

Review

Food and health considerations in Asia-Pacific regional security

John McKay MA

Australian APEC Study Centre, Melbourne, Australia

Recent dramatic increases in food prices in much of the world have caused much concern, and have even resulted in some public protests and riots. This is easy to understand given the large percentages of incomes that the poor devote to food purchases. Many commentators have predicted that food supplies in the Asia-Pacific region will become much more limited in the future as the result of population growth, the rapid growth of cities, new food demands by a growing middle class, the impacts of climate change, and the growth of a global food industry. But will these possible shortages of food result in pressures that will destabilise the security situation in the region? Recent work of the whole concept of security has resulted in some redefinition of the term to include issues of human security, but it could also be argued that severe strains on the human security situation could even result in increased instability in the more traditional kind of security regime. The extreme case of North Korea is used as an example of how this might happen. But we really do not know if such dangers are real ones for the region as a whole, and it is suggested that much more research is needed in this area. The whole concept of resilience has been used in some studies elsewhere and this may be useful starting point for new work in this area.

Key Words: Asia-Pacific security, food security, development in Asia-Pacific, regional resilience, food prices

INTRODUCTION

During 2007 global food prices increased by nearly 40 per cent, with a number of Asian countries experiencing steep rises. Public protests were reported from Pakistan, Indonesia and Malaysia against deteriorating living standards, hardly surprising since poorer people in Asia generally spend 50 to 70 per cent of their incomes on food. These price increases are just one symptom of what many commentators see as a crisis of food in many parts of the world, and the role of Asia in this emerging situation has received particular attention. A number of factors have been responsible for these price increases in Asia including population growth pressures, the rapid explosion of urban growth, changing tastes and food demands by the emerging middle class, the growth of a global food trade, and now the impacts of climate change. But to what extent will these food shortages and a range of health concerns further destabilise the already fragile security situation in the region? In the first part of the paper the changing definition of security is discussed, and in particular the broadening of the concept to include issues of human security. The place of food security in this new conceptualisation is also examined. There then follows a more detailed analysis of the food security situation in the Asia-Pacific, and the implications of what many see as a deteriorating situation are discussed. The extreme case of North Korea is used to illustrate some of the security implications of a particularly dire food situation, but it is argued that severe destabilisation can result from much lower levels of food stress. The extent to which the region as a whole might be susceptible to security tensions as a

result of food shortages is not really known, and a series of urgent research studies are suggested. In particular it is argued that the concept of *resilience* might be used as a starting point for this new research agenda.

SECURITY IN THE ASIA-PACIFIC REGION: BROADENING THE CONCEPT

The Asia-Pacific region is faced with a range of complex and seemingly intractable security issues of various kinds. Many of these are what might be called traditional or 'hard' security concerns, and many such problems are of a long-standing nature, although some are of more recent genesis. As if these complex issues were not difficult enough, further complications have been added in recent years through the significant broadening of the whole concept of security and of the factors that are considered to be relevant to any discussion about potential threats to security. Particularly important here has been the development of concerns with *human security*, and a range of health and food concerns are now widely recognised as being very relevant to this new and expanded agenda.

Corresponding Author: Professor John McKay, Australian APEC Study Centre at RMIT University, Level 3 Suite 10, 343 Little Collins Street, Melbourne, Victoria 3000, Australia.
Tel: (+61-3) 9866 8009; Fax: (+61-3) 9866 8709
Email: john.mckay@analysisinternational.net.au
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Asia is the one remaining major region of the world in which a number of very significant security issues are left over from the Cold War. Principal among these are the questions over the Korean Peninsula and the Straits of Taiwan, among the most serious global security concerns. But the region also has a number of other old security problems that are not really relics of the Cold War, but still posing risks at the same level of magnitude. Of particular concern here are tensions in the relationships between India and Pakistan, and between China and India. The demonstrations of nuclear capability by both India and Pakistan in 1998 have, of course, added to the weight of these problems. The China-India-Pakistan triangle is difficult enough in itself, but it is further complicated by some echoes of Cold War attitudes and relationships, and more recent developments involving US and NATO intervention in Afghanistan.

Many commentators expressed a hope that the end of the Cold War would herald a new age of uninterrupted period of peace and goodwill, allowing the enormous resources that had previously been devoted to defence budgets to be redirected to many pressing humanitarian concerns – the so-called peace dividend – but these predictions proved to be sadly misplaced. The ‘end of history’ debate now looks extremely hollow, even naïve. Some analysts now suggest that we are already into the second phase of the post-Cold War era, in which optimism has given way to fears about how to manage a fluid, multipolar world. Paul Dibb has labelled this current phase the ‘Age of Discontinuity’, and more recently the ‘Age of Strategic Surprise’, arguing that these are indeed difficult and uncharted waters.¹

These uncertainties result from a whole series of factors, the most basic of which is uncertainty about the precise locus of power in the new strategic context. While some commentators expected that the United States, as the victor in the Cold War and clearly the dominant military and economic power in the world, would enjoy unchallenged power, this ‘unipolar moment’ has not really eventuated. Rather, we have a complex multipolar world in which there is intense jockeying for power and influence. As Paul Bracken has argued, the very notion of the end of the Cold War may be a Western concept with limited validity in Asia.² For powers such as China, he suggests, what is more important is the concept of the ‘Post Vasco Da Gama Era’. What is desired is a return to the situation before the brief European interlude in Asia, a re-establishment of the dominance of key Asian powers, notably China. Thus the future may involve challenge rather than co-operation, and economic rivalry will be a crucial element. There is no space to expand further on these important issues but the key question here relates not only to the extreme complexity of the regional security situation, but to another layer of conceptual difficulty that has been added through the expansion of the whole agenda.

One set of new concerns relate to the continuing consequences of the Asian Financial Crisis of 1997/8, and now to the impact of the global financial turmoil that we are all experiencing. It is difficult to overestimate the impact that the Asian economic crisis of 1997 had on the psychology of the entire Asian region. Until then there

had been years of rapid and seemingly unstoppable growth, albeit with some interruptions and minor recessions, but for many commentators the crisis called into question the entire basis of the Asian ‘miracle’. For a number of Asian leaders these events merely justified their anti-Western sentiments, or at least made them more suspicious of Western influences. Asia had to guard itself against the inherent instabilities that inevitably result from too close an integration with the US in particular, and must put in place an effective firewall to ensure that there was no repeat of the tragic events of 1997. This was seen partly as an insulation from the influences of Western governments, but also of Western financial institutions, notably the hedge funds, and those multilateral agencies (notably the IMF) seen as being under the direct control of the West. Richard Higgott has called these responses ‘the politics of resentment’,³ and the consequences of this anger were still working themselves through when Asia was subjected to some serious ramifications flowing from the global meltdown that we are currently experiencing.

Another set of issues relate to the responses to the terrorist attacks of September 11th 2001 and to the particular economic, political and strategic resonances in Asia. Almost all economies in Asia are heavily dependent on the US market for a significant percentage of their exports, and the global war on terror is imposing real costs on this trade. The costs of doing business have increased significantly: one study has suggested that the total cost of terrorism and of the implementation of anti-terrorism measures have cost the global economy some \$75 billion per year, and in relative terms the economies of poorer nations have been the most seriously affected.

These are also important and complex issues, but for the purposes of this paper the most significant development has been the growing emphasis on what has become known as *human security*.

THE NEW EMPHASIS ON HUMAN SECURITY

The current debate about the re-definition of the whole concept of security to include questions of human security is based around three separate but related threads. The first concerns the place of economic relations within the security domain. It has often been contended that trade and other economic linkages play a positive role in the development of stable and productive links between nations, but this has been challenged in a number of recent studies. Secondly, the scope of what constitutes the security domain is under question, with a number of writers arguing that we must look at definitions that are much broader than have been conventionally used. Thirdly, even those writers who still focus on the traditional concerns of security studies now argue that new kinds of threats to stability must be included in our analyses.

In the literature on international relations and security, there has been a long-running debate about the links between economic change and the degree of resultant stability or instability in the security environment. On the one hand, some analysts have argued that economic growth will inevitably lead to greater interdependence between nations and a general desire to avoid any conflict that might interrupt economic progress. Hence, economic growth and change lead to regional stability. Also, as

growth proceeds, there has been a tendency in many countries for more democratic forms of government to emerge, and some commentators have gone on to argue that two democracies will never go to war - the so-called democratic peace theory.⁴

In marked contrast, others have argued that the process of growth itself can lead to instability, especially in the current phase of capitalist development in which there have been marked shifts in power distribution between nations as well as a seemingly inevitable widening of the gap between rich and poor both between and within nations. The intense competition that now characterises the world economy can lead to serious rivalries and disputes that can escalate into armed conflicts. At the same time, the increased national wealth that has resulted from rapid growth can be used to purchase ever more sophisticated and destructive weapons, intensifying the damage resulting from any conflict. Few if any nations in the Asian region can be regarded as supporters of the *status quo*, especially in the economic realm, and intense competition has been an inevitable consequence of the greater integration into global markets. Zysman and Borrus, for example, have argued that there are several important lines of fracture that result from economic competition.⁵ Efforts by middle-power and mid-technology countries such as Korea to break loose from the existing hierarchy of economic power by moving towards higher value and higher technology products could create serious rivalries of development strategies. China and India may provide alternative and competing lines of development, turning economic rivalry within Asia into a form of security competition. Also, there is always a danger that Asia may be transformed into a more self-contained economic bloc competing with the US and Europe.

Another basic conceptual problem concerns the changing nature of international relations and the focus of concern for states. During the Cold War there was a simple and over-riding imperative for survival and defence, and this is still true for relations between the two Koreas, for example. But in many other domains, the very concept of security has been extended to include ideas of *economic security*, *environmental security* and *food security* as well as concerns with international crime, illegal migration and various pandemics. Some would argue that the most useful new overarching concept is that of *human security*, which reflects some of the concerns of traditional security, but with an emphasis on the individual as the object of security and on the ways in which increasingly global systems impact on the family and other small local groups. It also looks at 'structural violence' emanating from non-territorial threats.^{6,7} The emphasis on human security received much initial impetus from a UNDP report which proposed that two forms of security are vital for the individual: *freedom from want* and *freedom from fear*.⁸ This formulation is still very influential in most accounts of the concept.

Alan Dupont argues that in East Asia a new class of non-military threats has the potential to destabilise the region and reverse decades of economic and social progress.⁹ Here he includes issues such as overpopulation, pollution, deforestation, unregulated population movements, transnational crime and AIDS. This broadening of

the scope of security issues to include, at the very least, questions of national trade and economic priorities has a number of important consequences. At the level of analysis, the traditional separation of international relations from defence studies is no longer valid; indeed any meaningful study must also include a range of other viewpoints and disciplines. Similarly, at the level of government, ministries of foreign affairs, trade and defence all need to make policy inputs to security questions, something which simply does not happen in most countries.

The gathering pace of globalisation is also adding a number of complications. Growing international linkages and interdependencies are, at least in the view of some, weakening the power of the nation state. Actors at a range of scales, from local communities through cities to regions of various kinds, are now part of global networks in their own right. In many countries, the nation state is no longer the sole arbiter of policy, even of policies that have implications for security, especially if one accepts the new, broader concept of security discussed above. The entire post-war security system has been built around relations and treaties between sovereign states, but this concept looks rather shaky in some parts of Asia where economic and political weakness and fragmentation through religious or ethnic conflict are causing serious problems of instability. Indonesia is a prime example here.

Attempts to push the new agenda of human security have met some strident criticisms, including some particular objections from various parts of Asia. Some critics have seen the human security agenda as yet another example of Western models of economic and political development being foisted on Asia. The emphasis in much of this agenda on the individual is seen as potentially undermining the jurisdiction and power of the nation state. In some versions of the human security blueprint, for example that put forward by the Canadian government, options for humanitarian intervention in crisis ridden countries are left open, something which is vehemently opposed by many Asian countries. Most governments, notably that of Japan, favour an emphasis on 'freedom from want' rather than 'freedom from fear', but as a number of commentators have pointed out this limitation makes the concept essentially indistinguishable from a conventional notion of development, hence the real point is lost. Still other commentators have questioned just how much the idea of human security adds to the much older formulations of *comprehensive security*. For example, Japan as long ago as 1980 put forward a policy of comprehensive security to safeguard the economic livelihood of the Japanese people, protect vital markets and sources of raw materials and guarantee Japanese investments. The idea was taken up in a number of Southeast Asian countries, including Singapore, which proposed a concept of *total security*. Acharya has attempted to answer these criticisms, arguing that many of the basic ideas of human security were in fact first articulated by Asian scholars.¹⁰ He also stresses some important differences between the formulations of human security and comprehensive security. However, he concedes that the basic unit of analysis in human security has shifted to the individual and the community, away from the emphasis on state security and regime stability which is central to comprehensive secu-

riety. This is its strength, he argues, but this is bound to cause suspicion in many regional governments.

FOOD AND HEALTH IN THE HUMAN SECURITY AGENDA

The onset of the dramatic price rises in food that affected most nations has given rise to much analysis about the deeper implications of declining food availability, including the potential for serious challenges to national and international security. At the heart of this kind of research is the obvious importance of adequate food supplies for the creation of societies that are sustainable and capable of delivering continuously improving levels of well-being.

Quite clearly the sort of price rises we witnessed in 2007/8 have serious regional and global implications. In the three years leading up to February 2008 overall global food prices increased by 83 per cent and for many basic grains the rises were even more dramatic: global wheat prices increased by 181 per cent and Thai export rice rose by 54 per cent. World Bank president Robert Zoellick suggested that these increases had wiped out the impact of 7 years of progress in the fight against poverty. But these impacts have a marked differential effect on various kinds of nations and on specific socio-economic groups within countries. Food shortages have been particularly apparent in poorer countries that lack the financial resources to import food from the world market, and the poorer segments of societies that often spend perhaps 70 per cent of their incomes on food are especially vulnerable.

In this situation the implications of a seriously undermined food security situation can be profound. Reference has already been made to a number of food riots that took place in the last couple of years, but even more serious instability certainly cannot be ruled out. If a government is unable to feed its people it is seen as having failed to meet one of the most basic requirements for retaining legitimacy and political support, and severe disruption or even revolution are likely. At the very least some serious tensions seem inevitable, and during 2008 many such grievances were aired. Within countries existing gaps between the middle class and the poor in both rural and urban situations were clearly exacerbated. Similarly, at the global level the rich countries were accused of 'stealing' food from the poor. In a particularly angry contribution to the debate, George Monbiot argued that in the past the colonial powers simply seized food from their colonies, if necessary at the point of a gun, while today food trade deals are used: the means appear more subtle, but the effect is the same, and just as violent in its impacts.¹¹ As food supplies become more limited and valuable, rich consumers in the West come into conflict with the hungry poor. The EU, for example, has pushed through a trade deal with Senegal that involves selling large amounts of fish to European consumers, depriving the local people of their main source of protein. Similarly, large tracts of productive land in various parts of Africa have been purchased or leased by governments or companies from the Middle East and East Asia to grow food for export back to their home countries. Both Ethiopia and Sudan have concluded major deals of this kind while millions of their own people starve. Such agreements are bound to cause

deep anger, resentment and instability. A recent report by FAO has highlighted some of the potential problems created by such deals, as well as some of possible benefits, and has highlighted the need for transparent arrangements that can meet the needs of investors, host governments and local communities.¹² Importantly though, the report points to the large gaps that exist in such situations between local laws and the implementation of actual projects, and emphasises that far too little is known about these kinds of arrangements.

Even more dramatically, Felipe Fernandez-Armesto has argued that in the past failures to provide adequate food have brought down entire civilisations, for example the Natufians of Syria, the Minoans of Crete and the Mayans of Central America.¹³ In our own times, he suggests, the political convulsions have already begun in response to food failures and dramatic price increases.

FOOD AND HEALTH IN THE SECURITY PRIORITIES OF THE ASIA-PACIFIC REGION

While particular local factors have been responsible for some of the pressures on food supply in particular parts of the Asia-Pacific region, there are a number of common, structural factors that need to be examined carefully.

Among these factors population pressure is surely one of the most important. A number of studies have questioned whether it is possible for the world to support a population of 10 billion, something that is expected to be achieved around the middle of this century.^{14,15} There are, of course, wide differences of opinion over the question of whether current and future levels of population are sustainable, especially in terms of supplies of food and water. Those writers who have put forward policies that might be able to generate adequate future food supplies have concentrated on such areas as increases in the area of land under cultivation, the use of higher yielding varieties to increase output per hectare, increases in the intensity of crop production through the achievement of more crop harvests each year, replacement of lower yielding crops with more productive ones, reduction of post-harvest losses and reductions in the amount of produce fed to animals. It may be that the limiting factor in the intensification of agriculture will be the supply of water for irrigation: between 1900 and 1995, consumption of water grew by six times, or twice the rate of population increase. Now, more than 500 million people live in areas with chronic water shortages, and this is expected to increase to some three billion in the next 20 years.¹⁶ In any event, the generation of sufficient food for a world population of 10 billion will require enormous changes at all levels. Even to feed a population of 8 billion would require the average world yield of cereals to rise to a level equal to the yields achieved in Europe and North America at present, and an increase to 10 billions would mean an increase of 25 per cent above these average outputs per hectare. This is a daunting prospect, and highlights the need for continued emphasis on policies to limit national population growth in a wide range of countries.

Within the Asian context, much attention has been focussed on China and India, questioning whether these two very large societies can feed their growing populations in the future. In many Asian countries, and particularly those

that have been able to achieve high rates of economic growth, overall population growth rates have declined dramatically, but a range of other demographic factors are impinging on demand for food. The significant ageing of the population in a number of countries such as Japan and South Korea will have an impact on the demand for particular kinds of foods: generally, food intake decreases later in life as activity levels are reduced, and there is general tendency for the consumption of animal products to decrease, while the intake of fruit and vegetables increases. As populations age, the balance between the economically active and economically dependent parts of the population – the dependency ratio – will also change, with many implications for the structure of the economy, for rates of savings and for investment. A new report by FAO and the International Water Management Institute has cast doubt on the feasibility of feeding the extra 1.5 billion people that will inhabit Asian countries by 2050 unless significant investments are made in modernising irrigation systems in the region.¹⁷ Supplies of arable land and water have already reached their limit so that extra efficiencies in food production and the use of water resources must be achieved, but this will require significant efforts, particularly in South Asia where the use of irrigation is widespread but where crop yields are still very low.

The concept of food security is perhaps the one that comes closest to expressing the reality of hunger, food availability and nutritional levels in a variety of environments. Food security is generally measured with reference to three quite distinct elements:

- *Food availability*: which measures the total food supply that can be accessed from local and other sources. Questions of the *reliability* of this supply are often included here as well.
- *Food access*: which evaluates the entitlement of people to an adequate food supply – which includes issues of power of various kinds – and their ability to access in various ways of purchase the inputs necessary to produce their own food or to buy an adequate amount of food.
- *Food utilisation*: which measures the capacity of individuals to utilise and absorb the nutrients in the food that they eat, including micronutrients. This concept raises issues of food safety and quality and evaluates the adequacy of hygiene, sanitation and food preparation facilities in local communities.

Using these measures as much more mixed and complex picture emerges of recent trends in Asia. India, for example, has moved from being a large food importer to being now a major food exporter, but as recently as 2001 frequent cases of malnutrition were reported from all over the country. It is estimated that India still has some 200 million people living in hunger, or about 20 per cent of the population, although it has a current grain surplus of around 38 million tonnes. This picture is the result of poverty in large sections of the population, and many people are simply too poor to buy food. One of the key Millennium Development Goals is the halving of the number of hungry people between 1990 and 2015. However the FAO has reported that only 7 Asian countries are on target to meet this goal, while 8 Asian countries are in fact going backwards in terms of their targets. Some two-

thirds of the world's undernourished people are still to be found in Asia, despite the real advances in food production in many areas, and India alone has more hungry people than are to be found in the whole of Africa. In many parts of Asia local production is stagnating, often as the result of lack of access to productive land, while in some areas environmental catastrophes or conflicts and insurgencies have had serious impacts. The trade policies of the rich countries have also had enormous consequences, for example the export subsidies paid by the US and the EU to their farmers.

The environmental and health impacts of the overuse of fertilizers and pesticides have been well documented, following a large number of food contamination and other safety issues in China and elsewhere. However, a number of other environmental issues are now being raised. The increasing commercialisation and scale of food production on a global scale is also increasing concerns about the impact on the environment of turning over large tracts of land to single crops, especially if this first involves the removal of forest cover. The impact of soya bean and beef production in the Amazon region has received much attention in the international press, and there have also been concerns for the environmental impacts of large scale oil palm estates especially in a number of Southeast Asian countries. Malaysia, the world's largest producer of oil palm, some 54 per cent of total agricultural output is now accounted for by palm oil compared with 30 per cent in 1985.

The Asian economic miracle has been built primarily on the development of industrial products for the export market, and this industrialisation has been predominantly located in urban centres. In the Asia Pacific region as a whole it is expected that urban populations will increase by more than 580 million by 2020 as compared with levels in 2000. During the next few years the total size of the urban population in the region will overtake the total rural population for the first time in history. China's urban population, for example, is expected to increase by a further 308 million by 2020. At the same time, rural populations will shrink rapidly in most of the region. These changes will of course have massive implications for the overall food system and for the international food trade. Urban incomes are generally higher, and rather different kinds of foods are consumed there. Generally, rather higher proportions of animal products are consumed in cities, and there is a demand for a more varied range of foodstuffs. Also important in a number of countries is the loss of valuable farming land as cities expand.

With rapid growth in many Asian countries we have seen the emergence of what some have called the 'new middle class' or the 'new rich' in Asia, which represents a transformation of staggering proportions.^{18,19} This diverse group now constitutes quite a large section of the population of nations such as South Korea or Japan. One of the most interesting debates concerns the extent to which this large group has become 'Westernised', especially in its patterns of food consumption. Large-scale international population movements are also a factor here. There is a great deal of diversity in the current flows of population: many are refugees fleeing wars, famines and a range of

environmental disasters; others are poor economic migrants seeking any kind of life in new lands that must offer better prospects than their impoverished homelands; and still others are highly skilled professional moving between or within corporations located in any one of the growing urban centres of the new global economic system. In some cases, these new arrivals conform enthusiastically to the patterns found in their new homes, but in most cases many of the old ways also survive.

Another important factor for many commentators has been the growing internationalisation of the food supply system and the emergence of a massive global and regional food trade. It is well known that the food industry in the Asia Pacific region is now enormous, although precise and up-to-date statistics on many aspects of this area of the economy are surprisingly hard to come by. Much of this market demand is met from local sources, however, the food trade across national borders is of increasing importance. Japan now imports some 15 per cent of its total food consumption (by value), and the figure for South Korea is roughly similar. In the case of China, given the huge size of the agricultural sector, only 4 per cent of all imports are of food, but there is a clear upward trend. In the case of Indonesia, some 10 per cent of all imports and 9 per cent of exports are made up of food products.

At present, by far the most important components of the food trade – both within and between nations – consist of unprocessed items such as grains and bulk meat products. However, the growth of incomes and of urban populations in the region is resulting in a sharp increase in the demand for processed foods. Another factor here is the gradual liberalisation of the international food trade, as part of the overall reform of world trade rules, even though the trade in agricultural products is proving much more difficult to liberalise than that in industrial products. In the past, it was much more difficult to export processed foods, because of the prevailing tariffs and quarantine regulations, but this is slowly changing. Perhaps even more important has been the rise of the multinational food retailers. These companies have partly been responding to new kinds of demands for convenience foods in urban areas, especially from younger consumers, but it could also be argued that these emerging global food brands have created new demands through their advertising and related strategies. The majority of this demand, however, is not met through the flow of products through the food trade system. Rather, demand is met through direct foreign investment, the creation of new food outlets with their accompanying systems of supply, many from local sources. The net result is a major change in the food supply structure, and a major change in the nature of the products consumed.

Related to the growth of these new convenience food outlets has been the strong emergence of the supermarket as a new and dominant form of retail outlet in many countries. This has been driven by increasing incomes and new demands for processed food products. A major result of these new developments has been the increased centralisation of food distribution networks. One feature of the food available in supermarkets is the all-year-round nature of their products, and this in turn drives further

expansion of the food trade. In part this has driven the increased flows of food between the northern and southern hemispheres, dictated by the succession of seasons and the need to maintain constant supplies. However, some commentators have also suggested that the presence of these global retailers also encourages more local processing companies to move into this new system, harnessing local production sources. It has also been argued that the use of global retail brands encourages an upgrading of quality standards.

Some analysts have argued that the growth of commercial agriculture throughout the world, the application of new scientific and technological advances to food production, processing, storage and distribution, and the growth of the global food trade have all served to reduce global hunger and the chances of renewed famine and starvation. However, the evidence on this is in fact very mixed. Certainly food production has increased markedly in much of Asia in recent years – for example, there was a 430 per cent increase in food production in China between 1990 and 2000, largely as the result of increased output of grain crops. However, these kinds of increases may not by themselves result in declines in the prevalence of malnutrition. Nor do programs designed to tackle problems of poverty always produce better results – the problems associated with food supplies are much more complex and multifaceted.

Recent increases in the world price for crude oil, coupled with growing concerns about greenhouse gas emissions has resulted in rising demand for alternative fuel sources, many of these derived from agricultural products such as maize and palm oil. This in turn has caused significant price rises for these items and the diversion of much output away from traditional food markets. Large areas of forest have also been cleared in areas such as the Amazon to make way for crop production, but this is not resulting in increased food availability. The net result is that food prices for many items are becoming prohibitive for many poorer families.

Finally, it is likely that climate change may well turn out to be of huge importance for future food supplies in the region. It is likely that the frequency and intensity of cyclones, typhoons, hurricanes and floods will increase. We have already seen recent natural disasters of this kind cause serious damage and significant loss of life in the Philippines, Vietnam, Malaysia, China, and North Korea among others. Such events are devastating for agricultural production. Coastal and low lying areas of a number of countries are likely to experience inundation and storm surges, making it necessary to relocate coastal populations to higher ground. The large delta areas of Asia, such as the Mekong and Red River deltas of Vietnam will be particularly vulnerable. These deltas are generally densely populated and are among the most fertile agricultural regions. The Mekong and Red River deltas, for example, currently produce around half of Vietnam's rice. Storm surges are also likely to disrupt fish breeding grounds and hence fish yields in many areas. Higher average temperatures will result in decreased rainfall in a number of areas, leading to serious droughts and desertification of significant amounts of agricultural land. Australia has been in drought for a number of years now, a so called 'one in a

thousand year drought', but large parts of China and Mongolia are also especially vulnerable. A number of crops currently produced in Asia will no longer be viable because of increased temperatures, and drought, desertification and soil erosion will render large areas unusable for agriculture. Less water will be available for irrigation through much of the region.

Putting these factors together it is predicted that in some parts of Asia crop yields could decrease by as much as 30 per cent, however it should be pointed out that in some areas, including parts of Southeast Asia, climate change may in fact result in increased rainfall and greater yields. Much attention has been given to the negative impacts of these changes on India and the rest of South Asia.²⁰ The rapid melting of the Himalayan glaciers will severely damage the perennial flows of the major rivers, putting vast agricultural areas at risk. Groundwater resources are already under great pressure and with reduced rainfall and river flows this problem will intensify. Wheat yields in India and Pakistan will be seriously affected, as well as returns from key cash crops like cotton. The tea industry of Sri Lanka is also vulnerable to declining rainfall. Reduced food output will put severe pressures on the household budgets of a large segment of the population in South Asia, and when this is put together with the predicted increase in a range of diseases as the direct result of climate change – malaria, cholera and diarrhoeal diseases for example – human security in the region will be severely damaged. Controversially, some authors are now arguing that the increasingly globalised food trade is now a significant contributor to global climate change.²¹ The environmental costs of transporting food products often over very long distances are argued to be quite significant. This would of course be an argument against all kinds of international trade, but it is argued that agriculture need to be looked at very carefully since buying food locally can almost always be seen as a viable alternative.

The picture I have painted is not a reassuring in terms of future nutrition, health and standards of living in the Asia Pacific region, but what can we say about the possible impacts on security? Is it possible that competition for food will trigger the kinds of tensions and possible conflicts that were alluded to earlier? Certainly health and food issues are central to the *human security* situation in the region – that has been established beyond doubt – but can we say that health and food are now potentially significant in the 'hard' security concerns of the Asia Pacific?

Food and Health Issues in North Korea: Their Role in the Security Situation

There is no doubt that since at least 1995, the food situation in North Korea has constituted a humanitarian tragedy of immense proportions. In a country which has heralded the virtues of self-reliance and the paramount importance of the welfare of its population, this has constituted an undeniable challenge to national pride and policy. Estimates of production levels, shortfalls in food supplies and consequent imperatives to rely on food imports or emergency aid vary considerably, but it is generally recognised that annual imports of around 1-1.8 million tonnes of grain have been needed in much of this period

since 1995. Many deaths have undoubtedly resulted from this situation, but again estimates vary quite widely. Some commentators have estimated that around 2.5 million people have perished from malnutrition and related diseases, although the official government figure is rather lower than this. The impact of malnutrition on the children of the DPRK has been particularly severe. Surveys suggest that acute malnutrition, resulting in moderate or severe wasting has affected some 16 per cent of the children surveyed, including some 3 per cent with oedema. Moderate and severe stunting, or chronic malnutrition, affect some 62 per cent of children. These are truly alarming results, with some of the nutritional problems almost certain to result in impaired intellectual development.²²

The causes of this severe food shortage have been much debated. The North Korean government has cited severe environmental and natural factors as the key problem. Natural conditions have never favoured high levels of food output. Of the total national area of some 12 million hectares, around 85 per cent consists of mountainous terrain: only 15 per cent can be classified as arable land, and soils are often poor. The climate is harsh, with a very short growing season of 130-190 frost-free days. Many crops, such as maize and rice, are vulnerable to severe cold snaps. But many soils that were not robust or fertile to begin with have been seriously over-cropped and subject to erosion, especially in periods of flood. In the search for extra output, many steep hillsides have been cultivated, again with serious consequences for erosion. The result of all of this has been a serious decline in yields.

Agricultural productivity has also been hit by the impacts of the more general crisis in the DPRK economy. It is generally accepted that during the early 1990s it was the industrial sector that first went into recession, and it was only later that agriculture followed. Much of the agricultural machinery in the country is now very old and inefficient. Only about half of the estimated 62,000 tractors in the country are now operational, and there are reports that oxen are being used increasingly to cultivate the fields. A lack of spare parts is a major problem throughout the economy. The energy crisis facing the country has had a major impact on agriculture, with serious shortages of fuel for agricultural machinery and irrigation facilities. Domestic production of fertilisers has declined, so that now only around 10 per cent of demand can be met.

But most outside commentators have also argued that shortcomings in the organisation of the economy, and of the agricultural sector in particular, are also a major contributor to the current crisis. The emphasis on military spending has deprived other sectors of much-needed investment. Lack of adequate infrastructure, in particular, has had widespread effects, including in agriculture. It is also clear that problems resulting from the earlier collectivisation of agriculture and the adherence to the '*Juche* farming system' have been significant, hence there have been calls for a number of years for a more market-oriented approach to economic management.²³

These ideas have been taken a stage further in a provocative new study by Hazel Smith who has been critical of the tendency for conventional security analysis in the Northeast Asian region to focus on North Korea as the source of most problems.²⁴ Human security concerns,

Smith argues, are usually restricted to denunciations of North Korea's human rights record. Humanitarian concerns are expressed regarding the on-going food crisis and the inability of the North Korean government to feed its people. Transnational crime is also discussed in relation to the trafficking of women, narcotics and counterfeit currency. From this perspective, human insecurity is seen as the direct result of the military policies of the DPRK, the intransigence of the government in its negotiating posture, and the unwillingness to institute essential economic reforms. The implication is that once the nuclear issue has been resolved the major obstacle to human security in the region will have been removed. In fact, Smith argues, the DPRK presents no real military threat to the region, although it could inflict massive casualties on South Korea if attacked. Some kind of pre-emptive first strike by North Korea is not a policy option, and the government is well aware of the disaster that would result from such an act of folly.

Much more real are the security threats that originate from the economic and food situation itself. The economic crisis that has affected North Korea since the early 1990s has meant that the state can no longer ensure the livelihoods of the population, and most are left to fend for themselves. Some economic reform has taken place, but in the absence of any political liberalisation the result has been the unrestrained growth of what Smith calls 'primitive capitalism'. There is no regulatory framework, and no real distinction between what is legal and what is not. In such a situation, inequality and corruption are rife, resulting in dangerous levels of instability. With growing inequality and the significant weakening of the old social safety net, many people are in absolute poverty and malnutrition levels are very high. The result is an increase of all kinds of criminality, often across the border into China. The border region is a zone of considerable instability, and this is a growing concern to Chinese authorities. Organised crime groups are involved in the large-scale smuggling of people from North Korea. This includes women as brides and prostitutes, especially in northeast China, and some people are smuggled into Seoul in return for most of the resettlement allowance received from the South Korean government. Lack of any kind of technical regulation or quality control in the DPRK is already having an impact. The possibility of some kind of nuclear accident can certainly not be ruled out; many commentators are convinced that a catastrophic nuclear accident is rather more likely than the launch of a nuclear weapon, with serious consequences for the whole region.

Obviously North Korea is an extreme example, but the food situation there is quite clearly a central component of the security situation on the Peninsula and serves as a warning of what forces might be unleashed if the food supply situation is allowed to get much worse, as some researchers are predicting.

SOME WAYS FORWARD: KEY POLICY DEBATES AND AREAS FOR INNOVATION

These developments are now raising some fundamental questions about the whole question of food security in Asia, an issue which many believed was well on the way to being solved. Policy makers are being forced to look

more critically and sceptically as some of basic dynamics of food supply and demand in the region in their approaches to decision making. They are also being forced to address challenges to traditional thinking about food security, for example in the emerging area of *food sovereignty*.²⁵ These are complex and multifaceted issues and no single solution is likely to be effective. Rather we need to think how a range of policies and innovations can re-enforce each other and together produce a more prosperous future. Work in this area is still in its infancy and much more research is needed, but let me outline what I see as some key areas for future analysis.

This is an area that evokes strong emotions, and sometimes this has resulted in simplistic or unrealistic analysis and policy advice. Yet it is clear for the evidence that I have cited that all is far from well with the food system(s) of Asia, and there is much work that must be done to improve current policies and programs. At present, the rise of the global food trade can be seen as just one facet of some much broader forces that we generally call globalisation. It is clear however that many of the consequences of these processes are not contributing to the welfare of the region's citizens. While it is certainly not possible to turn back the clock and remove all of these strong global tendencies, it is necessary to temper all of the most pernicious of these impacts. In particular, governments need to re-emphasise the national and the local rather than simply accepting the often deleterious impacts of internationalisation. But in many cases, as has already been noted, detailed evidence on which to base new policies is lacking, and a great deal of carefully targeted research is needed. The food industry is complex and multifaceted, and to understand the true nature of these emerging food systems we need research that concentrates on the entirety of the food system at all scales from global to local, isolating factors and forces that operate at all these levels. We also need to recognise that national communities are becoming more differentiated, and we must therefore expect that some will gain and some will lose from the new features that are emerging again at various geographical scales.

Much more work is also needed on the links between food, health and security that have been hinted at in this paper. The security threats that might result from failures in the food and health systems need to be studied in much more detail. A good starting point would be to build on some innovative work that has been done in Britain on the whole concept of *resilience* to security threats of various kinds. Work on various kinds of resilience has a long and controversial history in fields as diverse as developmental psychology and evolutionary biology, but the approach here is built around the aim of designing a robust infrastructure that can deal rapidly, effectively and flexibly with a whole range of civilian disasters and threats, including terrorist attacks. This approach involves two key concepts:

- *Capabilities*, derived from the military use of the term, which evaluates personnel, equipment, plans, doctrine, operational systems and training and their ability to deal with a range of possible threat situations.
- *Resilience*, which evaluates the ability of systems and infrastructures to detect, prevent, and if necessary to handle serious challenges.

Thus, the general aim is identify and build up the capabilities necessary to ensure resilience in key areas. Co-ordination of this elaborate system involving a wide range of government departments is the responsibility of a Programme Director within the Cabinet Office. Ministerial oversight of the entire area is exercised through the Ministerial Committee on UK Resilience chaired by the Home Secretary.

This approach to a whole range of new potential threats to security is being closely scrutinised by a wide range of commentators and researchers, but particularly important is a major research programme organised by Chatham House.²⁷ A five-year programme on 'New Security Challenges' funded by the UK Economic and Social Research Council has been launched, involving 40 related projects and some 120 researchers.

These concepts are interesting, although they need some serious reworking to meet the needs of the Asia Pacific situation. They lend themselves to studies of threats posed by health issues, such as influenza of various kinds or HIV-AIDS, and those resulting from food shortages. Given the importance of the food issues that have been raised here and the potential for serious instability that some commentators have seen in this area, a strong argument can be made for the immediate implementation of a research program on the resilience of the security systems in the Asia Pacific region to various kinds of threats resulting from health or food system failures. Care must be taken to avoid any use of resilience to suggest an emphasis on the design of systems that are essentially defensive or static: rather, the key aim is to identify systems that are adaptable and capable of meeting the challenges of a rapidly evolving situation. But with care, an innovative research program can be built using such a framework.

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Review

Food and health considerations in Asia-Pacific regional security

John McKay MA

Australian APEC Study Centre, Melbourne, Australia

亞太地區安全性中的糧食及健康的考量

最近許多國家糧食價格的劇烈增加已造成許多憂慮，甚至導致某些民眾的抗議及暴動。這種情況容易理解，因為窮人大部分所得花費在購買食物上。許多評論者已預測在亞太地區，由於人口成長、城市快速發展、新中產階級對食物需求增加、氣候變遷的衝擊以及全球食品工業的成長，使得食物供應在未來將會更加受限。但這些可能的糧食短缺的壓力將會導致區域安全態勢不穩嗎？對安全性整體概念的一些研究已使得安全性被重新定義，涵蓋人類安全的議題。但可議的是，對於人類安全態勢的嚴厲壓力，也可能導致較傳統的安全體制的不穩定性增加，北韓即是一個可能發生的實例。但我們無法確知對整體區域而言，這樣的危險性是否真實，因此建議需要更多對於這個地區的研究。復原力的整體概念已被用於其他地區的某些研究，這可能是這個地區新研究的有用出發點。

關鍵字：亞太地區安全性、糧食安全、亞太地區的發展、區域復原力、糧食價格