annum by 2020. The country already depends on its neighbours for importing water. Gauteng, the main area of economic growth, is particularly dependent on imported water.

- Turkey's current per capita availability of water is 1,642 cubic meters per year and is declining in many parts of the country. Some estimates point

Water Consumption
(Average litres / per person / per day)

700	Canada
625	USA
350	Europe
250	Japan
180	Latin America
140	Asia (India)
90	China
35	Africa
0	

Water Scarcity in Emerging Countries

Present Status

River
Population of Watershed
Type of Threat
Countries affected
Treaties

Nile
Population: 360 mn
Threat: Climate change, over extraction
Countries: 10
Treaties: Yes

Population under water stress
(in billion)
1 — 2005
3.6 — 2025
5.5 — 2050

Indus
Population: 17.8 mn
Threat: Climate Change, pollution
Countries: Afghanistan, Pakistan, India, China
Treaties: Yes

Yangtse
Population: 430 mn
Threat: Pollution, infrastructure (sp)
Countries: China - 1/5th of land area
Treaties: Yes

Ganga/Brahmaputra
Population: 200 mn
Threat: Water extraction, climate change
Countries: Nepal, India, China, Bangladesh
Treaties: Yes

Mekong
Population: 6 mn
Threat: Infrastructure, Borders
Countries: China, Laos, Thailand, Combodia, Vietnam
Treaties: No

Salween
Population: 6 mn
Threat: Infrastructure
Countries: China, Mynamar, Thailand
Treaties: Yes

Water Stress 2025
Scarcity
Stress
Abundance

Souce: SEFL, New Energy Finance

out the potential to raise it to 3,960 cubic meters per capita but it would involve building 700 dams in a mountainous terrain. Marmara where 50 per cent of the industrial activity is concentrated is already water-stressed along with 4 outer basins - Gediz, K Menderes, Akarcay and Asi.

- Turkey has 26 river basins, but, Chorokhi (Turkey, Armenia and Georgia); Arax, Maritza (Turkey and Greece), Euphrates (Turkey, Syria and Iraq), Orontes, and Tigris (Turkey, Iraq, Syria and Iran) flow across borders. The Tigris, Euphrates, and Arax begin in Turkey. The water crises in Turkey are therefore extended to the Middle East.

- The agricultural sector has dominated the global demand for water at around 70 per cent, the industrial sector at around 20 per cent and domestic sector at around 10 per cent. In the future with growing industrialisation and urbanisation, the future increase in demand for water is likely to be substantially in industry and domestic sectors. Yet food security will be undermined with the declining availability of fresh water.

Drivers

Water Quality

- By 2050, untreated waste water could reduce the world's fresh water supply by as much as 18,000 cubic kilometres annually – i.e. almost four times the annual flow of the Amazon.

- Cleaning the 450 odd cubic kilometres of wastewater discharged into rivers and streams takes 6000 cubic kilometres of fresh and clean water to dilute and convert this dirty water into useable water.

Government Policy

- The importance of government-sponsored initiatives – sometimes in partnership with civil society - directed towards water conservation, recycling of water, wastewater management, cannot be overemphasised.

- Government policy towards pollution of water resources and management of water bodies are vital for ensuring good quality water for domestic, agricultural and industrial use in the future.

Future of Water Pricing

- In the industrialized countries, water prices are increasing. In rural areas of emerging economies, consumers rarely pay the actual cost of water, leading to wasteful usage of the resource in all sectors. The biggest impediment towards treating water as a commodity or tagging it with a price that is reflective of its value is the political unpopularity of such a move.

Technology – Crop per Drop Ratio

- A global cooperative effort in disseminating best practice water technologies in irrigation, industry, recycling, disposal etc could solve any potential water crisis faced by the world in the coming future.

- Technology is very important in the water debate. For example strides in water desalination technologies can turn the whole issue around. The most far reaching impact that technology can have is on the agricultural sector.

- A 30 per cent increase in agricultural productivity can reduce additional crop water demand from 80 per cent to 20 per cent by 2050.

Efficiency

- Industrial countries have shown a decline in the amount of water used to produce a unit of GDP. Differences in the amount of water used to produce a unit of GDP indicate towards vast opportunities for water efficiency in production. For example China takes 370 litres of water to produce one dollar worth of GNP, while India requires 880 litres of water to produce a dollar of GNP. For comparison, the US takes about 3.8 litres, Europe takes even less.

- Differences in water demand arise between different irrigation systems. The saving in drip irrigation in comparison to flood irrigation is substantial. Shifting to the former can raise productivity for varied types of crops from 25 per cent to 200 per cent. Despite its potential water efficiency, a mere 1 per cent of irrigated farmland worldwide uses precision drip irrigation.

Uncertainties

- Global warming and its impact.

- Willingness of countries to cooperate with their neighbours for integrated water development – India and Pakistan, Israel and Arab countries, Turkey and several of its neighbours, China's provinces. Except for China, all other sets of countries are engaged in protracted conflicts. Water can help them build bridges of cooperation or be a cause of violent conflicts, even though in the past there is no record of a water war between states.
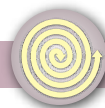
Impact

- The impact of water scarcity on the development of the emerging economies will affect food security, leading to social destabilisation particularly in rural areas, and undermining open economic policies. These dynamics can reduce the rate of growth for the emerging economies and have an adverse impact on the prospects of the world economy.

- Since China, India, South Africa and Turkey are located in areas marked by turmoil, they may experience the first ever violent conflicts driven by water. In the case of China, the problem is essentially internal with potential to cause peasant discontent. In the case of India, there is a risk of war with Pakistan, since the latter is expected to reach threshold level before 2010 and all the three major rivers run through the Indian part of Jammu & Kashmir. In the case of South Africa, there is in fact scope for cooperation with several countries in the continent, failing which social destabilisation is likely. In the case of Turkey and the Middle East, water may undermine prospects of negotiations on other parameters.

6

Revolution in the cell

New advances in biology and biotechnology may open a new terrain in international politics in a decade or two. Genetics may offer panacea to address disease and physical defects. But it may create a new category of haves and have-nots, further widening the gap between developed and developing economies. It may also create possibilities for business companies in the Western countries to use territories and populations in developing countries to undertake experiments that are not allowed in the West; in the process opening possibilities for terror groups to acquire dangerous technology.

Signposts

Fast Growing Technology

- In the 1980s, individual human genes took many months to be sequenced and cloned. Today the same can carried out in a matter of hours.

- Though the Human Genome Project was completed in 2003, the process of transfer of technology to private companies for further research is expected to continue over the next few years.

- Techniques such as cloning to create pure human proteins and gene-therapy are already in use to treat diseases such as diabetes, severe combined immunodeficiency (SCID), single gene defects such as cystic fibrosis.

- In June 2007, scientists of the J Craig Venter Institute announced the results of work on genome transplantation that enabled them to transform one kind of bacteria to another type.

This is the first step in the creation of a synthetic organism.

- Scientists at Case Western Reserve University have created an artificial human chromosome, about 1/10th of the size of the normal chromosome, which can be integrated with the normal chromosome with a potential to influence the nature of progeny in the future.

- The first human/animal chimera (animal containing genetic material from parents of two or more distinctly different species) has been created at the Shanghai Second Medical University, China where human and rat cells were fused.

The Biotechnological Divide

- The biotech industry is growing. In the United States, there are more than 1500 companies with over $500 billion of market capitalisation. The turnover at the beginning of the decade was $27 billion, which should reach at least $100 billion by the end of the decade. Medical biotechnology produces 40 per cent of the drugs that the US Food and Drug Administration approves. It has created more than 200 new therapies and vaccines, including products to treat cancer, diabetes, HIV/AIDS and autoimmune disorders.

- The biotechnology industry is spreading to Asia. Many countries in East Asia, led by China, are wooing investments in this field. In India the industry doubled to $2 billion in 2006-07 from the previous year. However, there seems to be a clear technological gap. In the United States and Europe, the industry focuses on fundamental

research and the development of new drugs and therapies. In Asia, the industry mostly consists of Contract Research Organisations that carry out experiments at a lower level in the value chain. There is the Arab Genome Project in UAE. The scientific work Shanghai Second Medical University has been cited earlier. Thus, technology is spreading but gaps remain.

Policy and Ethical Debate

- Policy debate bringing together experts from the fields of biology, government, law, medicine, philosophy, religion on the ethics and regulation of procedures like gene therapy have begun. The J Craig Venter Institute, a leading force in the advancement of genomics, the Centre for Strategic and International Studies, a policy research organisation, and Massachusetts Institute of Technology conducted a major study to explore the risks and benefits of synthetic genomics and to disseminate it widely to policy makers, as well as the public.

- A parliamentary panel in the UK has recommended that experts rather than government ministers decide what kind of hybrid animal-human embryo experiments to allow. Issues such as whether or not to allow inter-species embryo licenses are also under discussion the UK parliament.

- Biotechnology Industrial Organisation (BIO) represents more than 1,000 biotech companies, academic institutions, state biotechnology centres and related organizations in 34 nations. The Statement of Ethical Principles adhered to by all members of BIO charts a comprehensive vision of biotechnology for human good.

- One of the first ethical choices to come from the human genome map will stem from diagnostic tests for diseases that have no cure. Apart from the emotional impact of such knowledge, the availability of such information to insurance companies or employers could pose a problem.

Drivers

Highly Educated Workforce and Entrepreneurship

- The spread of the technology and the ability of developing countries to close the gap depend on the availability of educated workforce. India produces 3 million graduates, 700,000 post-graduates and 1500 PhDs every year in the field of science and engineering. China produces 300,000 graduates every year in science, technology, engineering and mathematics – three times the number coming through UK universities. However, the mere availability of workforce is not enough. The Asian pharmaceutical industry has so far concentrated on generic drugs, rather than the development of new molecules. There is a similar risk that the human resources in these countries might be deployed at low-end processes. The ability of the Asian countries to close the emerging gap will depend on the combination of entrepreneurial spirit supporting original research and the supply of qualified scientists.

- Universities in countries, such as India, China, Brazil and other Latin American countries are establishing new courses to train students in this field. How competitive these courses are will be a determinant of the kind of research that comes out of these countries.

The Direction of the Ethical Debate

- The current ethical debate in the field of bio-ethics generally encourages new technology, as long as it is made public and is carried out within certain limits. Some of the issues discussed question our sense of morality. If there is, however a change in public opinion on the direction that biotechnology should take, it may lead to reduced governmental expenditure on research.

- At present, ethical dimension of some issues that fall under the realm of biotech are still under discussion. These include issues such as the patenting of new life-forms, rights of chimeras, cloning of human cells. Legal issues such as ownership and control of genetic material, fairness in the use of genetic information etc.

Governmental Regulation

- Governmental regulation differs widely in different countries. For example, just between the US regulation and EU regulation, there is a tremendous difference. In the US, products of biotechnology have been extensively tested and marketed. In the EU, few biotechnology products have received regulatory approval while most have faced a de facto moratorium. The tough regulatory stance of the EU towards biotechnology has typically been justified on the basis of public scepticism towards the technology and heightened concerns about safety.

- There are many countries that do not have any kind of restriction on the kind of research carried out. These could attract biotech multinationals to set up research facilities in the future, much as companies register themselves in tax havens such as Barbados, St Kitts, Canary Islands etc. Once proliferation of industries without proper regulation takes place, it will be feasible for terrorist groups and other non-state actors to secure access to technology.

Investment in New Technologies

- Brazil plans to invest over $5 billion in biotechnology over the next decade. In India, investments in biotechnology may cross $500 million by 2010. These figures are too insignificant as compared to $500 billion market capitalisation in the United States, but they indicated the recognition of a new opportunity.

- The Chinese Government has targeted biotechnology as a priority including for incentives, development programs, education and training, research and development, and the commercialisation of new products, technologies and services.

Uncertainties

Changing Nature of Debate

- The direction that the ethical, legal and societal debate on the nature of genetic manipulation, use of human cells in research, development of new organisms takes will determine to a large extent the direction of research undertaken – at least by established and government recognised research facilities.

- The societal impact of technologies such as synthetic genomics is unknown. There could be a widespread repulsion towards the use of animal or plant DNA in human cells.

Research in Rouge Labs

- The cost of setting up a laboratory for biotech research is relatively small compared to the cost of developing nuclear or chemical weapons. The manufacture of lethal toxins requires modest equipment, essentially the same as is needed for medical or agricultural programmes: the technology is "dual use". This knowledge and technology is already dispersed among hospital staff, academic research institutes and factories. It is possible to recruit trained people by laboratories set up by rouge elements (or even terrorists groups) to create pathogens detrimental to human life. Bioterrorism is a real possibility in the next decade.

Accidental Outbreaks

- In the past there have been limited outbreaks of disease that have been traced to accidental release of a biological agent from academic and research labs. This includes the Foot and Mouth Disease in the UK in 2007, Texas A&M in 2006, Boston University Medical Centre in 2004. All these laboratories are well run and subject to many regulations. The same cannot be said for other laboratories in different parts of the world.

- If there is a major outbreak in the future, there may be severe clamping down by governmental authorities on the kind of research and agents that can be used in experimentation. This however would not have impact on research in rouge laboratories or by anti-social elements.

Impact

Positive

- The revolution in the cell, or the advancements made in the field of biotechnology has the potential to change the life of humankind for the better by impacting health, eradicating disease and creating miracle drugs.

Negative

- Biotechnology can also be used with malicious intent. The rapid advances in biotechnology will make the development of biological weapons easier, deadlier, cheaper, and more difficult to detect. These could include pathogens to create widespread terror or the use of genetically modified organisms to target a specific race or ethnic group. Indeed, for future combatants, germs could replace bullets.

- Sir Martin Rees (former President of British Association for the Advancement of Science), states in his book Our Final Century "I have staked one thousand dollars on a bet: That by the year 2020, an instance of bioerror or bioterror will have killed one million people."
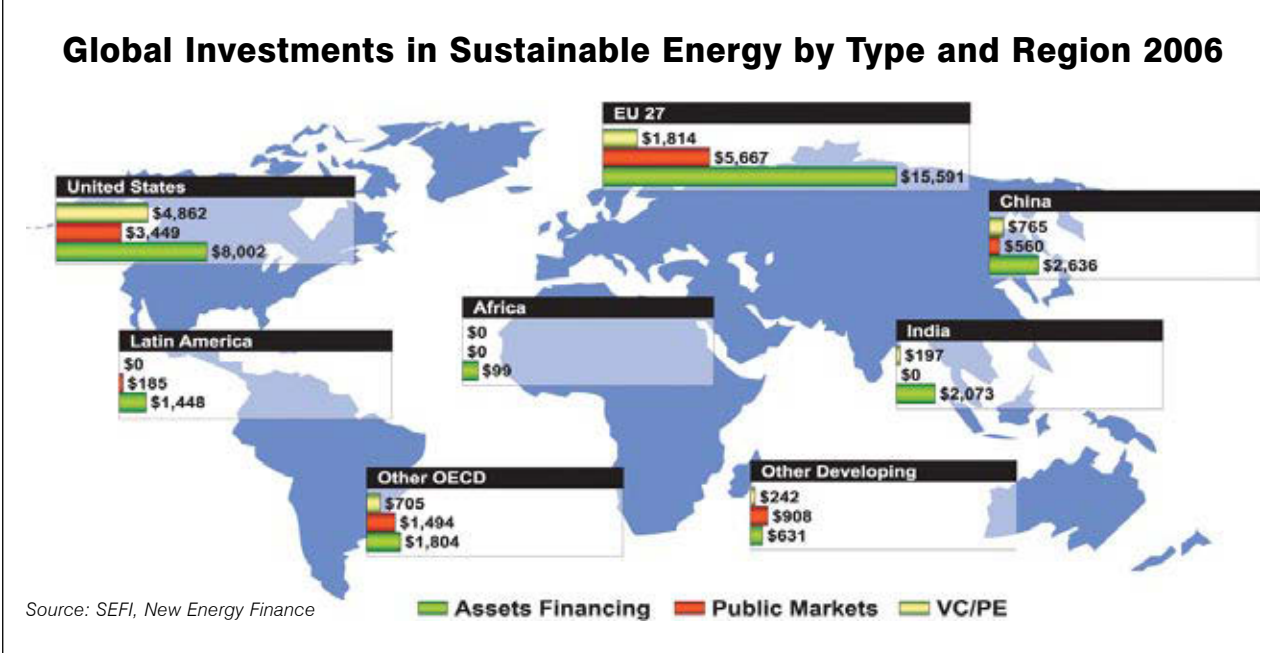
Spread of Clean-tech

There is literally a revolution spreading in the Western countries to bring in clean technologies that increase efficiency in production, develop alternative sources of energy and aim to change the very way of life. The Clean-tech boom is concentrated in the industrialized countries but can spread fast to other parts of the world. If economic actors in emerging and developing economies judiciously shift investment strategies and concentrate on green research, they can make a quantum leap and attempt to achieve equivalence with the developed world. Otherwise, we will see Clean-tech to be instrumental in perpetuating North-South divide on one more parameter.

Signposts

- The United States and EU, followed by other OECD countries account for most of the invest-

ments in Clean-tech. China, India and Brazil account for barely 10 per cent of the global sustainable energy investments. Other developing economies seem to be completely out of Clean-tech revolution.

- Carbon trading has seen phenomenal growth over the last seven years, from a mere $241 million in 2000 to $11.2 billion in 2007. There are a total of 58 carbon funds at present. Once again, the US and Europe hold a monopoly in carbon trading, accounting for over 50 per cent. At present, the EU Carbon Trading Commission is the largest green house gas emissions trading house in the world. As emerging economies grow, they will need to purchase carbon credits from the industrialized countries, thus turning carbon trading into a mechanism of resource transfer from the South to the North. At the same time,

Global Investments in Sustainable Energy by Type and Region 2006

EU 27: $1,814; $5,667; $15,591
United States: $4,862; $3,449; $8,002
China: $765; $560; $2,636
Africa: $0; $0; $99
Latin America: $0; $185; $1,448
India: $197; $0; $2,073
Other OECD: $705; $1,494; $1,804
Other Developing: $242; $908; $631

Source: SEFI, New Energy Finance

Assets Financing ■ Public Markets ■ VC/PE

use of Clean-tech can enable companies from emerging economies to export carbon credits and earn revenue.

- Overall, the Clean-tech revolution with 28-30 per cent annual growth rates has been compared to the PC, wireless, and Web industries during their heyday. Further, the same innovators and visionaries of the Internet revolution are involved in the Clean-tech revolution. For example, the Google founders are investing in clean energy projects and initiatives. Just as India and other emerging economies joined the information technology revolution at the lower end of the value-chain, they seem to be following the same pattern with regards to Clean-tech. There is hardly any interest among business leaders of the developing economies to look ahead and invest in exploring break-through technologies.

- The United States has stayed away from the multilateral Kyoto Protocol, which is expiring in 2012. On the other hand, it has been taking its own selective initiatives. The non-binding 'Washington Declaration' styled as a successor to the Kyoto Protocol comes into place by 2009. It is signed by Canada, France, Germany, Italy, Japan, Russia, UK, US, Brazil, China, India, Mexico and South Africa. The 2005 Asia-Pacific Partnership on Clean Development and Climate, also known as AP6, is an international non-treaty agreement among Australia, India, Japan, China, South Korea, and the US. Canada has expressed a desire to join it. Emerging economies are signatories to the US-led initiatives, indicating the pressure they will be under soon to change their investment patterns.

- There is a growing interest in emerging economies to try to stay ahead in the Clean-tech race – e.g. China in solar water heating, India in wind turbines and Brazil in ethanol. Also, India, China and Brazil have strong environmental think-tanks that are spearheading policy discourse on the value of Clean-tech in those countries.

Drivers

- For the first time in history, clean energy technologies are becoming cost competitive with their dirtier counterparts. In contrast to conventional energy sources, there has been a continued and significant reduction in the cost for renewable sources over the last 20 years. Lower costs should make it possible for businesses in developing countries to move into this sector. Limited vision has inhibited such a shift despite relative cost viability. The arrival of some visionary and capable business leaders will change the situation in a short period of time, since cost will not be a problem.

- Clean-tech revolution is diverse and spans from wind energy, green buildings, hybrid cars, hydrogen cells to mass transit systems, waste treatment, organic farming, sustainable forestry, and many other aspects of mainstream life. It is impossible for these technologies not to have worldwide diffusion, just as PCs and Internet spread all over the world.

- The increase in the demand for energy and power by the emerging economies of India and China will be significant. The two countries account for 10 per cent of global oil consumption, up from 5 per cent a couple of decades ago, and expected to increase to 20 per cent in two decades from now. They have high import dependency. Thus far, these economies have relied heavily on their coal reserves. Now they seem to be moving in the direction of nuclear energy without clear idea about nuclear waste management. If financial constraints and risks of accidents undermine the prospects of coal and nuclear energy, the emerging economies are bound to shift to renewable sources and energy saving production technologies.

- The effect of the increase in the price of oil on the clean energy market is obvious – it drives clean energy stocks up, decreasing the stock

of oil companies. The increase in oil prices in 2005-2007 led to an ethanol frenzy, with private equity investments in bio fuels shooting to $1.1 billion.

- The increase in the costs of inputs in the direct or indirect production of a clean technology (due to excessive demand, sometimes by competing industries) can decrease the cost competitiveness of the technology. These include cost of silicon for solar energy, building materials for windmills, etc.

- Restrictions on foreign direct investments and technology transfer, imposed by government regulation or weak market institutions, can hamper the development of Clean-tech in the developing world.

- There is entrepreneurial capacity in emerging economies. However, the problem is that of demand, underlying which there is the problem of mindset. For instance, Indian companies making photovoltaic modules and wind turbines mostly do so for exports. If the mindset in emerging economies were to change, the latent supply-side strengths will be harnessed to service the local economies.

Uncertainties

- A global financial collapse or even economic weakening of industrial or emerging economies can dampen enthusiasm for new technologies.

- A major disaster (like Chernobyl) in nuclear plants or an attack on oil pipelines or hydro-electric dams by terrorist groups will weaken the confidence in conventional sources of energy in emerging economies, boosting the demand for Clean-tech.

- If the Western countries lose their strategic advantage and control in the Middle East, due to the growth of extremist forces in the region and particularly if several orthodox governments come to power, they will offer incentives and partnerships to emerging economies to move into Clean-tech and dissuade them away from hydrocarbon dependency.

Impact

The spread of Clean-tech will lead to new politics and new security debate in the world. The industrial revolution gave birth to Left Vs Right politics. This has now become anachronistic with centrists and parochial parties coming to forefront. The Clean-tech revolution will give birth to political camps such as Nature Vs Machine. Europe has had Green parties for two decades. Slowly Green politics will spread all over the world, as will its opposition. The Green politicians may revise the basic concepts of security and advocate sustainable relationships within and between societies. The empirical evidence suggests strong correlation between Green and Peace movements. In the industrial revolution, developing countries lagged behind since the rate of technological diffusion was very slow and capital requirements were high. In the case of Clean-tech, emerging and developing countries can fast forward their economic thinking and lead the new economy from the front – rather than being purely pushed in this direction by global climate change concerns. If they do so, capital requirements and technology will not be barriers. In the long run, they will be able to use Clean-tech as a leveler of global economy and create a relatively equitable world.
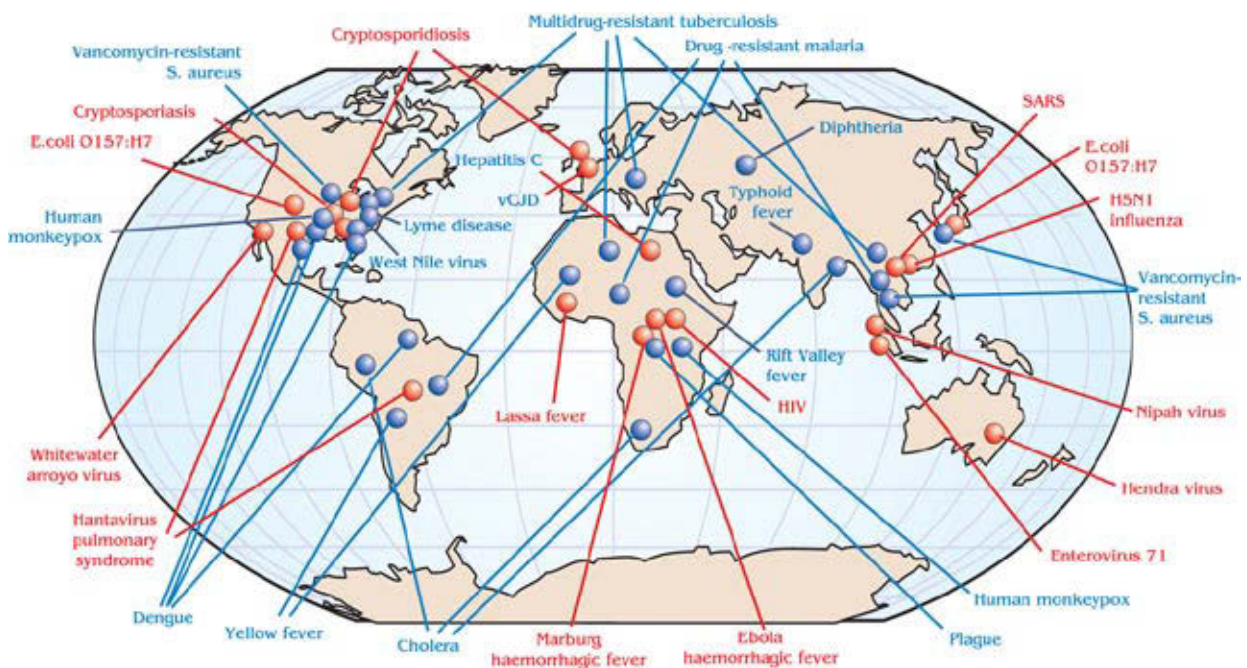
8

Fear of Pandemics

Infectious diseases are not only spreading faster, they appear to be emerging at a historically unprecedented rate of one or more per year. Today, there is virtually no G8/WTO/WHO summit/international gathering that does not deal with infectious diseases and the possible toll of a widespread pandemic (an outbreak of an infectious disease that spreads through human populations across a large region or even worldwide). The current global debate seems to focus on when and how the next global pandemic (influenza) manifests itself, and how sovereign countries can protect themselves from the destabilizing risk.

Signposts

- The rapid proliferation of new and emerging diseases at a rate of one or more per year. During the last five years, WHO has verified more than 1100 epidemic events world wide.

- The SARS epidemic of 2003, killed 774 people and the H5N1 Avian influenza that started in 2003, has till date managed to kill over 190 people, shows no signs of stopping. Over 100 million birds have been slaughtered in Southeast Asia in recent years, at enormous economic cost and impact

Global examples of emerging and re-emerging infectious diseases

Vancomycin-resistant S. aureus
Cryptosporidiosis
Cryptosporiasis
E.coli O157:H7
Human monkeypox
Hepatitis C
vCJD
Lyme disease
West Nile virus
Multidrug-resistant tuberculosis
Drug-resistant malaria
Diphtheria
Typhoid fever
SARS
E.coli O157:H7
H5N1 influenza
Vancomycin-resistant S. aureus
Rift Valley fever
HIV
Nipah virus
Hendra virus
Enterovirus 71
Human monkeypox
Whitewater arroyo virus
Hantavirus pulmonary syndrome
Dengue
Yellow fever
Cholera
Marburg haemorrhagic fever
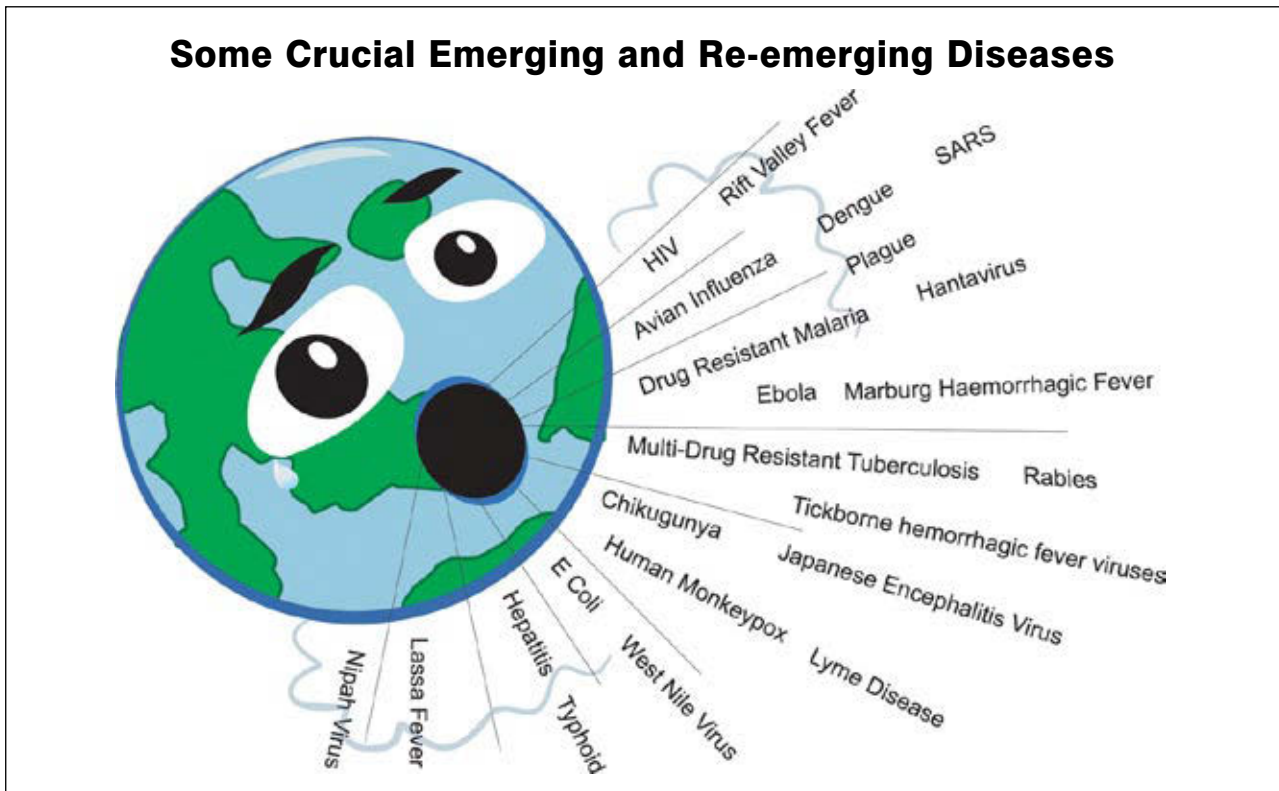Ebola haemorrhagic fever
Lassa fever
Plague

● Newly emerging diseases; ● Re-emerging/resurging diseases

Source: Nature Magazine: The challenge of emerging and re-emerging infectious diseases, David M. Morens, Gregory K. Folkers & Anthony S. Fauci

Some Crucial Emerging and Re-emerging Diseases

on poor farmers, yet the H5N1 virus is nowhere near being contained, let alone eradicated. Both these modern emerging infectious diseases have affected and destabilized world trade, economy and travel.

- Most of these new diseases are zoonotic, i.e. are transmitted from animals to humans. When the disease mutates to a human-to-human transmission, the disease spreads very rapidly. Avian flu already shows signs of human-to-human transmission in Indonesia, according to a 2007 study published in Emerging Infectious Diseases Journal.

- With 2.1 billion air passengers in 2006 alone, diseases can spread very rapidly across the globe.

- Scary forecasting studies have been published. In 2006, the Lancet, a British medical journal, predicted that a global flu pandemic could kill 62 million people. The World Bank has estimated that a pandemic could cost the world economy between $800 billion and $2 trillion, depending on the virulence.

- Major geopolitical players are getting involved. In January 2006, Government of China together with the European Commission and the World Bank organized the International Pledging Conference on Avian and Human Pandemic Influenza where the international community pledged a total of $1.9 billion to fight avian influenza and to cope with a possible human influenza pandemic.

- The influenza vaccine market is sized at approximately $2.2 billion in 2006. Currently, only nine western countries produce influenza vaccines. This could create a vaccine war.

- The UK Government has instituted airport screening on arrival for those from high prevalence countries with long-term visas, and is conducting pilot trials to pre-screen visa applicants for TB in Bangladesh, Thailand, Tanzania and Sudan. This could be applied to a pandemic in a global scale.

- Emerging viral diseases such as Ebola, Marburg hemorrhagic fever and Nipah virus are already emerging in Africa as major health catastrophes.

- The UN Information, Communication and Space Technology Division of the UN Economic and Social Commission for Asia and the Pacific (UNESCAP) organised a conference in August 2007 to find potential uses of space technology to monitor the migration of birds and track the bird flu. Amid fears of H5N1 mutating into a form easily spread amongst humans, the UN World Tourism Organization (UNWTO) held its second regional Avian and Human Influenza Simulation in Jakarta, Indonesia, in August 2007 to model the impact of an evolving pandemic in the Asia Pacific region.

- Historically, influenza pandemics have struck, on average, every 28 years. In the twentieth century, there were three major pandemics, so it is only a matter of time before the next one hits the world.

Drivers

International Travel and World Trade

- There are more than 2.1 billion people taking flights every year.

- Since 1950, gross world production has increased five fold while world trade has increased 14 fold. The rapid increase in the trade and transfer of all these commodities, especially livestock and food products, pose a great risk.

- Emerging economies of SE Asia (7 per cent growth), India (8-9 per cent growth) and China (10 per cent growth) and the disease burden they carry is important for the global economy. One of the factors propelling surveillance and funding and fear is the possibility of these economies collapsing quickly under a pandemic disease.

Wars, Conflicts and Disasters, including Climate Change

- Wars, conflicts and disasters lead to increased movement, often compounded by poor living conditions, and affect the risk, control and containment of infectious disease and the potential for serious impact. For example, a refugee crisis in the Middle East.

- Experts at the Intergovernmental Panel of Climate Change, UK concluded that climate change will expand the geographical distribution of vector borne diseases. Also urbanisation, deforestation and bird migration pose a serious threat to spreading disease.

The Current Flu Strain

- The H5N1 flu strain is not stable and constantly keeps changing, so scientists and policymakers are very apprehensive of being able to developing anti-virals and vaccines soon enough to keep up with the mutations of the disease.

- Increasing drug resistance to current antibiotics.

Health Policy

- By the end of the 20th century, the UN increasingly collaborated with businesses, due to less assistance from the OECD countries. The funding from US government, the International Development Association (IDA) and the Bill and Melinda Gates Foundation play a major role in determining policy. US policy and priorities could drive global health fears.

- Apart from the politics of vaccines and pharmaceuticals, many countries are already grappling with the issue of globalisation and privatization of health policies. Policy on drug patents and production will determine future research directions.

Media Hype

- Fear in the medical community, and medical reports create a perfect opportunity for hype in the media. Pandemic is a scary word; Science Magazine observed that expert opinion held the odds of a global outbreak as "100 per cent".

- Fear of bio-terrorism post the anthrax scare and sarin gas attack.

Uncertainties

- There may be no global pandemic. However, this still leaves room for a lot of other localised high mortality epidemics to occur like drug resistant TB.

- Countries find an effective method to "ring fence" zones of the world that have epidemics.

Impact

If a pandemic occurs

- The pandemic will totally destabilize the emerging economies. International institutions will control supplies and response strategies.

- There will be a race for access to vaccines. The 9 Western economies that produce vaccines may nationalize their supplies.

- Public health infrastructure the world over will collapse.

- The situation in Asia and Africa, which still bear over 50 per cent of the current global burden of disease, will be catastrophic.

- Closing of borders, health sanctions and severe travel restrictions.

- Global markets will be disrupted.

- The military will get involved, to "quarantine" affected populations. Armed forces will be weakened by the toll of the disease.

- Food distribution and commodities networks will collapse.

- Civil war due to domestic instability.

If no pandemic appears, even 10 years from now

- The ramifications of this fear will negatively impact the South, developing, and emerging economies.

- Disproportionate global status to Avian flu/new diseases will divert funds from the biggest infectious killers like multi-drug resistant TB and HIV/AIDS. These diseases will see a rapid resurgence.

- Chronic diseases are deadlier in poorer nations. By 2015, according to the World Bank, chronic diseases (especially tobacco related illnesses) will be the leading cause of death in low income nations.

- Increase in border monitoring for signs of ill-health.

- Disease as an issue will continue to skyrocket to the highest levels of the global political agenda along with terrorism. It will be increasingly securitized.

- The broader issues of comprehensive health, poverty and development will be sorely neglected.

- With the number of new diseases increasing so rapidly, along with drug resistance, the forecasting of pandemics or localized epidemics will not stop.

9

Critical Information Infrastructure

The Internet is the lifeblood of the 21st century with 1.1 billion users globally and is a critical part of all nations' core finance, trade and defence infrastructures. At the same time, its ubiquity and interconnectedness exposes it to several threats. We are now entering an age of overt global information warfare, where web based threats will be increasingly motivated by sovereign and financial interests to cripple the enemy's military, political, social, and economic infrastructure.

Signposts

- According to the 2006 Threat Report and 2007 Forecast of Trend Micro (a security software company) digital threats have increased by 163 per cent and Web-based threats have increased by almost 15 per cent in the past year.

- IT security company, Symantec, reported that in the second half of 2006 some six million computers around the world were infected by "bots" (robotic pieces of malicious software). Four out of five of them had been attacked by Trojan horses that sniffed out confidential information by logging keystrokes, recording internet sites visited, and reporting the findings to a third party.

- Cyber crime losses in the United States account for up to $400 billion per year. In the United Kingdom, 89 per cent of businesses have been attacked in a year.

- Monster.com, the world's leading job portal in August 2007 was hacked and 1.3 million resumes were illegally downloaded full of personal information, including names, addresses and phone numbers.

- Swedish hacker Dan Egerstad in September 2007 had posted 100 easily compromised email addresses and passwords of embassies and government offices across the world on his website. They included the details of 13 Indian establishments such as the Indian National Defence Academy and Defense Research and Development Organisation.

- In 2006, in Los Angeles, a Romanian man was indicted on charges of hacking into more than 150 US government computers, causing disruptions that cost NASA, the Energy Department, and the Navy nearly $1.5 million.

- In 2005, Hacker Christopher Maxwell's botnet attack brought down more than 400,000 computers destroying the network of the US Department of Justice and Seattle's Northwest Hospital, shutting down an intensive care unit and disabling doctors' pagers.

- Russian hackers in May 2007 shut down the entire IT infrastructure of the small Baltic nation of Estonia and raised the issue of cyberspace security. A wave of attacks crippled critical Estonian web sites of the parliament, banks, ministries, newspapers and broadcasters. Ambulance and fire service emergency numbers were out for over an hour. Over one million computers were affected, and orchestrated so perfectly that the attacks stopped precisely at midnight.

- Phreaking or telephone hacking is increasing. According to the US-based Communications Fraud Control Association, annual worldwide telecom fraud losses are an estimated at $35-55 billion. French authorities who studied the Madrid 2004 terrorist attack, investigated claims that

the bombers whilst planning their attack had 'phreaked' into a bank's telephone exchange.

- In 2001, after an American spy plane and Chinese fighter collided, hackers from both nations defaced the other's public and private-sector websites. The White House site was temporarily brought down.

- Titan Rain was the codename given by the US government to a series of attacks from 2003 on American computer systems by Chinese systems. In June 2007, US authorities further accused China's People's Liberation Army (PLA) of breaking into Pentagon systems and shutting these down for a week.

- According to German Der Spiegel, 60 per cent of cyber attacks on German government systems come from China. UK intelligence officials also say that Chinese operations to break into the Whitehall database had come to notice as early as two years ago.

- China's Vice-Information Minister, Lou Qinjian, said that 80 per cent of the intruders into Chinese National systems were from the US.

- In 2006, the computer network of the Korean military was attacked by 40 hacking attempts and 949 viruses.

- The US and China hosted nearly two-thirds of spam, viruses and other computer security threats delivered around the world in 2006. Computer security firm Sophos said 34.2 per cent of malware in 2006 originated from the United States, with 31 per cent from China. Russia was third, accounting for 9.5 per cent of the threats. It is now said that these three countries are increasingly making Spam a commercial and military activity.

- More state departments are moving online globally. Global government IT operations is a multi-billion dollar business.

- Phones and other devices are also under attack. In June 2007, a man in Valencia, Spain was charged with creating a virus that had caused damage to an estimated 115,000 mobile devices. Surveys from security companies like Kapersky and F-Secure, have estimated that there are over 370 malicious code programs that have all been designed to steal information from phones and PDAs using the Internet.

- The EU is currently trying to make internet service providers (ISPs) and phone companies keep a record of internet usage, e-mail logs and phone call records.

- In August 2007, Zimbabwe's Robert Mugabe signed into law the Interception of Communications Bill, which in principle allows his government to spy on the private communications of ordinary citizens.

- In 2005, the US National Security Agency (NSA) asked Google to turn in their records of global searches in their quest to track terrorist activity. NSA has also been tracking call information supplied by AT&T and other telecom giants analyzing records to look for terrorists.

- India will soon have mandatory police-sanctioned key logging software installed in all Mumbai cyber-cafes to monitor users in the name of fighting terrorism.

- The Interpol in September 2007 called for a global fight against cyber-crime and the creation of global and regional anti-crime centres. The cyber-laws of countries vary dramatically and there is a move towards an international legal framework.

- Nations like China, South Africa, Brazil and most Arab States feel that Internet governance is a matter related to national sovereignty that has to be UN legislated while the United States, European Union, Japan, Canada and Australia, support the current system of private sector leadership. And since developed economies have the greatest stake in private companies, it reflects the current struggles in global power.

- Google has called on the UN in 2007 to help set up global privacy standards for the future of the internet. Google Privacy Chief Peter Fleischer said, "every time a person uses a credit card their information may cross six or seven national boundaries."

Drivers

Increased Dependence on Cyberspace

- In 2005, three-quarters of the world's population living in low-income and lower-middle income formed 30 per cent of all Internet users. Broadband is available in over 170 economies. Cyberspace, telephones, cables, computers or electromagnetic waves, have no borders, and is so woven into banking and other control systems that it is practically impossible to isolate its use, importance and functions.

Inherently Insecure Networks

- Most of the network components are developed by the private sector, where competition instead of security concerns drives product development and hence the greater margin for error. An electricity grid might fail just as badly because of a simple technical error as it would with a hacker attack.

- New communication platforms, information systems and the convergence of the two provide new windows of opportunity for malicious attacks and data mining. This holds true for mobile 3G phones and wireless networks.

Organised Crime and Cyber Terrorism

- Perpetrators range from teenagers to organised hackers, criminals, terrorists and even nation states. The Internet offers an easy, anonymous, high pay-off means of committing old crimes such as theft, fraud, and money laundering and offers ample data that provide venues for extortion.

- Terrorist groups like Hezbollah and Al Qaeda for years have used the internet as an easy recruitment and fundraising tool. In 2007, the Liberation Tigers of Tamil Eelam (LTTE) hacked and took over one of the satellites of Intelsat to relay their programs. The US government itself is taking the threat of an "electronic Pearl Harbor" very seriously. Thus, there is correlation between the growth of terrorist groups and attacks on critical information infrastructure.

Hackers with a Profit and Glory Motive

- Hackers find it financially more viable to hack than to work for IT companies pointing out errors and vulnerabilities. Hacking also makes them more famous. Hackers exploit new system errors called "zero day exploits" and sell these ideas. According to Trend Micro, hawking zero-day exploits for Microsoft's new Windows Vista operating system was a cool $50,000.

Asymmetric War

- The Chinese have closely studied all the recent wars (Gulf Wars I and II, and the Kosovo and Afghan wars) and have come to the conclusion that in the ongoing revolution in military affairs, victory is only possible through exploitation of unknown fields in asymmetric warfare. It is in this context that Chinese military planners have focused on "information warfare".

No Binding Legislation

- The Council of Europe has a treaty on cyber crime dating from 2001. America and Japan have signed up, but not Russia. The International Telecommunication Union, which unites all 191 countries that use the world telephone system, hopes to take the lead in pushing for a global convention against cyber crime. But all countries need to be signatories for it to have impact.

Netizens Cyber-Illiterate

- It is easy to remotely take control of hardware through a platform defect, by phishing a password or ID, or by tricking the user into installing software. Studies show that countries with older populations are unable to keep up with new technologies. Many net users do not even have firewalls and anti-spyware.

Uncertainties

- With cyber-trust declining, states decide to stay offline.

- A new technology makes it easier to preserve privacy. Networks get more isolated.

- Failure due to human error or technical problems increases, perhaps leading to a major breakdown of physical infrastructure (e.g. electricity grid), calling for a major regulation of cyber-space with unintended results.

Impact

- Governments globally will increasingly legislate/control/disrupt/monitor cyberspace to reiterate their ideology, economic and sovereign interests and wage information and cyber wars to deter enemies (both state and non-state). Major conflicts over global internet governance.

- In freer nations, there will be a trade-off between information volunteered and protection offered by the state to protect the citizen. Even access to the internet will depend on this trade-off. Financial records, health records, videos, cell-phone conversations, shopping patterns, surveillance videos, will all be out there.

- Repressive governments will possess even more powerful filtering/monitoring technologies for restricting the IT freedom of its users. They will also simultaneously use the internet as a coercive tool to obtain private information domestically.

- There will be greater legislation of the internet and sterner punishment for hackers. Governments will introduce national and international cyber laws, ratified by all telecom nations.

- Cyber wars and the use of the internet for military purposes will proliferate. The internet will soon function as a cost-effective weapons delivery system, and satellite hacking will become common.

- Richer nations will develop means of protecting their information, as poorer nations on the ICT bandwagon, give up their information more willingly, with fewer security protocols.

- Richer nations will also move critical information offline to secure locations as poorer nations move their information online.

- A growing group of cyber dissidents will emerge who will defy status quo and stay offline to avoid any and all scrutiny. Environmental activists are already doing this. This cyber dissident group will soon encompass political and terrorist groups.

10

Competition in Space

The radical global increase in the launch of exclusive military and dual-use satellites is shifting space systems from civil to military motives. Several new players like Japan, China, Russia and India now plan to send missions to the moon. We are entering the age of competitive space colonization. Those who take control of the heavens will control every aspect of life on earth in the years to come.
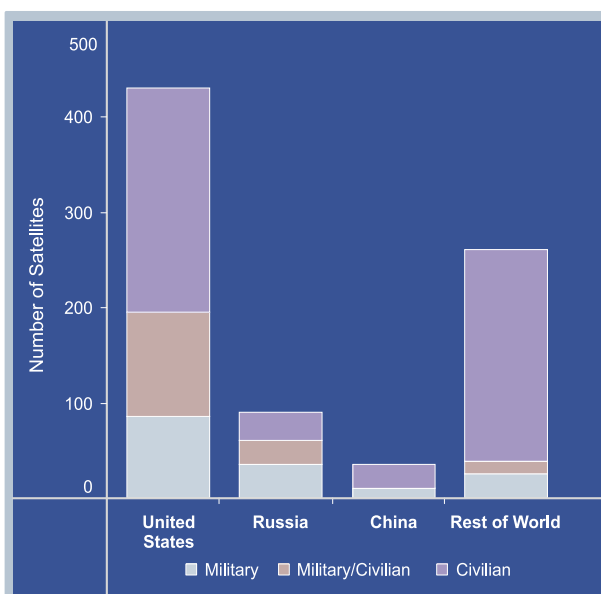
Signposts

Military Reconnaissance Satellites

- The US operates about 270 military satellites in orbit, out of the total 800 odd satellites. Russia has about 89 satellites. About 45 nations in all have launched satellites for various purposes.

Estimates of Space Assets

Source: Union of Concerned Scientists.

- India is expected to launch its first dedicated military reconnaissance satellite, Cartosat 2A and will help Israel launch its military satellites such as Polaris 1 which will be used to spy on Iran's facilities. China and Brazil have also launched military satellites together.

- Iran has two satellites giving it limited capability to monitor the entire Middle East. The Iranian government has allocated $500 million on space projects for the next five years. Turkey plans to have its own $200 million military recon satellite in orbit by 2011. Venezuela plans to use its oil wealth to launch its first satellite in 2008.

Anti-Satellite Tests

- On January 11, 2007, China successfully destroyed their own weather satellite with a ballistic missile, the first space test of such military technology (moving missile hits a moving satellite precisely) by any nation in more than 20 years.

The Staunch US Refusal to Sign Space Treaties

- The US abstained from the 2000 UN Prevention of an Outer Space Arms Race resolution, rejected the 2002, China and Russia UN proposal "Prevention of the Deployment of Weapons in Outer Space [and] the Threat or Use of Force Against Outer Space Objects"(PAROS), and voted a loud "No" at the 2003 and 2006 UN vote on prevention of an arms race in space.

Moon, Mars and Manned Programs

- In September 2007, Japan's space agency JAXA launched a 55 billion yen lunar explorer SELENE. JAXA hopes to put an exploratory robot

on the Moon by 2010 and work on developing technology needed for humans to stay on the Moon for extended periods. China will launch a lunar explorer by the end of 2007, and India and the United States in 2008. In 2018, the United States, European countries, Russia and China will send manned lunar exploration missions on the moon.

Satellite Hacking

- In 2007, the Liberation Tigers of Tamil Eelam (LTTE) hacked a satellite of Intelsat, and used it to relay programmes around the world. It was the first time that a designated terrorist group hacked into satellite systems. Terrorists taking over satellites are a real fear.

Dual Space Budgets Soaring

- It is estimated that the US shuttle programme will cost the US government $145 billion, while the construction of the International Space Station comes at a cost of £50 billion to the US and its 16 partner nations. In 2006, the US Department of Defence's budget request, both classified and unclassified, dedicated to space activities (including communications and reconnaissance) was a whopping $22.5 billion. Japan spends a third of its $3-4 billion space budget on defence and war fighting satellites. Russia has earmarked $1.4 billion for the space program in 2007. China's space budget was at least $1.7 billion in 2007.

- The Pentagon is planning some projects aimed at space weaponisation, such as "Global Strike" and "Rods from God" which will target precise locations anywhere on the earth using space systems. The Pentagon's Missile Defense Agency is developing space-based missile interceptors (SBIs) at a cost of up to $600 million over several years, complete with a test bed for experimentation. The Pentagon is also planning a $100 billion Future Combat Systems network (FCS), that will enable soldiers to "perceive, comprehend, shape, and dominate the future battlefield at unprecedented levels."

Drivers

Communications Revolution and its Vulnerability

- With the increasing dependence on satellites for telecommunications, banking, energy and transportation, the exploitation of space systems are increasing globally.

- Information superiority is a key battle-winning factor that comes from space supremacy. US officials rely on photo-reconnaissance satellites to gather visual information from space about adversarial governments and terror groups, such as construction at suspected nuclear sites or jihadist training camps. The United States has invested $200 billion over the past four decades developing and operating its super secret spy satellite programs. France already has four Essaim intelligence satellites that will develop an "operational eavesdropping system" by 2010. India, Brazil, China, Japan and Israel have their "birds".

The Dark Side of Moon and Mars Missions:

- One prominent goal of the US is to land the first human being on Mars. But the Pentagon is also concurrently planning the first stationing of weapons in space. An expanded space program to return to the Moon and go to Mars will almost certainly include substantial funding to develop new launch vehicles and propulsion technologies that would help the Pentagon for its military space and missile programs. The Moon also offers a strategic positional advantage for the US to control activities on Earth.

- Human missions back to the moon and Mars in an economical way with reuse potential always mention nuclear energy and nuclear propulsion technologies.

Race for Resources

- Gold on asteroids, water and helium-3 on the moon, while magnesium, cobalt and

uranium are believed to be on Mars. Scientists say the moon resources could support life on the earth with cheaper and cleaner energy and help human exploration of the solar system and outer space with cheaper rocket fuel and space-travel construction materials.

Redundant 40-year old Space Treaty

- Article IV (1) of the 1967 Outer Space Treaty states that: "States party to the Treaty undertake not to place in orbit around the Earth any objects carrying nuclear weapons or any other kind of weapons of mass destruction, install such weapons on celestial bodies, or station such weapons in outer space in any manner" and "the moon and other celestial bodies shall be used by all States Parties to the Treaty exclusively for peaceful purposes." But the old treaty is ambiguous about the definition of WMD in space, the use of satellites to direct weapons on earth, and anti-satellite tests. This has lead to a lot of loopholes allowing countries like US and China to use this treaty-less time to weaponise space.

The China Strategy

- The Chinese have closely studied all the recent wars (Gulf Wars I and II, and the Kosovo and Afghan wars) and have come to the conclusion that in the ongoing revolution in military affairs, victory is only possible through exploitation of unknown fields in asymmetric warfare. It is in this context that Chinese military planners have focused on "information warfare" and "space supremacy" as the key components of its battlefield.

The Need To Break the US Hold on Global Positioning Systems

- Europe's Galileo's supporters say the current GPS system, run by the US air force, could be turned off at any time that the US military decided, causing mayhem for European trucking companies, sat-nav firms, mobile phone operators and other users of GPS devices. It is this fear that is propelling, the development of Russia's Glonass system as well.

Uncertainties

- Space is a high cost, high risk, and high innovation sector needing sustained technology investment. Nearly all space projects run billions of dollars over time and over budget. Left to itself, it is unlikely that the private sector would be able to bear the technological and financial risks. Huge government budget deficits can also stall space expansion.

- A comprehensive treaty bans space exploitation for military purposes, like the Antarctica Treaty. Alternatively, there is sudden political desire to seek cooperation rather than competition. Brazil and Iran are cooperating with Russia to build their satellites, and Iran has joint satellite agreements with China and Thailand. The new navigation systems like Europe's Galileo and Russia's Glonass rely heavily on trans-national collaboration. The International Space Station (ISS) is also an exercise in trans-national collaboration.

- A huge costly technological failure, such as manned missions failing publicly will stall this process.

Impact

- Rampant militarization of space, increasingly put several risks to humanity including risk of extinction of large segments of human civilization.

- Ships at sea will no longer be immune from attack. Eventually, nations will need to control space in order to control the sea, air or the land.

- Greater global pressure from China and Russia to make US sign space treaties. Laws, space governance and privacy issues to be greatly debated.

- Anti-satellite weapons will be used extensively to eliminate the earth attack satellite systems. The never-ending cycle will drive a continuous arms race in space.

- The more dependent countries are on satellites, the greater their vulnerability and loss due to attack on their satellites. Computer viruses can be transmitted via satellite systems and cause huge computer system damage and data exposure. Terrorists will also seek to hack into satellites.

- Sovereignty will depend upon countries having their own military satellites. More developing countries will start their own space programs.

- The higher cost of space programs and toll on taxpayers will lead to more aggressive foreign policies. Funding space at the cost of development will be a big issue in the years to come.

- More alternatives to US global positioning systems such as Europe's Galileo and Russia's Glonass are to start functioning in the next year or so and will break the existing US monopoly in this field. This will have geopolitical implications in a multi-polar world.

- The US military will rely even more heavily on smart bombs and space guided weapons. From Gulf War I to II from Kosovo to Afghanistan, the US has depended more and more on space systems.

- Space Junk will become a big problem. Today there are about 18,000 pieces of space garbage bigger than an orange in space. The new debris could damage operational satellites, puncture solar arrays, and even threaten the International Space Station.

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Spread of Nuclear Weapons

The "peaceful" nuclear energy industry is experiencing a boom that is unparalleled in history, with over thirty countries actively considering embarking upon nuclear power programs. However, the goals of nuclear technology proliferation are contradictory to the goals of nuclear weapons non-proliferation and nuclear disarmament.
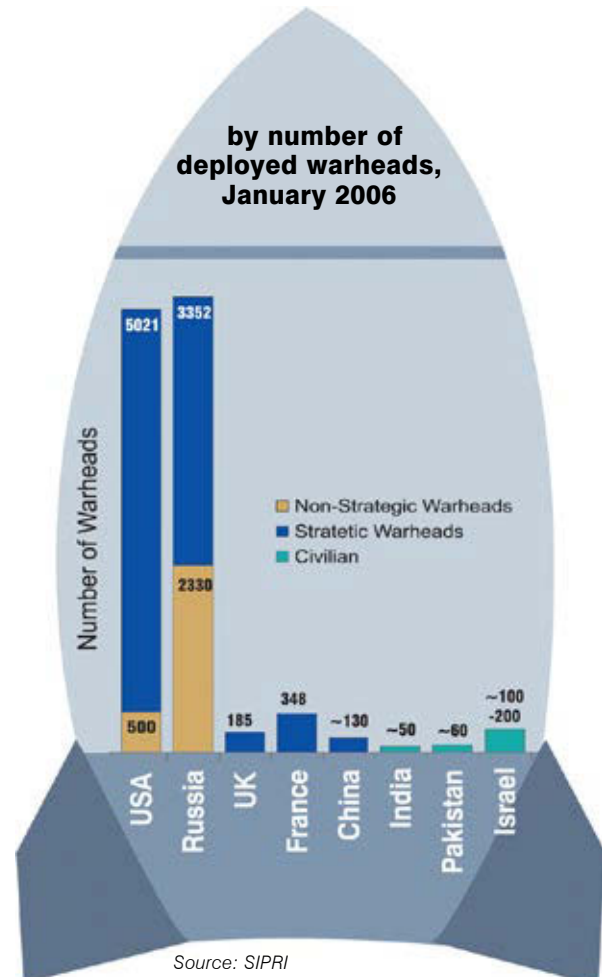
Signposts

Drastic Revival and Renaissance of Nuclear Energy Programs

● Over 30 countries are actively considering nuclear energy programs. At the moment 442 nuclear reactors in 31 countries supply 15 per cent of the world's electricity. Around the world, 31 reactors are under construction and many more are in the planning stages.

● The US Department of Energy (DoE) in 2006 proposed a $250 million Global Nuclear Energy Partnership (GNEP) to promote a robust future for their nuclear industry and reduce their dependence on foreign oil.

● According to the World Nuclear Association, more than 50 per cent of the world's new nuclear power plants over the next two decades will be built in Asia. Of the 29 new reactors under construction, 16 are in developing countries. India's target is to construct 20-30 new reactors by 2020; Russia plans 10-26, Australia-25, Turkey-3, Brazil-8.

● After multiple energy crises over 60 years of the nuclear age, the oil rich Middle East is considering "peaceful" nuclear power programs after the 2003 discovery of Iran's nuclear program. The Gulf Cooperation Council (GCC) decided in 2006 to develop energy programs, as did Jordan and Egypt.

● The UK parliament has voted to revamp the Trident submarine-based nuclear-weapon system for just over £1bn over the next three years. In January 2002 the US Nuclear Posture Review (NPR) added five new countries as potential targets for U.S. nuclear weapons. Russia announced

World Nuclear Forces

by number of deployed warheads, January 2006

Number of Warheads

5021
3352
2330
500
185
348
~130
~50
~60
~100 -200

Non-Strategic Warheads
Stratetic Warheads
Civilian

USA
Russia
UK
France
China
India
Pakistan
Israel

Source: SIPRI

aggressive plans in 2007 to resume long-range missions by strategic bomber aircraft capable of hitting the US with nuclear weapons. Patrols over the Atlantic, Pacific and Arctic began in August 2007 for the first time since 1992. The US has embarked on Complex 2030, which will produce a new generation of nuclear warheads and testing.

Illicit Trade of Nuclear Materials

- The former Soviet Union states are trafficking goldmines. Nuclear traffickers who obtain materials in the Former Soviet Union follow the narcotics trafficking routes, including the old silk roads, from Kazakhstan, Turkmenistan, Uzbekistan and Tajikistan, into Afghanistan and Pakistan, and then potentially continue on to India, Iran or Southeast Asia. Iran, North Korea, Iraq and elsewhere.

- Since the 1980s, Pakistan's nuclear maven AQ Khan and his network has equipped Iran, Libya and North Korea with a range of centrifuge equipment, nuclear materials, design data, blueprints, and know-how needed to produce enriched uranium, which can fuel nuclear weapons. It is not known who else were his clients and if they included any terrorist groups.

- Uranium rich Congo is the hub of a vast trafficking operation, where in 2007 over 100 bars of uranium vanished from a nuclear centre. Eight kilograms of radioactive uranium has gone missing in China. A South African court in September 2007 has found German engineer Gerhard Wisser guilty of being involved in the supply of parts for Libya's nuclear weapons program. He admitted he had played a part in AQ Khan's network.

- The theory behind the NPT was simple: non-nuclear weapons states would forgo developing nuclear weapons on the conditions that, 1) they are never blackmailed with nuclear weapons, and 2) the Big Five, the United States, Britain, France, China, Russia would get rid of their arsenals. They have ignored the obligation to dismantle their nuclear arsenals or to even discuss general disarmament.

- The IAEA is in charge of securing nuclear technology and preventing states from diverting peaceful programmes to military uses. But their inspections, trafficking databases and safeguards have been woefully inadequate.

- Besides the 123 India-US Nuclear Deal in the pipeline, there are many civil nuclear deals cropping up, such as the Russia and US deal. Egyptian policy makers have discussed civil nuclear deals with the governments of Canada, China, Russia and the US. China is planning to supply nuclear technology to Pakistan.

Drivers

Energy Crisis

- Global energy demand is projected to be 50 per cent higher in 2030 than today. Much of the demand growth will occur in China, India and East Asia and other developing and emerging nations.

Security of Energy Supply

- A re-emerging topic on many political agendas is security of supply, as countries realize how vulnerable they are to interrupted deliveries of oil and gas. The abundance of naturally occurring uranium in more "politically stable" countries like Canada and Australia makes nuclear power attractive from an energy security standpoint.

Dual Use Technologies

- A major security concern is that the fuel used in many new nuclear-power reactors will contain plutonium that could be used to manufacture nuclear weapons. The two stages of the nuclear fuel cycle, namely isotope enrichment and plutonium reprocessing, also provide pathways to nuclear weapons. India, Iran and North Korea all began their weapons programs under the guise of civil nuclear plants.

The Green Ideal: Climate Change and Nuclear Boom

- Over 60 per cent of the energy demand increase is anticipated to be met by coal, oil and natural gas, with serious consequences for global CO2 emissions. Scientists predict that global average temperatures will rise by between 1.8 and 4.0 degrees centigrade, and the environmental lobby is increasingly favouring the nuclear energy market.

Rampant Arms Trade by US, Russia, France

- The Russian defence industry portfolio of international orders for 2006 almost doubled over the previous year, increasing from $14 billion to a record breaking $30 billion. The Bush administration has announced a massive series of arms deals worth $20 billion in the Middle East as an offensive against Iran. The US is giving Israel a $30.5 billion package over the next 10 years. Egypt too will get a new 10-year deal; worth an estimated $13 billion. France is providing weapons to Libya and Japan.

War in Iraq: The Iran-Israel factor

- The UK and US are flooding the Middle East with weaponry, providing arms to neutralise the rise of Iran.

Missile Defence Systems

- Missile defences will provoke other nuclear weapons states to counter what they see as a threat to their own security by building more nuclear weapons rather than by honouring their treaty commitments.

Uncertainties

- A lot of the civil nuclear deals can fall through in the countries proposing them due to public pressure over cost and environmental conditions. Poorer countries can ill afford the start up costs of these ventures. Who bears the buck is a key factor.

- The cost of nuclear power generation is based partly on the price of tradable carbon credits. A recent MIT study found that for nuclear to be economic, a tonne of carbon would need to trade at a minimum of Euro 71 over a long-period of time. The carbon credit exchange rate can dissuade countries from acquiring nuclear reactors.

- Alternative sources of viable energy are discovered.

- New treaties, including the commitment of Big Five to phased elimination of nuclear weapons.

- A nuclear accident prompts reversal in nuclear acquisition.

Impact

Nuclear Arms Race in the Middle East and Asia

- With Iran and Israel acquiring nuclear weapons, there is temptation for Arab states to follow suit. Illicit networks like the AQ Khan network will proliferate. Some of the Asian countries may also consider nuclear options, considering the proliferation of weapons in the region. Along with an increase in the amount of nuclear power worldwide, will be a corresponding increase in the frequency of global transportation of nuclear materials. While existing nuclear powers may be able to provide adequate levels of security for transported nuclear materials, countries with less developed economies and regulatory frameworks may not, increasing the risk of terrorism and nuclear disaster.

US/China may Invade Countries under the Pretext of WMD

- It would be very easy for the US or China to invade countries under the pretext that they own WMDs after they start their civil nuclear programs.

Uranium Politics

- The global uranium supply is expected to deplete by 2050 or earlier, depending on the number of reactors in operation. So uranium rich countries like Australia and Kazakhstan will have to worry about stolen uranium and energy security.

Toxic Waste Disposal

- Even though new designs for nuclear plants may be safer, they still generate toxic waste and this is going to be a huge problem. Nuclear power is the most capital intensive to establish, decommissioning is extremely expensive and the financial burden continues long after the plant is closed. On March 30, 2006 Britain estimated it will cost $170 billion to clean up its 20 nuclear sites.

Nuclear Disaster in Earthquake Prone Areas

- It is a little worrying to see how earthquake prone countries like Japan and Indonesia have plans for more nuclear reactors. How will Indonesia secure these areas? On 16 July 2007, the earthquake with a magnitude of 6.8 that hit Niigata Prefecture caused no severe damage to the Kashiwazaki-Kariwa nuclear power plant in Japan, but there were suspected leaks and low-level radiation, reviving fears about nuclear safety.

12

Energy Security

World energy demand is likely to increase by more than 50 per cent in the next two decades. Most estimates depend on the Middle East for additional supplies. Will the world have energy resources to maintain the current rate of growth given the inclination to nationalize oil companies, huge investments required for energy infrastructure, fear of terrorist attacks and political instability in regions where producers of energy resources are predominantly located?

Signposts

- The daily demand for oil is projected to increase by 35 million barrels per day by 2030. This raises total world demand for oil from 80.1 MBPD (Million barrels per day) to 118.0 MBPD. Increases in demand for oil will come from the emerging economies of Asia and Africa.

- Total global production for oil is estimated to meet this increase in demand. However, the increase in production is dependent on the OPEC countries, and even more on the Middle Eastern OPEC countries with the highest projected increases in production.

- However, the 2006 International Energy Outlook reduced the estimated increase in Middle East OPEC production to 29.4/27.0/18.5 MBPD in 2020 assuming $34/$51/$85 per barrel oil prices respectively. This is also alarming in light of the increased global oil prices.

- Natural gas consumption and production is on the rise. Consumption is favoured due to more stable prices, more energy efficiency and due to it being a cleaner gas. While current consumption is more concentrated in American and European OECD countries, by 2030, non OECD countries are likely to consume substantially more. In terms of production, once again non OECD countries are projected to increase from 58.9 tcf (trillion cubic feet) in 2004 to 118.6 tcf in 2030 with Central Asia, Russia and the Middle East contributing the most. South Asia's proximity to all three, places it in a beneficial position. Further, while at present natural gas trade is disproportionately in favour of pipelines (70+ per cent), liquefied natural gas shipments are expected to rise. Shipments allow for one source to feed multiple areas.

- Unconventional liquids (bio-fuels, oil sands, ultra-heavy oil etc) production is on the rise, and majority of the projected increase is concentrated in the non OECD countries. This is indicative of a global move towards diversification of the energy mix and reducing reliance on conventional liquids and gas.

- There is uncertainty about the exact amount of proven reserves, and more so about the degree to which they can be tapped. Estimates vary from 3.74 trillion barrels to approximately 1 trillion barrels. Of the proven reserves with the exception of Canadian oil sands, majority of the global oil reserves remain concentrated in the OPEC Middle East states (62 per cent). There are doubts over the accuracy of reporting by the OPEC states about their proven reserves. A senior executive of an Iranian Oil company went as far as to state that OPEC production was already at its peak, and production could drop by as much as 32 per cent by 2020.

With growing global energy needs, the future will see an increase in the contribution of nuclear energy. At the present use rate, there are (as of 2007) about 70 years left of known uranium reserves, economically recoverable at a price of $130/kg. Other estimates are more optimistic. In either case the issue is more of production that is economically profitable. Some estimates place returns on nuclear plants at 10-15 years after production begins, due to the low fuel prices at present.

Drivers

The last 'Super Giant' oil reserves were discovered in 1967 and 1968, and since then only smaller reserves have been found. If new oil is not discovered and brought into production, world oil production will no longer satisfy demand – this point is called peaking of oil production, after which production will decrease despite large reserves at the time of peaking. Most optimistic of forecasts, like Shell, indicate towards a peaking in the next 20 years. Some indicate that we are already at that state. There is evidence that some world's largest oil fields have already shown a decline in production due to the maturing of their fields such as in North America, North Sea, Saudi Arabia.

Nationalization of companies is being seen all over resulting in the decrease in production capacity. The impact of nationalism on oil production is worrying due to loss of investor confidence, closing of oil sector to foreign companies, lack of reinvestment. Only 4 of the top 10 oil producers are in established democracies.

Strikes in leading supplier countries of Venezuela, Nigeria and Norway, could lead to a dip in production. For e.g. Venezuela's development of its non-conventional oil reserves is mainly limited by political unrest. In late 2002 and early 2003, a strike at the state oil company PDVSA resulted in a dramatic drop in Venezuelan oil production and the firing of most of the oil company's workers.

Supply Disruptions : Oil/Gas (2007)
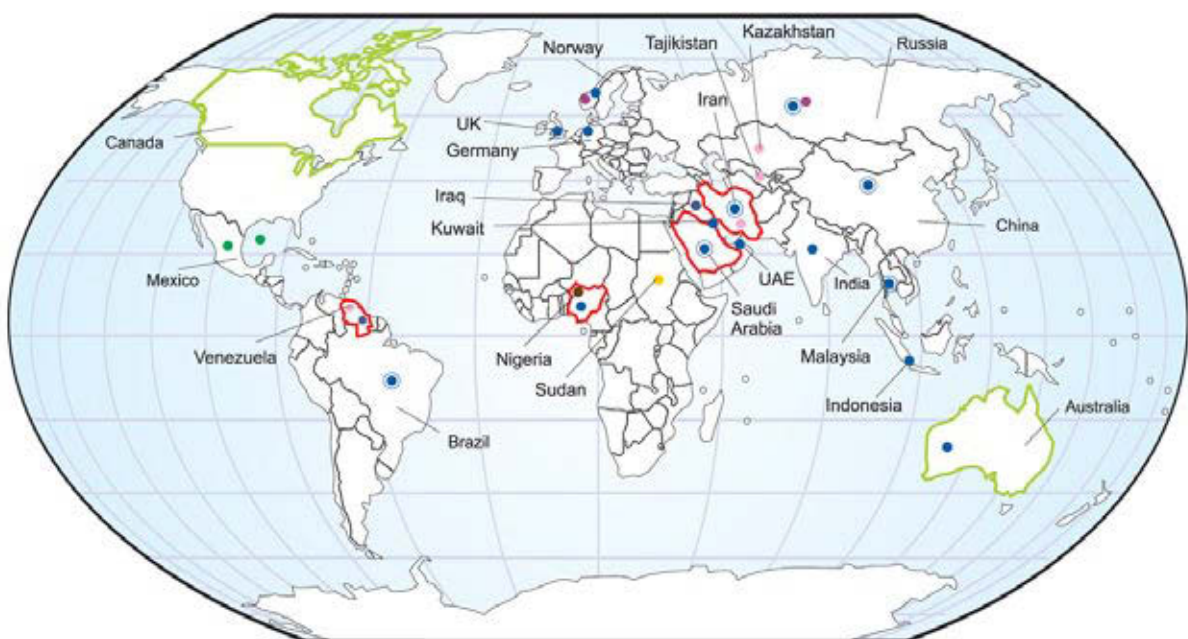
World Unconventional Liquids Production
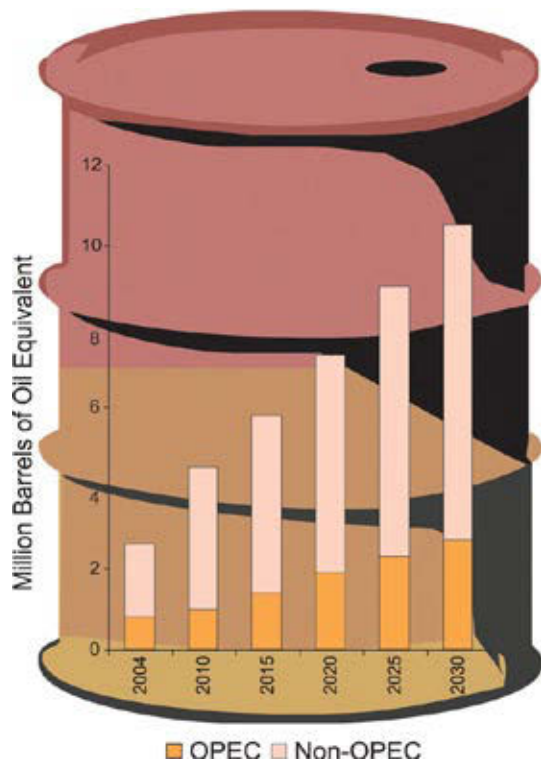
Venezuela's oil production in December 2006 was only 2.5 million barrels per day, a 24 per cent decline from its peak of 3.3 million barrels per day in 1997.
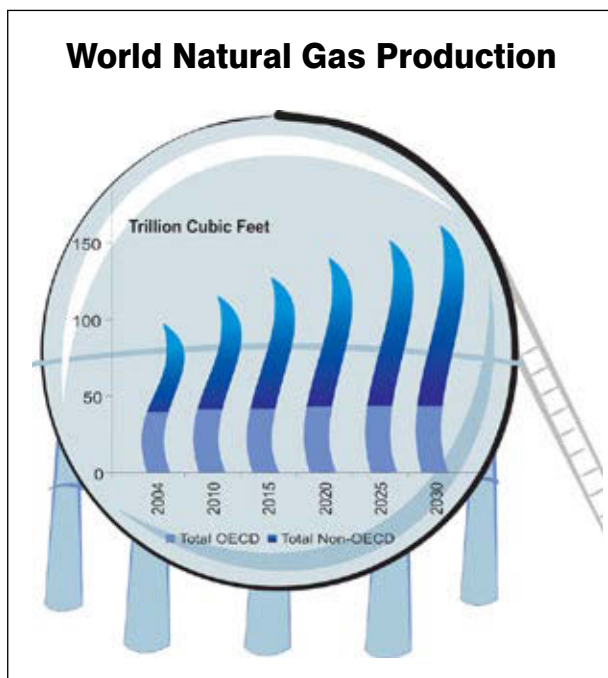
- Natural disasters could decrease oil production. For e.g. hurricanes in the Gulf of Mexico destroyed US refining capacity in 2005; production fell to 1.5 gigabarrels per year, a production level comparable to the end of World War II.

- Terrorist and insurgent attacks can seriously compromise production. In Iraq, the state with third largest reserves of conventional oil, production is currently limited to 0.5 gigabarrels per year. Militant action is also a feature in Nigeria and Sudan.

- In the case of Iran, its nuclear ambition as well as threats of US sanctions has stymied develop-

ment of the South Pars gas field, the largest ever discovered.

- The Russian policies have been unpredictable in the past with regards to the government's relationship with oil companies within the country, foreign investors, and overseas customers. The attitude of the new government, expected to be formed in 2008 will be an important driver.

- The pull out by transit states from oil and gas pipeline projects can have a serious impact on production.

- The main threat to sustainability of energy supplies is the mismatch between investment in additional capacity and energy infrastructure and the growth in demand for energy. It is estimated that total investment worth $20 trillion is required by 2030 to feed the world demand for energy. Of this, $4 trillion is required for the oil sector. Half of this investment is needed from developing countries, with China having to foot at least 18 per cent of this bill. Investments in energy are not always forthcoming (depending on exporting companies and countries). The Russian gas industry is already facing speculation of insufficient production to supply Europe, let alone export to Asia.

- Current worldwide oil sales are denominated in US dollars (Petro$). A change in the value of the dollar against world currencies would affect OPEC's decisions on how much oil to produce- a decline in the value of the dollar, results in oil producing states receiving lesser revenues making them more inclined to cut production in order to raise the price of oil. Iran has suggested using the euro as the new oil currency; Venezuela has recently supported such a move. On the reverse side, higher oil prices can have a debilitating impact on oil importing nations. For example, a price rise from $30-50 a barrel forced Kenya to forfeit foreign reserves worth $400 million, equivalent to its development aid in 2004.

Uncertainties

- To satisfy India and China's energy needs for the future, global energy markets would have to increase their capacity accordingly. Demand by other developing economies can place a major strain on energy reserves. In 1980, China and India consumed 2.6 MBPD (4 per cent) of a total world consumption of 64.4 MBPD; by 2030 they are projected to consume 20.7 MBPD (18 per cent) of a world consumption of 116.3 MBPD.

World Natural Gas Production

Trillion Cubic Feet

■ Total OECD ■ Total Non-OECD

- A future scenario focused on alternative energy technologies coupled with efforts towards reducing overall consumption could reduce the strain on energy resources and reduce reliance on imported oil and gas from unstable supply sources. The second phase of commitment for the Kyoto protocol in 2012, with possible commitments from China, Brazil and India will take place, moving them towards cleaner technologies. Total investments in Clean-tech are expected to reach $220 billion plus by 2016, i.e. 10 per cent of overall energy industry.

Impact

- Disruptions in oil and natural gas prices and supplies are felt strongly by importing countries, and more so if they are developing ones.

- Alliances or confrontations between importing and exporting countries, formation of new trade cartels or geopolitical energy blocs, oil and gas hegemonies.

- Threats of attacks on energy resources or infrastructure more likely, dominance of energy in foreign policy and geopolitics would remain strong.

- Spurred investment and development on alternative energies, as well as energy efficient technologies by developed countries to reduce reliance on oil producing countries.

Part III – Troubled Geographies

US-Iran Strategic Cooperation

13

The success of the Khatami presidency in having legislation passed in the Majlis in early 2003 that could have curbed the powers of the Guardian Council, dominated by clerics, had created the hope of massive internal reforms in Iran and complete reorientation of its ties with the United States. The Iraq War has helped the conservative clerics to consolidate their hold over the country again. However, the foundations of their rule are increasingly weakening and a gradual political change is in the offing. If there is no military confrontation between the United States and Iran by 2009, change of presidency in the United States and internal changes in Iran may lead to the de-escalation of tension, gradual rapprochement, and the evolution of a strategic partnership between the two countries. This will throw all calculations of regional and global security upside down.

Signposts

- **2000:** Secretary of State Madeleine Albright delivered a speech on March 17 apologizing for America's role in the 1953 overthrow of Mohammed Mossadeq (a democratically elected PM who threatened to nationalize Iran's oil fields) and acknowledged the coup, which installed the Shah. Albright later met with Iranian Foreign Minister Kamal Kharrazi as part of the Six-Plus-Two regional talks on Afghanistan. The talks marked the highest diplomatic contact between the U.S. and Iran since the 1979 hostage crisis. This lesson indicates that similar gestures by a future Democrat administration in the US are possible. If the Afghanistan talks provided an opportunity in the past, then talks over Iraq may provide an opportunity again in the future.

- **2001:** After the US-led war in Afghanistan toppled the Taliban government, American and Iranian diplomats met together in Bonn, with representatives from other UN members, to form a new government and constitution for Kabul. Iran also cooperated with the United Nations to repatriate nearly one million Afghan refugees residing on its soil and—working with United States, Russia, and India—provided support to the Northern Alliance.

- **2003:** An overture from Iran for comprehensive bilateral talks, reportedly signed by the highest levels of government, was offered to the US officials in May shortly after the US-led invasion of Iraq.

- **2007:** Peace-talks on Iraq: Just like the US, Iran has a compelling interest in preserving stability in Iraq. In March 2007, The US ambassador to Iraq, Zalmay Khalilzad held a meeting with an Iranian team at a conference of Iraq's neighbours in Baghdad, which became the first formal encounter between the two sides in more than two years. Finally in May, US Ambassador to Iraq, Ryan Crocker, and his Iranian counterpart Hassan Kazemi Qomi held the first high-level talks between the two countries in almost 30 years at Sharm el Sheikh in Egypt. When the countries geared up for another round of discussions on Iraq in June, a prominent Iranian politician called to expand the talks to broader issues such as Afghanistan, Persian Gulf security, and the tensions in the Middle East.

- Ali Akbar Hashemi Rafsanjani being elected as the new Chairman of Iran's powerful Assembly of Experts could push Iran towards internal

US : Iran – Cooperation Vs Conflict
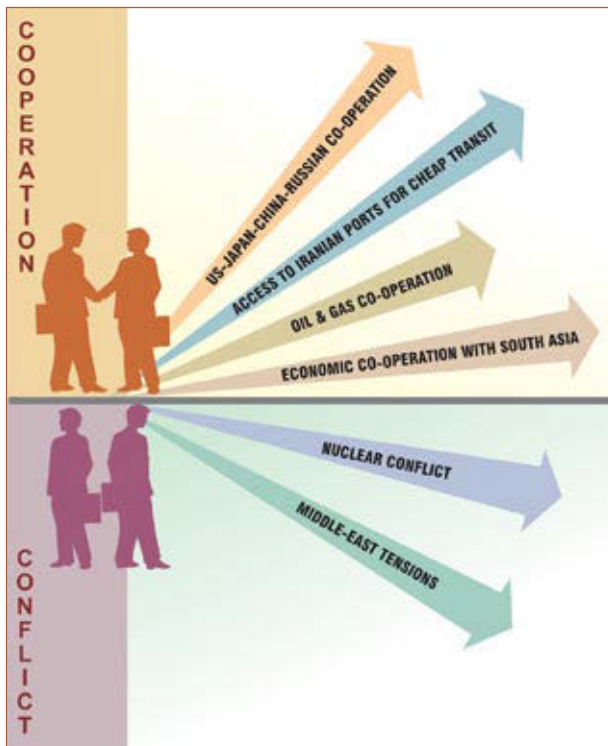
reforms and extending diplomatic etiquette towards the US. Not only does Rafsanjani hold a high position in Iranian politics, but has time and again reiterated that Iran should forward an olive branch to Washington, even at a time when the country's Islamic revolution was at its peak under Ayatollah Khomeini.

- Through numerous bills passed in 2007, such as H.R. 770 (bars pre-emptive military action against Iran and the use of US government funds for any regime change or military activities) and H.J. Res. 14, US Congress compels the administration to consult the legislature before launching an attack on Iran. However, these bills can be interpreted in different ways.

- The six-member Gulf Cooperation Council (GCC) reiterated its stance on reaching a negotiated settlement to the standoff between Iran and the West over Iran's nuclear program and opposed plans to impose sanctions on Tehran. The GCC is studying prospects of signing a free-trade agreement with Iran.

- In addition to the open sources signposts, Strategic Foresight Group has learnt from its sources that informal discussions between track one, as well as track two confidants of the rulers in Washington DC and Tehran have been taking place, including some at locations in Sweden and Turkey. These lines of communication may open new possibilities in exploring a breakthrough just as a secret channel turned around the relations between a Republican White House and Communist China, shocking the world.

Drivers

- Iran's increasing alliance with China and Russia would mean that a war against Iran would severe ties between the US, Russia and China. On the other hand, trade-offs between great powers may lead to de-escalation of tensions with Iran.

- Iranians can be a stabilizing presence in the Middle East, they can offer the US its unrivalled regional and socio-political expertise in trying to overcome the regional difficulties (which they did after 9/11 on what to do in and with Afghanistan). Iran's enormous natural hydrocarbon resources (the world's 2nd largest oil and natural gas reserves and the world's 4th largest oil producer after Saudi Arabia, Russia and the US) are a necessity for the US diminishing domestic hydrocarbon resources (except coal).

- Iran is made up of a youthful population with 15-64 year olds making up 68 per cent of the population and the literacy level stands at 79.4 per cent. Iran already trades with the EU (the EU is Iran's biggest trading partner), China, India and Russia – countries that have secure relations with the US. The Iranian youth have shown fondness for football, Internet, dating and all other characteristics that the Western youth would share with them. With a progressive regime in Tehran, they may place demand for the globalisation of Iran's economy, followed by globalisation of its polity.

- There are indications that the US Defense Secretary and service chiefs may rather resign than to approve the launch of a massive attack against Iran, which would be unpopular all over the world, especially if the attack were to involve nuclear weapons to target underground nuclear plants.

- Even a small air strike against Iran's budding nuclear facilities, as Israel has advocated, could prove disastrous. The Iranian government has scattered its nuclear program around the country, and a partial or unsuccessful Israeli strike would leave Iran poised for nuclear counter-action. A US strike at the behest of Israel would strip the US once and for all of its role as an "honest broker" in the Middle East peace process. The US could pursue aggressive counter-proliferation measures, including intelligence-sharing and a clampdown on smuggling, as well as bolstering regional security.

- If, as proved already that it can, Iran blocks off the Strait of Hormuz in a military war declared between the US and Iran, it would spell world disaster. One-third of the world's oil passes through the Strait of Hormuz (between 15 and 16.5 million barrels of oil transit the Strait each day), and blocking that off would lead to serious repercussions throughout the world.

- Iran has time and again stressed its enthusiasm for tapping its strategically placed ports, namely Chabahar (cargo handling capacity of 1.5-6 million tons a year) and Bandar Abbas (reserved mainly for trade with Russia and Europe). Iran is positioning itself as the custodian of new trade routes to Afghanistan, Russia and Central Asia. Iran has already engaged Russia and India to improve the North-South Corridor that can carry goods from India to southern Iran and thereafter across the Caspian Sea into Russia and Europe. Cooperation might see Iran make cheap transit possibilities through these ports so as to cut out construction of complicated oil pipelines via Turkey or Russia.

- Iran's leaders have been pushing for a strategic cooperation with Saudi Arabia in order to resolve "the problems of the Muslim World and help foster solidarity among Muslims". Saudi leaders have also stressed that promotion of relations with Iran was an unchanged principle in their country's foreign policy. The Iranian Majlis Research Center has announced that improved relations between Iran and Saudi Arabia will give more power to Iran to bargain with the West, including the US. Saudi-Iranian relations and the use of Saudi diplomacy to calm down US hostility to Iran can have a major impact.

Uncertainties

- The Bush administration bombs Iran within a year, with unforeseen consequences, partially depending on the magnitude of the attack.

- US pulls out of Iraq and Iran tries to play regional hegemon by intervening into Iraqi politics.

- Israel and Syria go to war in the upcoming year, which will almost certainly engage Iran, foreclosing many options between Iran and the United States.

- Russia and China form a strategic partnership and engage Iran very closely, despite a conflict of interests between Iran and Russia in some respects, which will dissuade Iran from track two efforts to build peace with the United States.

Impact

- Given the huge American economic and political interests in the Caspian region and Central Asia, and Iran's strong desire to be a major player in this new great game, normalisation of relations between Iran and the US will determine the final decision about the best and most economical pipeline routes for energy transmission, to be more beneficial for both U.S. and Iran. It may

also result in a more representative balance of power in this region rendering a higher level of security and stability, hence a lower level of risk for international investment.

- Cooperation between US and Iran would spare the whole of Middle East and the world of the possibility of a nuclear war.

- Foreign and trade relations with Asia would prosper, enabling smoother transactions for both US and Iran. Iran is seen in Asia as a gateway to the resource rich Central Asian republics, which energy-starved India is keen to gain access to.

- The Arab-Israeli conflict will be closer to a solution if Iran (backing Hezbollah, Hamas and Syria) and the US (backing Israel) get into a strategic cooperation. Being massive powers, their combined efforts would see a definitive change in the age old conflict.

14

Arab Islamic Renaissance

The Arab and Islamic countries are embarked on a growth trajectory enabled by revenue surpluses from oil exports and the slow opening of minds. There are indications of major investments in economic diversification in downstream industries, knowledge creation, finance, tourism, science and technology. If current policy reforms, investments and programmes are sustained and bolstered by political reforms, the Arab and Islamic world may be able to usher in a renaissance recalling the multifarious technological and knowledge development achieved by the region about a thousand years ago. Such an approach may provide the foundation for a win-win relationship between the Islamic countries and the West, ending the current hostility.

Signposts

- The GCC countries are earning surplus revenue of more than $300 billion per year. They are expected to invest almost $1.5 trillion in economic diversification in the next decade – particularly in petroleum refining, petrochemicals, cement, steel, tourism and service sectors. Such huge investments can create jobs and economic dynamism and place demand for qualified young people. These expectations have generated a boom in education.

- The Arab region is trying to connect to the rest of the world. About $3 trillion is expected to be invested in leisure and tourism as well as supporting infrastructure projects in the next decade and half, with a view to attract 150 million tourists.

Malaysia's Success in Islamic Banking Finance
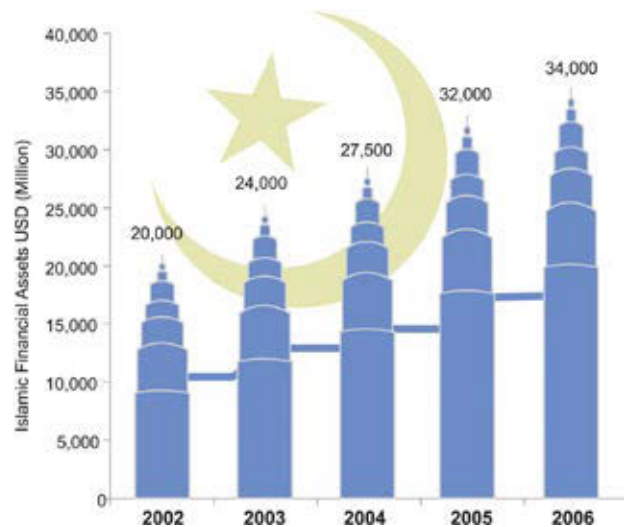
Source: Bank Negara Malaysia, 2007

- Bibliotheca Alexandrina has created Internet archives – one of the only four places in the world to have such archives. UAE is attempting to accelerate its place on technological ladder with the launch of an Arab Genome Centre and a fund for clean technologies.

- Due to the gradual opening of the Arab countries to international trade and rapid dissemination of information and computer technologies, many if not all Arab and North African countries have embarked on major reforms in the education and training sectors.

- Egypt, Jordan, Iran and Tunisia have achieved near universal primary enrolment.

- The ruler of Dubai, Shiekh Mohammed bin Rashid al-Maktoum, has established a foundation of $10 billion for education. Qatar has created

a Knowledge Well – an oil well with revenue dedicated to education. The ruling families of Abu Dhabi, Dubai and Qatar have invited several American universities to open branches there.

- In the last few years there has been an influx of business incubators that support the entrepreneurial process and encourage women to start up small businesses. Currently Tunisia has 24 business incubators; Iran has 43 incubators and Turkey has 20 incubators with 1256 enterprises.

- When it comes to Science and Technology (S&T), the Islamic countries lag far behind the Western countries with few exceptions. However, their performance is much better than that of most developing countries. The Arab region is placed just below Europe in the World Bank Knowledge Index. For instance, the number of S&T articles published in 2005 per million people was 61.1 in China, 26.5 in India and a 138.5 in South Africa. In comparison, articles published in Lebanon during the same year were 347.3, Kuwait 267.2 and Turkey 250.6.

- Qatar's Science and Technology Park with venture capital worth $130 million along with creditable international firms will make Qatar one of the world's most attractive locations for technology enterprises in the future.

- At the Arab Scientific and Technology Foundation (ASTF), grants are awarded to scientists that engage in R&D activities that would benefit development in the region as a whole, like addressing target markets in energy, medical care, water purification and food safety. This also helps attract investment.

- ASTF has also set up an International Initiative to engage Iraq's Science and Technology community.

- Islamic banking and finance has grown rapidly over the past few years. Annual global growth is consistently in the double digits and Islamic finance assets under management are currently

valued at more than $400 billion. Malaysia has made special efforts to promote Islamic banking. London and Singapore are competing to be centre of Islamic banking.
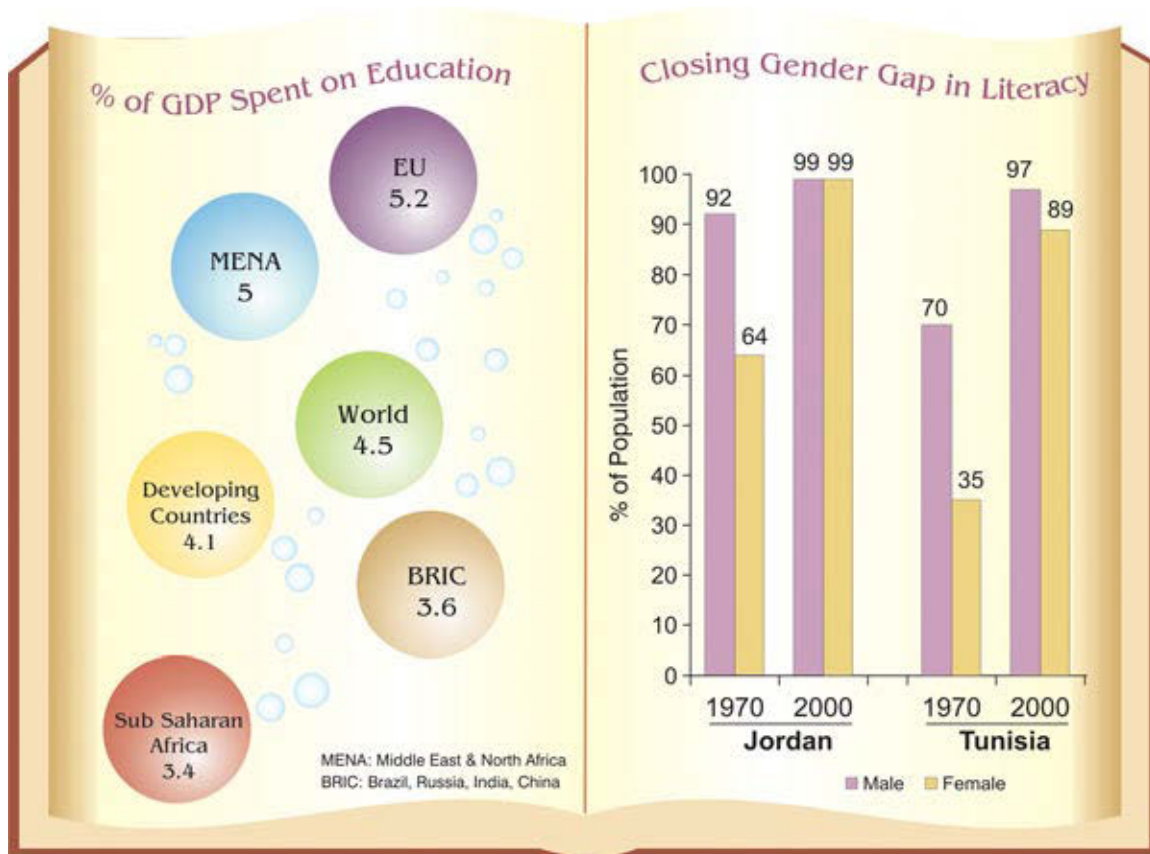
- Turkey has made major economic strides under the leadership of its Justice and Development Party. It has propelled small entrepreneurs into economic mainstream. Malaysia has already engineered similar transformation.

- Along with developments in education, entrepreneurship, science and technology, there is also churning going on about questions of democracy, freedom of inquiry and civil liberties. Several new television channels and blogs have mushroomed in the region. Conferences on democracy and free trade are popular.

Drivers

- The commitment of governments in the Islamic world to open economic policies, privatisation, foreign direct investment, technology transfer, education reforms and freedom of scientific inquiry will play the most critical role in transformation. The policies of Malaysia over the last two decades and Turkey in the last five years demonstrate what governments can achieve.

- Institutional reforms will go a long way in facilitating renaissance. In the Arab region, all institutions are controlled from the top, which can create opportunities for some bright people who may come to the attention of the rulers, but such an approach results in gross underutilisation of human capital.

- So long as Israel's conflicts with Palestine, Lebanon and Syria are not resolved, it is impossible to harness the full potential of the region. Empirical experience shows that the Lebanese and Palestinians have a strong capacity to excel in knowledge industries. However, security is a major constraint. It is easy to advise young Palestinians to dream of being computer engi

Knowledge Creation in MENA

% of GDP Spent on Education

EU 5.2

MENA 5

World 4.5

Developing Countries 4.1

BRIC 3.6

Sub Saharan Africa 3.4

MENA: Middle East & North Africa
BRIC: Brazil, Russia, India, China

Closing Gender Gap in Literacy

Jordan: 1970 — Male 92, Female 64; 2000 — Male 99, Female 99

Tunisia: 1970 — Male 70, Female 35; 2000 — Male 97, Female 89

% of Population

■ Male ■ Female

Source: UNESCO, Goldman Sach's Eurostat, EFA GMR 2003

Source: UNESCO Inst. for Stats, Literacy Stats 2003

neers rather than suicide bombers. It is difficult to follow this advice if there is no guarantee of life the next day.

- If the war in Iraq, terrorism sponsored by Al Qaeda and the perception of West-Islam conflict persists, it will be difficult to tap the potential of cooperation in several sectors, particularly high end technologies.

- The oil rich countries in the GCC are still substantially dependent on oil for revenue - oil constitutes 3/4th of total revenues. Should oil prices take a sudden and sustained downturn, there will be the problem of mobilising resources, currently the main driver of growth and transformation.

- If economic disparities between different parts of the Arab region continue to grow, there will be adverse implications for overall development as well as instability in the region.

- Currently much of the effort for knowledge advancement is concentrated in a few GCC states, without deep cooperation and coordination. Since human resources are limited, regional cooperation by the real actors will expedite the renaissance.

- The inclination of the GCC countries to establish cooperation with successful economies in the developing world – including Turkey, Malaysia, China, India – rather than fully depending on the United States and UK for acquiring knowledge will determine optimum results. ARCEIT, a joint venture between the Bahraini government, UNIDO and the government of India, collaborates with other industrial and developing nations in an attempt at "South-South cooperation" rather than resorting to conventional partnerships with Western companies.

Uncertainties

- If the war in Iraq produces a violent outcome – for instance, a major attack on the style of 9/11 on significant US assets – it will deepen the conflict between the Western and Islamic countries. Also, if the United States opens new war fronts (such Syria, Iran), it will result in a major policy diversion from development and modernisation to security and geopolitics.

- Some of the governments in the region can be toppled by orthodox social forces. If an important country like Egypt faces this problem, there will be spill-over in other countries.

- If the relationship between Iran and the United States undergoes a turnaround, it will gradually bring peace to the region, and the renaissance will accelerate at an extremely fast pace.

Impact

- Support for policies to seek working peace and cooperation with Israel.

- Reduction in terrorism, though not its complete elimination.

- A new era of peace, prosperity and cooperation around the world.

15

The Middle Eastern Drama

Until Intifada-2 of 2000, the conflict in the Middle East was primarily between Israel and PLO. Since then two new players – Hamas and Hezbollah – have occupied significant political space. The US invasion of Iraq has added another dimension. A further complication is in the making, with the fear of US attack on Iran and the latter strengthening its client-relationships in the Palestine territories, Lebanon and Syria. In the next decade, Russia, China and perhaps Turkey may join the Middle Eastern Drama, initially through strong diplomatic and economic relationships, extending to strategic interventions.

Signposts

The Strengthening of Hamas and Hezbollah

- Hamas and Hezbollah may be condemned and isolated by Israel, some of the Arab regimes and the West. However, they have garnered significant public support as reflected in electoral politics, popular demonstrations and armed conflicts on the ground.

- With the dissolution of the national unity government in the Palestinian Authority in early 2007 and the capture of Gaza by Hamas in June 2007, the tensions between the Fatah and Hamas have risen considerably.

- The victory of Hezbollah in the missile war with Israel in the summer of 2006 has strengthened its position across the Arab region.

Saudi Arabia's Rivalry with Iran and Syria

- Historical rivals, Saudi Arabia and Iran are now backing the main rivals in Lebanon's political crisis; Iran backing Hezbollah and Saudi Arabia backing the government of Fouad Siniora. The growing civil war-like situation in Iraq has increased the tensions between them, since the Shiite ascendancy in Iraq has benefited Iran.

- Saudi Arabia's prominent role and revered status in the Israel-Palestine peace process is endangered due to Iran's backing for Hamas.

- Since the 2005 assassination of Saudi-backed former Lebanese PM Rafik Hariri, relations between Saudi Arabia and Syria have chilled. This is also because Syria has established a strategic alliance with Iran.

Saudi Arabia's Growing Role in Regional Politics

- Saudi Arabia has traditionally been considered as a leader among Sunni nations with the Saudi monarch playing the role of a custodian of the two holy mosques of Islam in Mecca and Medina.

- Saudi Arabia convened the Mecca Summit in February 2007 that resulted in the signing of the Mecca Agreement between Fatah and Hamas. This was a significant victory for Saudi Arabian diplomacy, especially where Egypt, Jordan and Qatar had failed before. The unity government in the Palestinian Authority was formed under a lot of pressure from Saudi Arabia with a reportedly $1 billion aid incentive to a unity government. But the government failed to materialize. Saudi leadership credibility, especially in non-Arab Muslim nations, would have gained if Hamas-Fatah unity government had succeeded.

- Some analysts feel that the current political impasse in Lebanon can be resolved if Saudi

Middle Eastern Drama
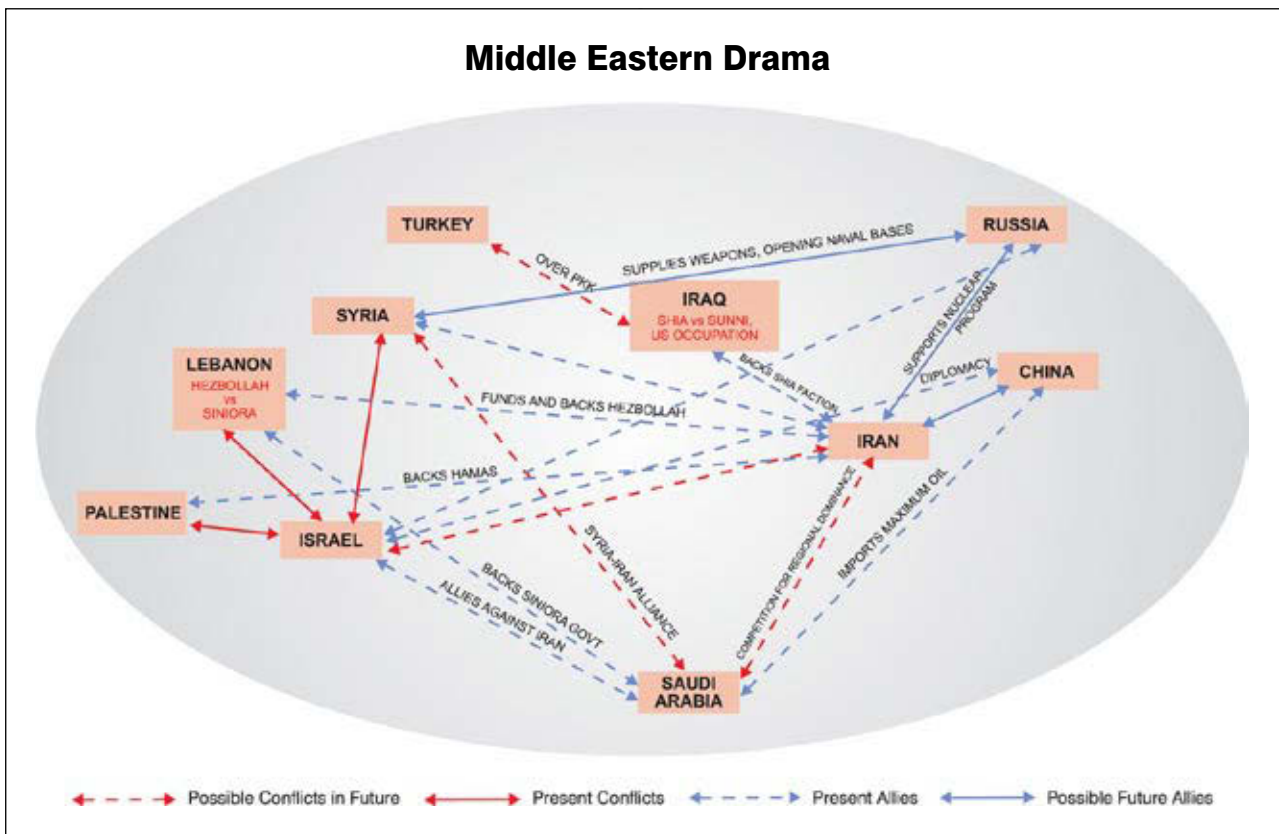
Arabia agrees to broker a deal between the Iran-backed Hezbollah and the West-backed government of Fouad Siniora.

- In May 2007, Saudi Arabia got into Darfur peacekeeping moves when it hosted a meeting between Sudan's President Omar al-Bashir and Chad's president, Idris Déby, at which they reiterated promises not to undermine each other's regimes.

- One of the motives behind Saudi Arabia's increasingly influential role as a peace broker in the region could be to balance out the growing dominance of Iran in the region, especially as regards to Hamas, Palestinian Authority, Hezbollah and Lebanon. The other motive could be to uphold the traditional leadership role it has as the guardian of Islam. Another motive could be the need for Saudi Arabia to find an expression of its oil wealth through geopolitics of the region.

- Due to its increasing influence in the Middle East, Iran and Syria might be pushed into a corner.

Iran Tensions

- Iran is playing a progressively dominant role in the region. It is involved in Iraq, Syria and Lebanon. It has close commercial ties with Russia and China. Due to its increased dominance in the region, the Gulf States fear a rise of the Shia crescent. Israel is scared of Iran developing nuclear weapons to counter-balance its dominance in the region.

- The growing intensity of sanctions by the Western countries against Iran could have a counter-productive effect on Iran, eventually leading to the escalation of tensions and a military strike against Iran.

Growing Complications in Iraq

- Sunni Arabs, dominant during the Saddam regime, accuse the current Iraqi government of politically marginalizing them. The Sunni Arab Accordance Front pulled out of the Shia-led government in August 2007. The government was further weakened when the movement loyal to Shiite cleric Moqtada al Sadr withdrew from the government in September 2007.

- The situation in Iraq gets more complicated by the influence that Iran wields in post-Saddam Iraq. Prominent factions like the Supreme Council for the Islamic Revolution in Iraq (SCIRI) in the Shia Iraqi government enjoy Iran's support. The SCIRI controls the Badr Brigades militia, reportedly trained by the Iranian Revolutionary Guard, which control Basra and other Shiite cities. Iran also has ties with Moqtada al Sadr's Mahdy army which has been recruited primarily to oppose US forces in Iraq. Some also say that Iran is supporting Sunni insurgent groups in Iraq with an aim to weaken US position in Iraq.

- The threat of Turkey pursuing PKK into Iraqi territories remains very real, making the possibility of Turkey-Iraq conflict. The current situation may unfold into a full-scale civil war which promises to get neighbouring states involved.

Russian Diplomacy and Ambitions

- Russia has established friendly relations with Israel. Since 2004 the Russian and Israeli anti-terror forces have even trained together secretly.

- Russia continues to support Iran's nuclear program.

- In addition to selling arms to Syria, it is also re-opening naval bases in Syria (in Tartus and Latakia), to establish their presence in the Mediterranean.

- Russia's continued success in its juggling act of diplomacy would ensure its growing influence in the region; this could be used in the future as a bargaining factor.

Increased Trade Relationships and Investment in the Region by China

- Due to the unprecedented increase in its oil consumption, the past few years have seen a sharp increase in China's trade with the Middle East, especially with Saudi Arabia and Iran. In 1991, the total trade between China and Arab countries was $2.42 billion; this had increased to $51.3 billion in 2005. In a period of 5 years,

from 2000 to 2005, trade volume between China and Arab countries has increased at an annual average of 40 per cent.

Drivers

Peace Processes

- Peace processes and treaties in the region have either been failures or partial successes. The failure of peace processes creates a cyclical effect with peace process leading to despair to alignment with new external players to growing complications to greater difficulties in achieving peace to more desperation.

- The geopolitics of the region as well as that of the world in general, has changed significantly over the past few years, former enemies have become allies, as in the case of Russia and Israel presently; new alliances have been formed, as in case of Iran and Hamas; new relations have been formed, as China-Saudi Arabia bilateral trade relations. Such realignments act in favour or against prospects of peace.

- The Arab League Peace Plan sponsored by the Kingdom of Saudi Arabia and supported by all Arab states can resolve the Israel-Palestinian conflict on the basis of the 1967 borders, and build confidence between Israel and Arab states. The resulting peace will also disable Iran's expansionist plans in the region.

Demand for Oil

- By 2020, 83 per cent of global oil reserves will be controlled by the Middle East. In the next few decades, the Middle East might be the only abundant reservoir of crude oil. Until sustainable and cost-effective alternative energy resources are found through an unforeseen technological breakthrough, Middle Eastern oil is bound to attract strategic interests of external players. This explains China's growing attention to the region. While India currently maintains a low profile in

the region, growing strategic engagement in a decade or so can not be ruled out.

Global Strategic Environment

- The Middle Eastern drama has a cause and effect relationship with relations between West-Islam relations, terrorism and counter-terrorism and the deepening mistrust between Western and Islamic societies. If the relations between Western and Islamic nations improve, it will contain the conflict in the Middle East and vice versa.

- If the relations between the US, EU, Russia and China are constructive, they may work together to resolve the conflict in the Middle East. But if they deteriorate, each player will treat the Middle East as an additional theatre for rivalry.

Uncertainties

- One of the wildcards in such a situation would be the discovery of an alternate source of fuel. This would reduce the dependence on Middle East for oil; it would also dissuade external powers from being actively involved in the conflict. This in turn, would curb the growth of resistance factions and Islamist extremists, limiting the complexity of the conflict in the long-run.

- If significant reforms take place in Iran, they may lead to the normalisation of its relationship with the Western countries and a co-operative rather than aggressive attitude to resolve the conflicts in the region.

- If Iran is militarily attacked and retaliates strongly with missile attacks on Iraq, Israel and perhaps UAE and promotes insurgency in some of the Sunni-majority states, the situation will deteriorate beyond complexity.

Impact

- In the short run, growing complexity will lead to growing uncertainty and arms race, including competitive interest in acquiring nuclear weapons. Since it is not possible to acquire nuclear weapons by legitimate means, smuggling of nuclear weapons (fissile material and technology) may be sought. The exposition of the AQ Khan smuggling ring proves that smuggling of nuclear weapons is feasible.

- Also, growing strategic complexity will divert the attention from socio-economic development agenda, with its vicious cycle effect through unemployment, constraints on external economic engagement and deterioration of relations between the Western and Islamic countries.

- In the long run, the various tensions in the region might escalate into various confrontations, which might develop into a world war within the next 10-15 years. If Russia and China are involved in such a war, it indicates the risk of World War Three, of a much greater proportion than First and Second World War. With proliferation of nuclear weapons, declining sovereignty of states and the growth of terrorist groups, such a war is quite likely to involve the use of nuclear weapons. It can cause death of a few hundred million people and vast devastation.

16

Chinese Countryside

China's economic advancement and growing influence in global politics could encounter a serious roadblock in the form of what is known as the Triple-Agri (San-Nong): the problem of agriculture, the problem of the rural areas, and the problem of the peasant. The manner in which the Chinese government and people are able to cope with the Triple-Agri will determine whether China will emerge as a superpower or fade away in the midst of a peasant revolution.

Signposts

- Rural unrest is the biggest political problem China faces today, even though lethal violence in such events is rare.

- In 2004, according to official estimates, there were 74,000 uprisings throughout the country. In 2006, the police recorded 87,000 "public disturbances" as a result of widening gaps between rich and poor, and between urban and rural areas, and between the rapidly growing industrial east and the stagnating agricultural hinterlands.

- China's urban population has a strong tendency to look down on country folk. The word for "farmer" in Chinese has a distinctly pejorative flavour.

- As China's urban centres boom they are gobbling up farmland at a voracious rate. A total of 16 million acres (6,475,000 hectares) have gone in the last 20 years.

- In a system that has been compared to Apartheid, people born in rural China find it almost impossible to become full urban residents.

- Beijing still allows unregulated rural land development for new industries and infrastructure. Land seized from peasants reduces their minimal subsistence base, leaving them with what is called "two-mouth" lands, insufficient to feed most families.

- China's landless peasants, number a staggering 70 million according to official estimates.

- The Chinese state is very clear on the rural roots of the 1949 revolution that emanated from massive inequality and social insecurity. But there is a new awareness among peasants and rural workers, who have seen the state increasingly side with the newly rich over the past two decades, often at a direct cost to themselves, their families and communities

- A recent study by Michigan State University and Renmin University indicates that land grabs have increased 15-fold over the past decade.

- The current Chinese leadership is seized with the issue and has launched initiatives that include scrapping a 2,000-year-old agricultural tax, worth 120 billion Yuan ($16 billion) annually as part of efforts to boost farmers' income, promising free education and vowing to set up rural health-care collectives.

- The government figures indicate that at least 210 million rural labourers have migrated to cities or townships in 2006. In the first six months of 2007, the number of migrant workers increased by 8.6 million, a year-on-year growth of 8.1 per cent. The phenomenon has been described as the biggest internal migration in the history of the world.

- According to some reports, there are 93 kinds of fees and fund-raising levies related to farmers, formulated by 24 national ministries, committees, offices and bureaus at the central government level. Local governments levy 296 other kinds of fees. Within the framework of the harmonious society programme, some of the taxes might be scrapped since these reports appeared two years ago.

- The income gap between China's urban and rural residents widened last year, according to Vice Minister of Agriculture Yin Chengjie. In 2006, the average Chinese city dweller earned 3.28 times as much as his fellow citizen in the countryside, up from 3.22 in 2005 and 3.21 times in 2004.

- Compared to the commercial capital of Shanghai, Guizhou's 37 million people - most of who are peasants - can expect to live 13 years less, mothers have a 10 times greater risk of dying during childbirth, and infants are five times more likely to perish before the age of five. The income differential between parts of rural China and the urban areas in the coastal provinces can be 20 times.

- In a 2006 speech to the National People's Congress, President Hu Jintao said that China's industrial economy should begin to "repay its debt to the countryside," a slogan which has been gaining momentum over the last year.

- President Hu Jintao has also repeatedly identified the widening wealth gap between the urban and rural population as a key problem in his long-term objective of building a "harmonious society."

- A Chinese book by Chen Guidi and Wu Chuntao, *A Survey of Chinese Peasants* exposes the extent of official corruption in the countryside. After selling out its initial press run of 150,000 in January 2004, the book was banned by authorities. However, it has sold more than 10 million of copies in pirate editions widely available within China and is driving debate on the hardships of the rural poor.

Drivers

Policies and their Implementation

- China's health minister Chen Zhu has said that China's rural cooperative medical insurance system, initiated in 2003 to offer farmers basic healthcare, has covered more than 80 per cent of the country's rural population. It is expected to cover the whole of the rural population by 2008. If this scheme can actually be implemented in a manner that impacts the rural people, it can have widespread impact.

- Farmers' per capita income in 2006 reached 3,587 Yuan – 7.4 per cent more than the same period of the previous year. Farmers' income has seen an increase of 6 per cent for three consecutive years, the first of such increases in income since 1985. However, the gap between the urban and the rural continues to grow.

Water

- China's rapid economic growth has left its rivers polluted and more than 300 million people in rural areas without clean drinking water.

- By 2025 China is likely to be in a state of water stress with 1700 cubic meters per capita. This is bound to affect food security, the livelihood options of peasants and their propensity to participate in protests and agitations.

- About 40 per cent of the population in Northern rural China has access to only 14 per cent of the country's water. Since Northern China is host to significant proportion of farmland, relative lack of access to water in this part of the country is bound to impact the attitude of farmers.

Availability of Rural Finance

- The Chinese government has been tinkering with micro-credit and other innovative rural finance programs for more than a decade without much success. If they are able to make a positive

change in the rural finance sector, it will make a major impact on rural communities.

Changing Attitude of Urban Elite to Rural People

- At present, there is a strong prejudice against the rural migrants (also known as 'floating population') amongst urbanites in China. There is a tendency for migrants to be characterized by urban citizens as a vast and unkempt horde of ignorant outsiders who pour 'blindly' into the cities, bringing dirt, disorder and crime. In a survey of about five hundred households in a district of Shanghai, 97.2 per cent of respondents felt that the floating population had a negative influence on employment, environment, security of property, and/or traffic and transport, and nearly thirty per cent perceived negative influences on all of these aspects of community life.

Uncertainties

- If there is downturn in the American economy or global financial crisis, China's exports and industrial production will go down. This will result in the return of rural workers to the farming areas, increasing pressures on the farmland and raising the potential of violent peasant reaction.

- A major conflict with Japan or Taiwan may divert the government away from the policy of harmonious development.

- Even if the national leadership of CPC has shown appreciation of the problems of rural population, the real conflict is between farmers and local party officials who use their political authority to exploit farmers. If the tension between farmers and local officials proves to be difficult to manage, serious political fallout can not be ruled out.

Impact

The manner in which rural China develops in the next decade will be a major factor in the role that China can play in the world. If the rural population is able to benefit from the overall economic progress of China, China will become the next economic superpower. If a revolution truly breaks out in the agricultural heartland of China, the very survival of the country would be at stake.

17

Demographic Imbalance

An interesting dynamic will occur in the next 50 years between currently industrialised or developed counties, including Western Europe and East Asia that will accumulate an increasingly ageing population and poor countries in parts of Asia, the Middle East and Africa that will bear the burden of a youth bulge. The resulting demographic imbalance will affect pension policies, trade, migration, health, technology, crime and security.

Signposts

Aging Crisis in Industrialized Countries

- By 2050, nearly 1.5 billion people or 16.3 per cent of the world's population will be aged 65 or older, compared to about 420 million or 6.9 per cent in 2000.

- Japan and Europe especially will experience an upsurge in their aging population i.e. people above the age of 65 years.

- The ageing population in Italy made up only 16 per cent in 1995, which increased to 20 per cent a decade later. Germany, Spain, France and Britain all have ageing population of 15-20 per cent and growing every year. Some of the other countries like Belgium, Norway, Canada and New Zealand have less than 15 per cent population in the elderly category but this will change in the next few decades.

- There is a phenomenon of delayed child-bearing among European countries. The mean age at first birth was 24.1 in 1980 in Greece and 27.3

in 2000, for Spain it was 25 in 1980 and 29.1 in 2000, in Germany it was 25 in 1980 and 28.2 in 2000, in France it was 25 in 1980 and 27.9 in 2000 while in Netherlands it was 25.7 in 1980 and is 28.6 in 2000.

- The ratio of working age citizens to every senior citizen will incur dramatic changes in the next 50 years. In Europe, the current ration of 4:1 will reduce to 2:1 in 2050, thereby causing a gross imbalance in the economy.

- What is of greater concern is that currently the work environment in Europe is not willing to accommodate elderly employees. According to a Monster Meter poll, 46 per cent of workers across Europe believe their organisation discriminates against older workers when it comes to looking for new recruits.

- Health issues could be more common among older workers resulting in higher absenteeism rates.

- The Japanese people, both males and females, have the longest health expectancy in the world. According to the Japan Aging Research Center, the total number of the elderly in 2003 was 24.31 million, or 19 per cent of the total population

- OECD estimates suggest that the sudden decline in labour force activity in 2050 could lead to a dramatic drop in the standard of living, particularly in Japan.

- Older males in Japan show rapid declines in labour force participation, from 56.3 per cent in 1965 to 37.0 per cent in 1985 and 34.1 per cent in 2000.

Youth Bulge in Developing Countries

- UN sources say that there are more than 100 countries where people aged 15-29 account for more than 40 per cent of the population. A majority of them are in sub-Saharan Africa, the Middle East, and South Asia.

- The top ten youth bulge countries all come from the African continent: Botswana, Mozambique, Burkina Faso, Namibia, Cote d'ivoire, Swaziland, Ethiopia, Uganda, Malawi and Zambia.

- The population of the Middle East and North Africa increased from around 100 million in 1950 to around 380 million in 2000 — an addition of 280 million people in 50 years. During this period the population of this region increased 3.7 times, which is more than any other major world region.

- The size of youth bulges will decrease in all regions of the world except for Sub-Saharan Africa over the next 20 years, but populations of youth in many developing countries will remain large in comparison to industrialized nations.

- Half the population in Less Developed Countries (LDC) was under the age of 23 in 1996; in 2020 the median will have risen to 29 years. During the same period the median age of population in more developed countries will rise from 36 to 42 years.

- The world's poorest and often most politically unstable countries—including, among others, Iraq, Palestine, and Yemen—will have some of the largest youth populations in 2025.

- The International Labour Organisation estimates that the global labour force will increase by nearly 1 billion over the next decade—with most growth coming from the developing world—putting significant pressure on already weak economies to create millions of new jobs.

- In the Gulf, according to United Press International, real and disguised unemployment averages at least 20 per cent for young males and the number of young people entering the work force each year will double between now and 2025.

Demographic Imbalance
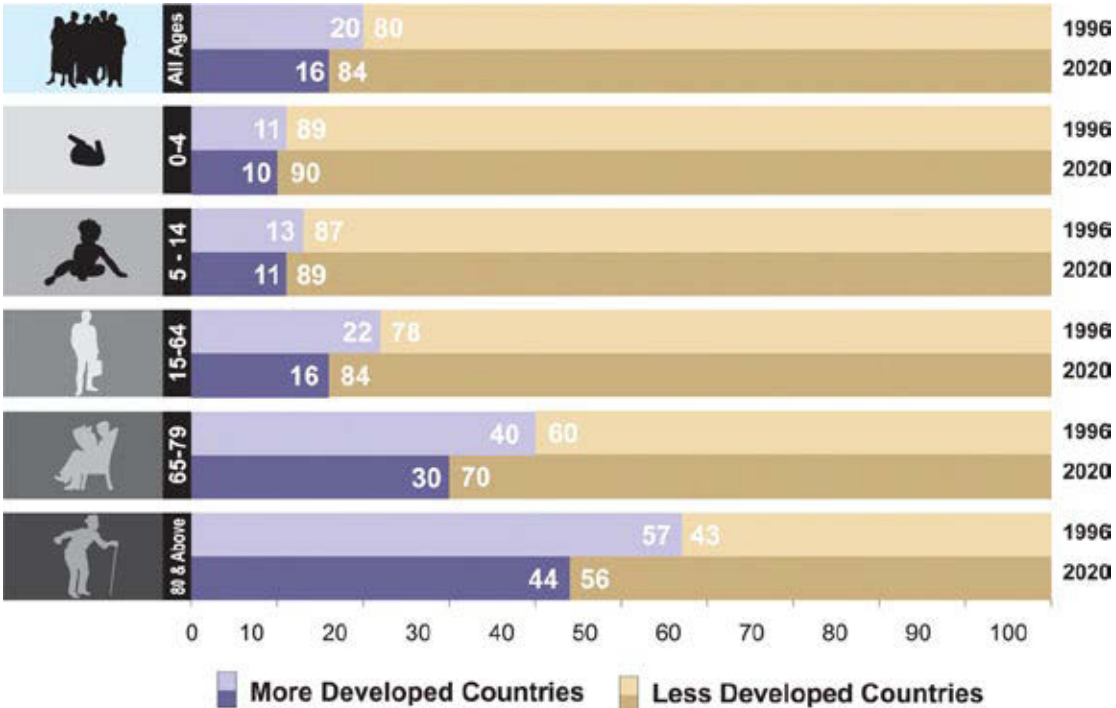
Source: US Bureau of the Census

Drivers

- The correlation between demographic imbalance and economic imbalance clearly indicates that availability of resources, good governance, relative peace and stability will influence future trends.

- Studies have shown a strong inverse relationship between the level of education and the number of children born in a family. Although the fertility rate in Sub-Saharan Africa and the Middle East will still be relatively high, education will cause a considerable decrease in the youth bulge.

- In the rich countries, increasing child rearing costs, work culture, an economic system based on loans forcing both partners to work and time constraints will lead to a lower fertility rate amongst families.

- In rich countries with high real estate prices (e.g. Japan), a phenomenon known as "Parasite Singles", where young Japanese adults choose to live with their parents until much later than normal, has increased the marriage age and consequently reduced the birthing span amongst Japanese youth. Growing real estate prices will strengthen this tendency.

- In a cyclical effect in developing countries, the number of women of childbearing age (15 to 49 years) will at least double in the next 30 years, which in turn will increase birth rate, creating a 'population momentum'.

- Another important factor is the use of contraception. According to UNICEF, the percentage of women aged 15-49 using contraception in sub-Saharan Africa is 23 per cent, in Arab countries 54 per cent, in South Asia 48 per cent, in CEE/CIS and Baltic States it is 66 per cent.

- Religious beliefs can accelerate birth rates, particularly in Latin America, Africa and the Islamic countries.

Uncertainties

- Outbreak of major wars in Africa, the Middle East, South Asia (all candidates for serious violent conflicts) resulting in the death of millions of young people, can have an impact on demographic imbalance – this is true only in the case of a really large-scale war, since the youth bulge is expanding despite small wars and conflicts in these regions at present.

- Breakthroughs in GNR technologies can enable the ageing population in the industrialised countries to work for longer years and resist any migration from the developing countries.

Impact

- Pension and public finance crisis.

- Productivity problems in the industrialized countries.

- Extension of outsourcing to several different sectors of economy.

- Significant increase in high end technologies, particularly information technology and robotics, to make for the shortfall of productive labour in the industrialised countries.

- Innovation in health and food to address problems of both the aged and the very young.

- South-North migration, resulting in economic benefits, remittances to the developing countries, but also cultural problems and crime.

- Europe's willingness to Turkey's accession, with a broader salutary impact on West-Islam relations.

- Consideration of new instruments of global governance to develop sustainable and orderly policies for migration.

18

Erosion of Sovereignty

Sovereignty of nation states is under attack from 3 different angles: (1) From below, with the breakdown of states (2) From the top with big powers, forces of globalisation and climate change imposing their will on smaller states (3) In a horizontal manner through voluntary surrender of national sovereignty to regional groupings such as the European Union. The adoption of the doctrine of the Responsibility to Protect by the UN Summit in 2005 could be the formal beginning of the post-sovereign age. The forceful advocacy of the doctrine of pre-emption by the United States is another step in this direction. With the erosion of sovereignty, unless alternative systems are found in place of the community of nation-states, a wide range of scenarios may emerge from mega-states and supra-national bodies, to complete anarchy.

Signposts

- The formal adoption of the doctrine of Responsibility to Protect by the UN Summit and worldwide diplomatic efforts to implement it indicate the formal beginning of the post-sovereign era.

- The United States has formally announced a doctrine of pre-emption, seeking right to intervene in any country that it may consider a potential threat, without respecting sovereignty of the latter.

- While the UN and great powers like the United States may produce doctrines undermining sovereignty, the ability of a large number of groups engaged in acts of terror also undermines sovereignty in action. As present, there are 191 nation-states as indicated by the membership of the United Nations. At the same time, approximately the same number of autonomous groups engaging in terror and capable of having major impact on their societies exists.

- There are different estimates available on the number of countries with internal strife where sub-nationalist and ethnic groups challenge the sovereignty of their home states and seek creation of new states. According to a recent report by the University of Maryland, more of the world's nations (one-third) are currently involved in conflict than at any other time in the past six decades; the historic low of 19 ongoing armed conflicts in 2004 were followed by an increase to 25 in 2005.

- ASEAN has recently changed its stand on the principle of sovereignty and the interference of external parties in the internal affairs of sovereign states. This was demonstrated in its decision to refrain from condemning the American attack on Iraq. India, which was very puritanical on the issue of sovereignty in its foreign policy, has accepted external diplomatic role in Nepal and Sri Lanka, in its neighbourhood.

- A poll by La Libre Belgique shows that only 29 per cent of Belgium's citizens are "certain" that there will be a Belgium in 10 years from how. 24 per cent said that Belgium "probably won't" exist, while 15 per cent said it "definitely won't" exist in a decade.

- Issues like disease, overpopulation, crime and migration are leading to the withering away of Central Governments in countries of West Africa, such as Liberia and Sierra Leone giving rise to tribal and regional domains.

- The number of active peacekeeping operations is more than double the number at any point during the Cold War.

- The US attack on Iraq has created regions in where there is no law and order machinery in place. In Afghanistan, one of the outcomes of the attack is the return of warlords in Southern and Eastern Provinces.

- Very large multinational corporations (MNC) have budgets that exceed those of many countries. Out of the 100 largest economies in the world, 37 are those of MNCs. The policy decisions taken by MNCs are generally taken by the Headquarters and implemented in countries where they operate.

- The World Bank (WB), International Monetary Fund (IMF) and World Trade Organisation are instrumental in setting global policy in the economics field. For example, in the 1990s, the WB and the IMF insisted on reforms for the lowering of tariffs, the privatisation or restructuring of state-owned entities, cutbacks in subsidies, and the removal of restraints on capital flows and foreign investment – decisions that were not necessarily palatable to local populations.

- The G-8 through their semi-annual meetings influence policy priorities on global issues such as climate change, health and medicine patent policies, trade and aid.

- The Kyoto Protocol assigns mandatory emission limitations for the reduction of greenhouse gas emissions to the signatory nations. As of December 2006, a total of 169 countries and other governmental entities have ratified the agreement.

- Countries are willingly giving up their sovereignty to join regional groupings such as the European Union. Currently EU has 27 member states and 3 candidate countries including Croatia, Macedonia, and Turkey. In order to qualify for membership, states have to submit to regular assessments on the basis of the Copenhagen Criteria.

- The EU has instituted the common currency-euro. A debate for instituting a common currency among the ASEAN countries is currently on. Preparations are underway to launch a common currency in the GCC (Gulf Cooperation Council) by 2010.

Drivers

- Determination of the international community to pursue doctrines like the Responsibility to Protect, to structure such doctrines in ways that could be acceptable to most countries around the world. The rejection of such doctrines by the community of nations will provide the conceptual framework for the sovereignty debate in the years to come.

- Ineffective governance that creates sense of alienation and supply of angry young people to sub-nationalist, terrorist and criminal groups that tend to undermine sovereignty from below. The quality of leadership and ability to deliver public goods effectively will determine the speed and spread of the break-down of states.

- Further spread of reach and influence of multi-national corporations on account of globalisation and capital deficit in many countries may lead to the undermining of sovereignty in effect.

- Conflicts or rivalries between states may result in intelligence agencies deliberately sponsoring insurgency and separatist activities in hostile countries. On the other hand, if many historical conflicts are resolved, the motivation for operations of the intelligence agencies will be weak.

- Policies of international community on climate change and other global issues.

- Strengthening of regional blocks such as the EU, ASEAN, GCC (Gulf Cooperation Council) and SAARC (South Asian Association for Regional Cooperation).

Uncertainties

- The promotion of post-sovereignty requires cooperation between leading members of the international community. For instance, a failure to reach an agreement on the sovereignty by the United States and the Russian Federation may secure the territorial integrity of states. Similarly, the dismemberment of any nation by the international community or even military intervention in the internal affairs of any nation will require a common cause among members of the UN Security Council.

- Rise of nationalism can strengthen or weaken sovereignty depending on the details of any geography or society.

- It is not clear what will replace sovereignty if nation-states wither at the global level. Will there be a few groups of large conglomerate nations like EU? Will there be colonization of small states by regional powers? Will there be supra-national issue-based organisations? Or will it be return to tribalism?

- Outbreak of a large-scale international war may strengthen sovereignty in the first phase but will lead to break down of state structures in the next phase.

Impact

- The voluntary giving up of sovereignty (such as the joining of the EU by member states) leads to greater economic integration and prosperity.

- If sovereignty of a state is lost due to internal wars, conflict or external aggression it will lead to a downward spiral of conflict, greater strife and breakdown of state structure. If several states in any given region break down, an entire region can face chaos. It will then be a question of the international community acting either to salvage or exacerbate the problem of security.

- If the principle of sovereignty is eroded over a period of time, it will be an interesting question to see whether the nation states, formally born with the Treaty of Westphalia in 1648, will be intact by 2048 or whether it will have dissipated by then. If it dissipates, it may be replaced by a few groupings or there could be large scale anarchy.

19

Spread of Soft Power

The spread of soft power is likely to gain popularity with emerging states. While hard power has the capabilities of enforcing rapid change, the strength of soft power is to win the international political game on the strength of ideas, in the process at times creating communities of like-minded nations. Soft power can also be used for cultural assaults, promotion of certain political systems, information warfare and elite subversion of client states. In either case, the spread of soft power is bound to change the nature of global politics in the coming years.

Signposts

- Many countries have launched television to present alternative perspectives to influence public opinion. These include Russia Today, Qatar based Al Jazeera, Saudi based Al Arabiya and Iran's Press TV. Al Jazeera is particularly credited for influencing political awareness amongst the Arab people and catalyzing reforms in the government and competing television stations.

- The European Union has developed Common Foreign and Security Policy (CFSP) on the assumption that the concept of the 'survival of the fittest' can be replaced by multilateralism. EU also engages civil society on a large scale to influence public opinion on issues such as human rights, democracy, capital punishment, arms control and global warming.

- The EU uses its Copenhagen Criteria of democracy, human rights and economic reforms to effect changes in aspiring member states, thus offering membership as a tool to bring about societal change in the neighbouring countries.

- The EU also uses the Barcelona process of cooperation to facilitate soft changes in the Mediterranean region.

- China is using aid to enhance its influence in South East Asia as well as Africa. Recently, China's aid to the Philippines, Laos and Indonesia rivalled US aid estimates. China has completed some 900 projects of economic and social development in Africa and sent 16,000 medical personnel to 47 African countries. In 2007, the African Development Bank chose to hold its annual meeting in China.

- China has organized exhibits in Myanmar, Singapore, Bangladesh and Shanghai to celebrate the 600th anniversary of the voyages of Zheng He, a Chinese Muslim who sailed across Asia, the Middle East and Africa in a subtle message to indicate its expanding aspirations.

- Chinese language learning and Confucius institutes have become increasingly popular on the African continent and in South East Asia. Conversely, several students from developing countries have accepted scholarships to study in Chinese universities, including 18,000 students from 50 African countries.

- Venezuela is promoting the concept of Bolivarian Alternative for the Americas (ALBA), which seeks social, political, and economic integration in Latin America and the Caribbean based on social welfare principles. It has announced aid packages, according to some estimates up to $10 billion, to countries in Latin America and the Caribbean for structural adjustment, energy, development and humanitarian causes.

- South Africa is promoting the concept of an African Renaissance with practical proposals for aid, integration of water and hydropower sectors, support to refugees and the promotion of a political concept that characterises the global north-south divide as the new 'apartheid'.

- South Africa also offers diplomatic support to resolve internal conflicts and projects role models for changing societies (Mandela and Tutu).

- Saudi Arabia has hosted several peace initiatives and invested in development projects that will enhance its diplomatic and socio-economic role in the region. It continuously makes efforts to enhance its image as the religious centre of the Islamic world. The Kingdom of Saudi Arabia is the main backbone of the Organisation of Islamic Conference and the Islamic Development Bank.

- Libya has also made efforts to play a diplomatic role between Chad and Sudan, while Turkey has launched diplomatic initiatives for contributing to stability in Iraq and has offered to facilitate conflict resolution between Afghanistan and Pakistan, the EU and Iran.

- India has awarded Afghanistan aid worth $750 million since 2001 and is providing assistance in health, education and infrastructure. During this time, bi-lateral ties between these two countries have been steadily improving while Afghanistan and Pakistan tensions grow due to border issues. India is also helping Afghanistan build a new parliament and establish democratic and human rights elements in the country.

- India's Confederation of Indian Industry works as an effective instrument of soft diplomacy not only in business forums such as Davos, but also in political spheres such as the UN General Assembly, the summit of East Asian Heads of State and Government, democracy promotion conferences, mobilising of the Indian Diaspora in the United States on important strategic issues, etc.

- Norway and other Nordic countries use soft-power out of their belief in peace and democracy, as values to be promoted for global good, and not to advance strategic national interests.

Drivers

- The cost of military warfare has become insurmountable for ambitious developing countries that cannot afford to incur damages to their infrastructure, economy and skilled labour. According to some estimates, the US will have a combined bill of $1 trillion for its intervention in Iraq and Afghanistan by the time it is able to disengage from these countries. Emerging countries, including China, simply cannot afford these kinds of expenditure. Yet they wish to spread their influence. Under the circumstances, soft power it an inexpensive option.

- In today's information age it has become extremely important to have some control over the media. With billions of viewers worldwide watching the news, it has become much more effective to manipulate and fashion perspectives through ownership of the media rather than resorting to coercive measures.

- A major incentive that guides aid and development is the potential for future business interests. For instance the Chinese government has pledged to invest $4 billion to develop Nigeria's infrastructure, while in return CNPC (Chinese National Petroleum Corporation) will obtain licensing from the Nigerian government to exploit five oil fields. Most of the funding that Venezuela provides other countries like Nicaragua, involves energy projects that often benefits it directly.

- At times soft power, particularly cultural influences, can be a natural outcome of a flourishing and thriving civilization without any deliberate policies or drivers.

- So long as there are countries with resources that believe in advancing whatever values they believe in, they are bound to use soft power – particularly aid, media and civil society – to push their value propositions.

Uncertainties

- Despite an increasing popularity in soft power tactics there is always a potential for military conflict due to heightened militarization and regional insecurities. China has currently been increasing its defence spending by 20 per cent annually despite its claims of a 'peaceful rise'. It has also initiated hostile policies toward India, Taiwan and Japan and increased the possibility of armed conflict in the region.

- If the oil economy or hydrocarbons sector plummets it will hamper aid policies of a range of countries from Venezuela to Saudi Arabia and Norway to Qatar.

- Much depends on the ability or skills of a nation to promote their culture, media and ideology to other nations. It is not always easy to have the required human resources to advance soft power.

Impact

- From a positive perspective, a horizontal spread of soft power amongst the emerging nations in global politics might encourage global democracy, promote a multi-polar system and reduce the harmful effects of military warfare.

- Yet from a negative perspective, the rise of soft power methods amongst developing nations can increase disparities in their client nations due to the selective processes in aid and investment, hinder humanitarian efforts due to vested business interests and even create a new kind of colonization.

20

Dominant Global Philosophy

The world has been ruled by dominant philosophies for over a century – competitive nationalism from the late 19th century to the early 20th century in Europe and until the mid 20th century in the colonies, contest between fascism and freedom in the first half of the last century, competition between capitalism and communism in the second half of the century, clash of civilizations since the last decade of the last century. What will be the dominant global philosophy of the next century? Will it be clash of civilizations? Will it be back to contest between capitalism and communism? Will it be nature versus machine? Or will it be about bio-ethics and post-humanism? A big issue of the next decade will be the nature of the defining concept of global public discourse.

Signposts

- The conflict between Western and Islamic countries has now transcended from a contest between two loose coalitions of nations to a deep war of values – freedom versus justice, democracy versus development, separation of religion and state versus unity of religion and polity. These are not only drivers of power politics, but also of deep psychological battles. The evidence of these psychological battles is seen all over in the form of speeches made by rival leaders, articles and pamphlets issued by ideologues, and justification issued for military and militant actions.

- The rise of green militancy and green politics is evident in the form of violent attacks perpetrated by Earth Liberation Front in the United States, green protests by organisations like Greenpeace, rise of new Green parties and caucuses in Europe, Internet-based campaigns on environmental issues, and popularity of voluntary movements and literature in defence of environmental sustainability.

- The protests by anti-globalisation groups at the meetings of the World Bank, IMF and other organisations are commonplace. The followers of such movement seem to revive socialism in new forms and organise themselves in various forums, including the World Social Forum.

- The debate on bio-ethics and post-humanism is still confined to the Western world but it is slowly spreading to other parts of the world, as reflected in academic and media debate. With new breakthroughs in biology and genetics, it is bound to gather momentum in a few years time.

- The contest of contesting ideologies has no clear winner yet. In some constituencies, the philosophy of justice and development is of prime importance, giving birth to new political parties promising to deliver these social goods. In some other constituencies, global warming, climate change and environmental sustainability are the most crucial values. In some constituencies, capitalism, while in other constituencies protest against globalisation matter the most. There is no dominant philosophy that matters all over the world the way contest between freedom and authoritarianism (in different forms) dominated the last century. The 21st century is in search of an idea that can explain the conduct of world affairs.

Drivers

- State support to promote certain ideologies will be crucial. While 'clash of civilizations' and 'end of history' were theories propounded by individual thinkers, there was a visible overdrive by the United States government to circulate relevant papers and organise debates through United States Information Service offices around the world, as well as by providing support to scholars engaged in debates on these theories. Support by strong states to any of the concepts in the future is bound to have a useful impact.

- The use of dramatic tactics like suicide bombing and highly emotional campaigns can strengthen certain concepts. Such efforts depend on the degree of commitment and organisational competence of proponents.

- Internet and television will play a critical role in defining and popularising the new philosophical debate. In particular, internet is a democratic and low-cost force that can be used by anyone to launch ideological battles. In fact, the fast spread of some religious and ecological concepts has primarily been possible because of internet.

- The growth of civil society and issue-based politics, away from traditionally ideological parties can pave way for new politics based on new concepts.

- The rise of nationalism and socialism in some of the non-Western societies can be instrumental in recreating 20th century ideologies rather than new concepts.

- The success or failure of governance models based on certain ideologies will determine the popular fate of such approaches. If certain ideological states fail to deliver social goods, such ideologies are bound to lose their appeal. So far green politics has essentially been politics of protest. If green politics fails to deliver as politics of governance, some of it strength would diminish.

Impact

There is nothing as powerful as an idea. It was the idea of divine justice that gave birth to several religions that tend to occupy minds of most of the world's population. The idea of the separation of church and state created a new society in Europe. The idea of revolution ended dynastic rules, something impossible to imagine earlier. The idea of social justice and general will created socialist states. The idea of free market and democracy changed the policies of several nations in the last century. The idea of nation-state is currently employed to organise society, even though it is facing erosion. Whatever idea finally emerges as triumphant from the current contest of competing ideas or due to sudden appearance of a new thought from beyond the horizon will determine how state and society relate to one another, how communities co-exist or refuse to co-exist, how nature and human race treat each other, what combination of power and principles determines the conduct of human affairs. The fact that there are many new competing ideas in global public discourse today proves that the ultimate emerging issue of the day is the intellectual and psychological search for a concept that will define how we want to live and govern.

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