

ACUTE FOOD INSECURITY IN MEGA-CITIES: ISSUES AND ASSISTANCE OPTIONS

Charles Kelly
Disaster Management Consultant

Benfield Hazard Research Centre
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1. Introduction

This paper focuses on acute food insecurity¹ as a contributing factor to disasters in mega-cities, cities of more than one million inhabitants (Mitchell:14). The case is presented that food insecurity can be a significant risk for some mega-cities, that this risk can transition to a state of disaster due to natural or political conditions, but that food insecurity is not usually considered as a cause or consequence of disasters in mega-cities, and that mechanisms for responding to food disasters in mega-cities are not well developed. The paper also reviews how the nature of a mega-city impacts the assessment of food security conditions and the provision of assistance in response to acute urban food insecurity. A summary of a project in response to a food crisis in Jakarta is presented to highlight unconventional mechanisms which can be used to deliver food aid in a mega-city. The paper concludes with suggestions on how monitoring and responding to food crises in mega-cities can be improved.

Relatively little attention has been given to acute food security problems and disasters in large urban populations. This paper provides a starting point for further discussions on improving the resistance and resiliency of mega-cities to acute food insecurity. The material presented in this paper is based on cited sources and the author's work in assessing food security conditions in the mega-cities of Luanda, Port au Prince, Yerevan, Monrovia, Lagos, and Jakarta, and involvement in food needs assessment and food aid operations in rural and urban settings over the past 22 years.

¹ Acute food insecurity is where individuals rapidly lose access, from production, purchase or non-commercial sources, to sufficient food for normal life. Famine is when this access has been lost and lives are in immediate jeopardy. Famine is a failure of supply, coping and relief options. Acute food insecurity is the condition before this failure occurs.

2. The Rural Focus of Concern about Acute Food Insecurity

External concern about food insecurity leading to famine conditions has largely focused on rural populations and areas. This focus has several overlapping origins. One is identified by Bart: “In the 1970s, the focus of nutrition and food security work shifted to rural areas, in an effort to counter the ‘urban bias’ of the past” (p. 2).

A second origin is the food security problems in Africa in the 1970s and 1980s. Relief efforts during this period firmly established rural areas as the focus on famine prevention (and famine early warning). This focus arose from the following assumptions:

- ❑ Rural populations are directly dependent on their own food production for survival and have few other food supply options. As a result, rural populations were considered more at risk following a failed harvest than urban residents, seen as relatively richer, favored by government policies and with greater range of coping strategies.
- ❑ Rural responses to food insecurity, particularly migration and selling assets, disrupt development efforts. Assisting rural populations early enough to avoid traditional coping strategies was (and continues to be) seen as critical to maintaining developmental efforts in the face of disaster.
- ❑ Famine migration leads to camps and squatter settlements which become permanent and generate longer term problems. Assistance in rural areas was expected to avoid the growth in squatter settlements by removing the need to migrate.

Some of the justification for the rural focus of efforts to address acute food insecurity and prevent famine can be debated (for instance, see Rain on the role of seasonal migration in food insecure rural areas). However, the purpose of this paper is not to critique this rural focus but to call attention to the fact that urban populations also require attention, and equal treatment, in efforts to mitigate acute food insecurity and prevent disaster.

3. Disasters, Mega-cities and Food Insecurity.

3.1 Why Worry About Mega-city Food Insecurity?

The justification for actively including urban populations in efforts to monitor, prevent or mitigate acute food insecurity rests on three considerations. First, urban areas are sinks for food

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commodities from rural areas. An urban food shortage will draw food out of adjacent rural areas, possibly leading to acute food insecurity in these rural source areas. If these centralized supplies do not meet the full needs of the urban population, both urban and rural areas can experience concurrent acute food insecurity.

Linked rural and urban shortages cannot be addressed without monitoring and assisting both areas. Only providing food to rural areas can result in these commodities simply moving into the urban areas, in response to greater effective demand, without improving the rural food security. Only providing food in urban areas can draw food insecure populations from rural areas.

Second, ignoring potential food security disasters means discriminating in favor of rural populations. This disregard of the needs of urban populations conflicts with the generally accepted standard of providing humanitarian assistance without discrimination. Disregarding the needs of urban populations is even more serious when not based on clear and well-documented comparisons of food security in rural and urban areas.

Finally, the number of people affected is often a key determinant of the magnitude of a disaster. Big disasters happen in big cities because of the number of people present, and often present in geographically small areas (Mitchell:27). Big cities - mega-cities - can be the sites of very big disasters.

3.2 Mega-city Disasters and Food Insecurity

Many of the risks, hazards and disasters, and the compounding factors arising from the nature of a mega-city, are discussed in Mitchell's Crucibles of Hazard: Mega-cities and Disasters in Transition. Interestingly, the book contains almost no discussion of acute food insecurity as a risk in urban areas. Yet, a mega-city food crisis can arise from a wide range of social, economic, technological and natural causes.

The latter include, of course, drought, floods, and earthquakes, all of which can affect the supply of food available to urban residents. Fewer examples exist of technological disasters which have contributed to acute food security problems, although the exodus of people from Bhopal after the chemical release probably contributed to some transitory food insecurity within the city and among those who left.

Examples of economic and conflict disasters contributing to serious food security problems are more numerous. Among the former are the economic crises in South East Asia and the former Soviet Union, which have resulted in various degrees of food crises in mega-cities (but apparently less so in surrounding rural areas). Conflict disasters, such as the war in Chechnia depopulating Grozny, or worsening food security conditions in Harare due to a combination of

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economic crisis and political conflict (Peta), underline how threats to food security can result from, or contribute to, disasters in mega-cities.

Specifically in the case of conflict disasters, the links with acute food security can be two-way and reinforcing. As Bonnard points out, real famine may be “an unlikely outcome of urban food insecurity . . . famine is replaced with riots and mayhem . . .” (Bonnard:5). Efforts by urban residents to avoid acute food insecurity may lead to further unrest and disaster, leading in turn to more food insecurity or change which addresses the causes of the food supply crisis.

At the same time, no mega-city in the periods since World War II has become totally cut off from outside food supplies and under siege for any length of time (Grozny was depopulated and Sarajevo is not a mega-city).² Whether it is even possible to isolate and lay siege to, rather than simply depopulate, a mega-city is both a political and practical question.

However, it is likely that the threat of acute food shortages in a mega-city will result in action by the residents to reduce this threat to acceptable levels. Whether this happens through fighting or shipments of food depends on the circumstances of each disaster.

The key factor defining the potential for food security problems in a mega-city is the dependence on a periphery for food. Although food is processed (and often grown) within a mega-city, most food commodities needed for consumption or processing come from outside the core urban area. Failure of the systems which move food to and within a city, due to floods, war or economic collapse, will result in acute food insecurity. While supply system problems can affect any community, the number of people who can be affected in a mega-city makes this peripheral dependency the most important element of mega-city vulnerability to acute food insecurity.

The risk of food insecurity is increased where a mega-city also depends on tight food supply systems, where there is little excess within the system and no large stocks of food held in reserve. Urban food supply systems can be tight at three levels:

- At the processing level, where factories do not maintain large stocks of raw or

² As this paper is being written, Monrovia, Liberia may be entering into a period of siege which is affecting urban food supplies. The city may have a resident and refugee population of over 1 million and thus qualify as a mega-city threatened by acute food insecurity due to conflict.

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- finished products on hand,
- ❑ At the commercial level, where retail outlets have only a few days stocks on the shelf, and,
 - ❑ At the family or personal level, where stores of food are not kept against supply shortages.

Disruption of this tight supply system at any level can lead to consumer shortages and increasing prices. For the poorer mega-city residents, with limited income and limited supplies of stored food, market shortages and increased prices will have an immediate impact on food security.

An additional factor contributing to acute food security problems for mega-cities is that rural areas around mega-cities may have limited food reserves. If large numbers of urban residents displace from a mega-city they take their demand for food with them to destination areas which themselves may be food insecure. Perversely, residents fleeing a mega-city food crisis may, like plague victims, take the disaster with them.

Finally, urban agriculture and livestock production contribute to urban food security, in some cities significantly (see Mougeot). At the same time, it is unlikely that urban agriculture can quickly produce the volumes of food needed to sustain mega-city populations during periods of quick-onset acute shortages. Similarly, the large scale selling off of livestock for income with which to buy food in response to decreasing supplies and increased prices will likely result in an oversupply on the market and falling livestock prices. Thus, while urban agriculture may serve as an important supplementary source of food (e.g., Vitamin A from vegetables), it does not appear to be a complete solution for acute urban food insecurity.

4. Defining Acute Urban Food Insecurity

Defining food security and identifying vulnerable populations in urban areas can be exceedingly difficult. Simple self-identification, e.g. people protesting high food prices, is not generally considered credible.

Bart and Bonnard separately discuss a number of approaches to defining and assessing urban food insecurity. Several of the key challenges faced in using these approaches to assess mega-city food security are discussed below.

The initial challenge in using standard food security assessment methods is that many of these methods, such as focus meetings, price and income surveys, and drive-by surveys, are more expensive and administratively more demanding in urban areas. This cost and workload

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combination has two impacts. First, it tends to make assistance organizations (which are usually resource-poor) shy about committing limited resources to working in urban areas.

Second, it tends to push assessors to draw the greatest conclusions from the least amount of work. Together these impacts make it likely that urban food security assessments collect less data in proportion to population size than in rural areas, run a greater risk of misstating the severity of food security problems and do not contribute significantly to the accurate targeting of assistance when it is provided.

Another challenge to assessing mega-city food security is that these cities are often demographically fluid. Mega-cities can absorb large numbers of people in short periods without the obvious indicators, such as camps, found in rural areas.

In a similar way, large numbers of people can move out of one part of a city to another, seemingly with little advance warning and in response to ill-defined triggers, such as rumors of fighting. Monitoring and measuring the impact of this fluidity, and its causes, is an important but difficult part of understanding food security and vulnerability.

Defining food security parameters is further complicated by the multiplicity of ways in which urban residents make a living. Not only are there a great range of opportunities in urban areas, but the ability of individuals to move from one profession to another (e.g., construction laborer to hawker or sex worker to seamstress) is much greater than in rural areas.

One of the most complex challenges in understanding food security in a mega-city comes from the city's high density and heterogeneous geography of wealth and poverty (Kelly 1995, 1997). Mega-cities can contain tens of thousands of people in small physical areas. In many mega-cities, people of considerable wealth live next to those of considerable poverty. Even when those who are better off move out of the core city and create "upper class" neighborhoods, they are usually accompanied by relatively poor populations employed in the extensive service sector found in large cities. Conversely, areas of considerable wealth can be found in the middle of districts considered as poor according to the government statistics.

Add to this spatial heterogeneity the fact that each administrative area of a hypothetical mega-city may contain more than a million people. Geographically defining areas of poverty and food insecurity, a common approach in rural areas, may be inappropriate at some scales in the mega-city.

An individual-oriented approach may be more appropriate, but is complicated by the challenges of deciding who is poor and who is wealthy. For example, a common presumption for rural areas

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is that a large portion of an individual's available assets is used for food security. This makes wealth ranking³ a useful tool in defining who has insufficient wealth to sustain a minimum food intake, and thus could be targeted for food aid.

In a mega-city, using only three or four wealth groups (e.g., very poor, poor and wealth) can lump tens of thousands of people into one group. Using more wealth groupings results in groups with smaller absolute numbers, but can create far too many groups to be useful for monitoring or targeting assistance.

Wealth ranking is further complicated by the fact that the range of expenditures in an urban setting is potentially greater than in a rural setting. Urban residents need to pay for water, housing, protection and a number of other legal and extralegal costs which are not present, or not paid directly, in rural areas.

In an urban area, it may be the proportion of wealth which goes to food and other basic needs which is the better indicator of food security. But collecting expenditure information is much more complicated than wealth ranking and not likely to be possible on a large scale in a crisis-affected mega-city.

Finally, mega-cities seem to generate new problems, adding new poor to old poor. This was the case in Jakarta in 1998. A group of officially poor existed and was well documented.⁴

However, the economic crisis, which began in late 1997 and resulting layoffs in 1998, created a new group of poor, the "newly disadvantaged",⁵ principally composed of construction, factory and service workers and some professionals who had lost work when major segments of industry ceased operations and many banks went into a state of suspended animation.

This group, while not as asset poor as the officially poor, was faced with poor prospects for re-employment (due to the overall economic collapse), limited official access to private or state-financed welfare support, and a resulting need to mine assets to maintain food security and cover other needs (e.g. health care, education).

³ The process of segregating populations into groups of relative poverty and wealth.

⁴ The official poor were enumerated by the Indonesian government and received regular welfare-type benefits.

⁵ Coined by the World Bank in Indonesia and used widely to identify those affected by the economic crisis.

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The irony was that the newly disadvantaged, unlike the official poor, were outside the official assistance umbrella (they were absolutely better off than the official poor). They were also less experienced at dealing with a lack of income and a loss of access to job-related services (e.g., health care). Identifying and including these emergent poor in mega-city food security assessments required a different approach than commonly practiced for rural areas.

At one level, the problem of defining food insecurity, and identifying who is seriously food insecure in a mega-city, is rooted in the fact that the standard assessment process is largely based on rural conditions, where society and geography are less complex. Directly transferring this experience to mega-cities results in systems which are too demanding of data and complicated to operate effectively.⁶

At another level, much of the data required in standard food security assessments cover not only the identification of need but also the targeting of assistance. If targeting can be done without the need for data during the assessment effort, then the pre-assistance data collection can be limited to defining the broad scope of a food security problem. This would significantly lower the information barrier to operating in urban areas. In other words, selecting the right intervention can reduce the work needed to define the problem, as well as the effort needed to operate in urban areas.

5. Responding to Acute Food Insecurity in Mega-cities: A Case Study from Jakarta

5.1 The Challenges of Providing Food Aid in a Mega-city

Bart, drawing from von Braun et al., identifies seven levels of interventions to address food insecurity:

Macroeconomic Policy, Subsidies, Employment Programs, Income-Generation Programs, Food Transfers, Supplementary Feeding, and Health and Sanitation Services.

⁶ Market survey firms, usually well established in mega-cities, use many of the same methods as food needs assessments. Excepting family planning, such firms do not seem to be much used to gather data for urban relief efforts.

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Most responses to acute food insecurity focus on the last three. Health care and the availability of clean water are increased and sanitation improved to reduce diseases which contribute to, or exacerbate, the impact of food shortages on individuals.

Food aid is provided directly to those identified in need (e.g. supplementary feeding) and to increase household food availability. Direct distribution of food aid to large populations is rare even after a disaster. It usually occurs only when an affected population is displaced and without other means of support.

More common is the provision of a one-off family ration, usually sufficient for one month, to help a family transition back into productive circumstances. Where acute food insecurity is expected to continue for more than a month, food assistance usually shifts to some type of food for work intervention involving public works.

Alternate uses of food aid, such as price subsidies (selling food assistance below market cost) or food stamps backed by food aid, are rare for two reasons. First, there are concerns about the impact of the food aid. The business sector and proponents of liberalized markets worry that food aid will have a disincentive impact on production and commerce. Those funding emergency relief efforts are particularly concerned that food aid specifically reaches those in most need, and doubt whether this can happen in the absence of strong control systems. Normally, a government's own control system is not considered adequate to address these concerns.

Second, NGO's generally lack the means and experience to manage large scale food aid programs in urban areas. As a result, there is a preference for using food for work, which can be managed as a direct input-output operation, and little consideration of alternate approaches to providing food assistance.

Both supplementary feeding and food for work have another advantage: they avoid the need for extensive data collection to target assistance. Food for work can operate on a self-selection basis, with food payments set low enough to only attract the most poor. Supplementary feeding can, by operating through health centers, screen for the most severely malnourished, rather than recourse to surveys to identify all the malnourished in a mega-city. Supplementary feeding through schools can also reach populations (children) presumed to be at risk from food shortages. In other words, food for work and supplementary feeding circumvent, in large measure, the mega-city data collection problems above. In short, those in need find the food⁷ rather than the other

⁷ This approach presumes no limits to participant access. Access could be limited in a conflict-affected mega-city. Success of a self-targeting approach would depend on whether free access was possible within sufficiently large areas of the mega-city to ensure an appropriate pool of participants.

way around.

Unfortunately, food for work and supplementary feeding are not a cure-all for a mega-city affected by acute food insecurity. Simply put, the scale of a food for a work program targeted to 10 percent of the 10 million in a mega-city is a massive undertaking. While food for work and supplementary feeding can address some of these food needs (particularly in well defined locations), other means are needed to increase the gross food supply, particularly within areas of a mega-city where the largest number of those most affected by acute food insecurity are located.

The following case study describes the development of an alternate approach to improving food security in Jakarta during the recent economic and political crises. The project used a self-selection mechanism conceptually similar to that used in food for work, but intended to provide a larger volume of food aid to target populations than contemporary food for work projects in Jakarta. Distribution of the food aid through the commercial marketing system was proposed to avoid the need for a new, large, stand alone and slow to start structure to manage the logistics of the food aid effort.

5.2 The Economic Crisis and Jakarta's Food Security

Indonesia made significant progress in overall development from the time of independence. Much of this progress was accomplished by state management of the economy (in some ways similar to the Soviet system), significant financial transfers within the economy, income from the sale of natural resources and private and public sector willingness to lend to the government and private businesses.

In the case of food security, Indonesia was able to assure the availability of affordable rice (the staple for a large majority of Indonesians) and other food commodities through a combination of imports, export and supply controls, production subsidies and financing, research, infrastructure investments and sales price subsidies. When national production fell below expected need, the government financed imports of food as well as inputs which were sold onto the market at below international cost.

The food security system came under pressure during the 1997-1998 El Niño event, when drought was expected to reduce rice production and above normal imports would be needed to meet expected demand. While the El Niño related problems were serious, the scale of required imports was not beyond government operational capacities⁸ and access to commercial and

⁸ Rice was a government controlled commodity. Although the government worked through private and parastatal systems to regulate supply and price, it legally controlled the market.

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concessional financing. Donor governments also took the risk of food shortages seriously and embarked on a variety of food assistance programs, targeted at rural populations most likely to be affected by production shortages. While the El Niño related drought created a serious risk of food shortages, the problem gained sufficient attention and generate sufficient response. Aside from early problems in physically isolated parts of Irian Jaya, large scale severe food insecurity was avoided.

The food security safety net weakened considerably in mid to late 1998, as Indonesia's economic system began to fall apart concurrently with a period of profound political change. Food security was impacted by the following events:

- With the collapse of the domestic banking sector foreign banks were unwilling to extend credit to firms in Indonesia. This lack of foreign credit even threatened the government's ability to finance essential food imports.
- The banking crisis forced many short term credit-dependent companies (e.g. construction, export assembly factories) to stop operations. This put large numbers of people out of work. These people, most lower middle income urban residents, were compelled to cut expenditures and mine assets to meet basic needs.
- Devaluation of the Rupiah pushed up food and other prices in local currency terms. Wages of those who still had jobs increased only marginally, if at all.
- Political activity became more open than previously, in particular the use of demonstrations and conflict to push agendas.
- Revelations about government corruption and moves to reform the government structure raised questions about the ability of the Indonesian social service system to assist those affected by the economic crisis, including the newly disadvantaged, and to finance and manage the import and redistribution of food within a county.

As these events developed the prospect of large numbers of ill-fed urban unemployed being manipulated by different political factions and provoked into large scale conflict in the Jakarta mega-city became an increasing concern. That violence did start on several occasions, particularly the riots of May and November 1998. While this violence was episodic, this fact did not significantly reduce concerns that Jakarta could descend into de facto civil war due to the economic and political crises, with dramatically negative impacts on Indonesia as a whole.

At the same time, the food security impact of the economic crisis was real. Data collected in Jakarta by one NGO documented a short term increase in malnutrition. The same survey indicated a shift in food consumption away from a diverse diet to one based predominately on rice, with a resulting impact on micro-nutrient and vitamin intake, particularly among children (Helen Keller). This report and other analysis highlighted the impact that food insecurity was

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affecting a sizable part of Jakarta's population,⁹ and that this impact needed to be addressed to avoid a loss of the progress which had been made in Indonesia in improving nutritional status and general welfare.

5.3 Mainstream and Alternate Responses

As the economic crisis worsened, the Government of Indonesia (GOI) and donors agreed to continue a number of mainstream food security programs, including subsidies of rice and other basic food commodities. The government used concessional sales, donations and payment guarantees to assure food supplies through the commercial market and the government's own normal and special social assistance programs. Donors continued NGO food aid operations in rural areas still considered to be at risk from El Niño-related production shortfalls. Finally, and not least, Indonesian firms and food producer associations provided food at below market prices to needy populations, using government channels (e.g. health clinics) or local non-governmental organizations.

However, by mid-1998 at least the US Government was concerned that not all urban populations in need, particularly the newly disadvantaged, were benefiting from assistance efforts. In particular, the credibility of the government's program to provide food at subsidized prices to needy populations was in question due to a lack of transparency and concerns about how beneficiaries were selected. Concerns about urban food insecurity were heightened by violence in Jakarta in May and November 1998, and the scarcity of options other than discredited government systems to deliver food aid in Jakarta.

The normal alternative to the government systems would have been NGO managed distribution, either as supplementary feeding or in compensation for work, as was being done in rural areas. However, the NGOs with sufficient institutional credibility to run such programs lacked the organizational base in Jakarta to quickly implement a large urban food aid program, and were, anyway, heavily involved in rural operations.

⁹ By mid-1998 La Niña conditions were affecting Indonesia. Rain continued through the normally dry period, rice production recovered, and food security was probably better in rural than some urban areas of Indonesia.

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Two other factors worked against a normal NGO program. First, the scale of operations needed to have an impact on urban food security was significant and would have involved tonnages equal to or larger than those being managed in the rural NGO programs. Second, to operate in Jakarta with the same level of control system as used in rural areas¹⁰ would have required a large intake of new staff and creation of a significant monitoring and control system. In the end, several NGOs did implement food aid programs in Jakarta, but these projects delivered only small volumes of food.

5.4 The Commercial Market: An Opportunity

In the search for alternatives to increase the targeted supply of food to vulnerable groups in Jakarta the concerned donor became more open to consider the use of the commercial market as a possible food aid mechanism. This occurred for a number of reasons, including an interest in promoting market outlets for food commodities from the donor's country, persistent suggestions on the use of commercial channels from Indonesian businesses, and a failure to identify other ways to address what was seen as a pressing food security problem.

The openness to using the commercial market for food aid distribution was facilitated by three other factors. First, food assistance had already been publicly earmarked for use in Indonesia, making the operational question one of how these commodities could best be used rather than one of trying to justify the need for the commodities. Second, the donor's implementing agency had, unlike many assistance agencies, a normal mandate to work with the commercial sector.

Third, there was a consensus, based on macroeconomic indicators and limited needs surveys, that a major food security problem threatened the newly disadvantaged in Jakarta. This consensus, and possibly the occasional violence in Jakarta, significantly reduced the need for NGOs to prove that serious food insecurity existed in Jakarta.

There remained the challenge of how to take the earmarked commodity, wheat, and eventually get it to individuals experiencing food insecurity due to the economic crisis. Based on input from the Indonesian food industry and the donor's own personnel a program was developed to use the market together with consumer price and quality preferences to target food aid to the newly disadvantaged.

¹⁰ The US Government normally requires a high level of accountability and assurance that food aid goes directly to target groups

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Food industry sources in Jakarta indicated the wheat could be used to produce packaged noodles. While rice is the major cereal consumed in Jakarta, market research by food production companies (confirmed through interviews) indicated that noodles made up an important part of the normal (pre-crisis) diet. Noodle consumption had dropped-off due to the general reduction in income due to the economic crisis.

Importantly, noodles were consumed both as part of family meals and as “fast food”, at sidewalk and mobile restaurants, by people who were generally part of the newly disadvantaged group (e.g. day laborers). Increasing the supply of affordable noodles would increase consumption opportunities for the newly disadvantaged target group.

Operation of this market-targeted food assistance program was built around the following components:

- ❑ Wheat would be imported and milled into flour by one of three Indonesian flour mills.
- ❑ Indonesian companies would use the flour to produce noodles. Several noodle production companies had reduced operations (and laid-off staff) due to a drop in demand because of the economic crisis. Producing noodles via these companies would also have the advantage of re-employing predominantly female newly disadvantaged.
- ❑ Existing commercial networks would be used to deliver noodles to the retail level in Jakarta. This eliminated the need to establish a parallel logistics system to move the noodles to target populations. The commercial system delivered noodles and a wide variety of other commodities to the street-corner level throughout Jakarta. As such, it provided an unparalleled infrastructure to reach any part of Jakarta. This commercial system also allowed for the targeting of noodles to specific parts of Jakarta considered to have a greater number of the newly disadvantaged target group.
- ❑ The noodles would be sold at affordable prices through commercial outlets. This approach, core to the program, involved setting a price for the noodles, and packaging the product, in such a way as to target consumers who had been affected by the economic crisis. This is the same self-selection approach commonly used for food for work programs. This eliminated the need to specifically identify each program beneficiary, as is often attempted in food aid programs.
- ❑ The physical movement of the noodles would be monitored through the stock management systems of the noodle producers. Core to this element was that each level of the commercial structure, producer to retailer, was allowed to make normal profit from the sale of the noodles. The bottom line was that the noodle

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producer and distributor would be financially penalized for losses (defined as the difference between tonnage produced and tonnage sold), thus placing an economic control on losses and misuse.

- A relatively light program management structure would be put in place, principally to manage the production and distribution process and to monitor noodle quality, the distribution process and financial control.
- The program would use commercial suppliers in Jakarta for services such as advertising, marketing and sales and financial monitoring. As became evident during early implementation, both market and social science research firms in Jakarta had a sophisticated capacity to identify program “clients”, and to provide advice on target population preferences, packaging and end-use monitoring. The range and capacity of these commercial services exceeded, in scale and detail, what is normally expected for food aid programs in rural areas.

As designed, the noodle program was targeted to reach approximately one million persons per month and deliver upwards to 16,500 MT of food over approximately eight months. The program was expected to be operational within 90 days of the arrival of wheat in Indonesia. The project began operations in early 2000, a follow-on project began in December 2000, and extensions continued the program until July 2003.¹¹ The original project was expanded to include urban and rural areas of Central and West Java out of concern that limiting distributions only to parts of Jakarta would disrupt commercial markets. Monitoring indicated that, as intended, the primary clients for the noodles were lower income buyers.

The downside of the project was that it was almost a year between the time the project was developed and when the wheat arrived in Indonesia. Other projects to respond to the food security problems in Indonesia had a somewhat shorter proposal-to-operation time line. A significant delay between when a food security problem is identified and when external assistance is available (often between six and 12 months) is common in donor financed food aid programs.

While the Jakarta noodle project addressed the difficulties of moving food into the mega-city market, it did not overcome the delays inherent in moving food to a mega-city from a distant source. The spatial and administrative distance between a need and sources of food aid remains a major barrier to effectively responding to acute food insecurity when it threatens a mega-city.

¹¹ Project-supported activities eventually included adding defatted soy flour to increase the protein content and nutritional value of the noodles, and shifting the project to Bali and Lombok in response to the economic crisis associated with the Bali bombing and SARS' impact on tourism (Prettyman).

6. Conclusion

This paper has argued that acute food insecurity is an important disaster risk for mega-cities. It can arise from a number of natural, technical or social causes, and in turn contribute to other disasters. The most critical component of this potential disaster is that mega-city residents depend on a periphery for food. That this periphery-to-center food supply system may have little in the way of internal reserves can result in serious food shortages when a system break down occurs. The shortages and food price increases following a system collapse pose a specific and immediate risk of acute food insecurity for the poorer (and often numerically largest) segment of a mega-city's population. And a serious mega-city food crisis is likely to damage the food security of surrounding rural areas, leading to a potential wave of acute food insecurity moving out, like a wave, from the urban core.

The paper also discusses the challenges of assessing food security conditions in a mega-city. Not all rural-based food needs assessment procedures can be easily used in a mega-city. It is suggested that the need for information on food security in a mega-city can be reduced by focusing on defining the immediate scale and extent of a food security problem.

This minimalist approach to data collection should be complemented by selecting food aid distribution mechanisms which target assistance to populations experiencing the most severe impacts of a food security crisis. An example of this approach, developed to respond to a food crisis in Jakarta, shows how food assistance in a mega-city can use commercial systems to avoid the need for costly and difficult to establish standalone distribution systems commonly used for emergency food aid distribution in rural areas.

However, the effectiveness of market-based alternatives, as with more conventional food aid mechanisms, is limited by the fact that mega-cities draw a large part of their considerable food needs from distant locations. Covering these distances requires time, something not available in a disaster. While acute food insecurity may be rare in a mega-city, once it does occur it is unlikely that there will be any quick fix, aside from death and mass migration.

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The Author

Mr. Kelly is a disaster management consultant with more than 23 years of field experience in humanitarian assistance programs dealing with droughts, famines, insect infestation, hurricanes, epidemics, floods, war and other emergencies in developing countries. Mr. Kelly has worked in more than 60 countries and has published more than 45 articles on a variety of disaster management topics, and worked with a number of governments, non-governmental and international organizations. Mr. Kelly is also the lead researcher in the Benfield Hazard Research Centre - CARE International Rapid Environmental Impact in Disasters project.

In addition to being an Affiliate of the Benfield Hazard Research Centre, University College London, he is a member of the American Association of Geographers, the International Research Committee on Disasters, the Society of Risk Analysis and The International Emergency Management Society and a Senior Fellow at the Cuny Center.

He can be contacted at 72734.2412@Compuserve.com