

# **THE IMPACT OF THE OIL-FOR-FOOD PROGRAMME ON THE IRAQI PEOPLE**

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**Report of an independent Working Group  
established by the Independent Inquiry Committee**

September 7, 2005

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## ***SECTION I. IMPACT OF THE OFFP ON THE IRAQI PEOPLE***

### **CHAPTER 1. CONTEXT: FROM THE 1980S TO 2003**

#### **THE INDEPENDENT INQUIRY COMMITTEE**

In April 2004, United Nations Secretary-General Kofi Annan appointed an independent, high-level inquiry committee to investigate the administration and management of the Oil-for-Food Programme (OFFP) in Iraq. Following this, the United Nations Security Council unanimously adopted Resolution 1538 (21 April 2004), which endorsed the inquiry and called for full cooperation in the investigation by all United Nations officials and personnel, the Coalition Provisional Authority, Iraq, and all other Member States, including their national regulatory authorities (IIC, 2005).

The appointed Independent Inquiry Committee (IIC) was chaired by Paul Volcker, former Chairman of the U.S. Federal Reserve. The Committee Members were Mark Pieth of Switzerland, an expert on money-laundering working in the Organisation for Economic Cooperation and Development (OECD), and Richard Goldstone of South Africa, former Prosecutor of the International Criminal Tribunals for the former Yugoslavia and Rwanda (IIC, 2005).

The terms of reference of the IIC were as follows (IIC, 2005):

The independent inquiry shall collect and examine information relating to the administration and management of the Oil-for-Food Programme, including allegations of fraud and corruption on the part of United Nations officials, personnel and agents, as well as contractors, including entities that have entered into contracts with the United Nations or with Iraq under the Programme:

(a) to determine whether the procedures established by the Organization, including the Security Council and the Security Council Committee Established by Resolution 661 (1990) Concerning the Situation between Iraq and Kuwait (hereinafter referred to as the "661 Committee") for the processing and approval of contracts under the Programme, and the monitoring of the sale and delivery of petroleum and petroleum products and the purchase and delivery of humanitarian goods, were violated, bearing in mind the respective roles of United Nations officials, personnel and agents, as well as entities that have entered into contracts with the United Nations or with Iraq under the Programme;

(b) to determine whether any United Nations officials, personnel, agents or contractors engaged in any illicit or corrupt activities in the carrying out of their respective roles in relation to the Programme, including, for example, bribery in relation to oil sales, abuses in regard to surcharges on oil sales and illicit payments in regard to purchases of humanitarian goods;

(c) to determine whether the accounts of the Programme were in order and were maintained in accordance with the relevant Financial Regulations and Rules of the United Nations.

## **THE WORKING GROUP ON THE IMPACT OF THE OIL-FOR-FOOD PROGRAMME ON THE IRAQI PEOPLE**

One of the tasks of the IIC was to evaluate the oversight and implementation of the OFFP. Since the aim of the OFFP was to avert a humanitarian crisis in Iraq, the IIC's evaluation was considered to be incomplete without an assessment of the Programme's effectiveness in reaching its desired objectives or goals. The IIC in October 2004 therefore decided to establish a process for assessing the humanitarian impact of the OFFP. A Working Group was assembled to undertake this task, engaging eight researchers across several academic disciplines from a variety of institutions across the globe. The Working Group was to independently assess the impact of the OFFP on the humanitarian crisis of the people of Iraq. The following scope of work and terms of reference were agreed upon:

The primary goal of the Working Group is to assess the contribution of the OFFP to improving the lives and well being of the people of Iraq, specifically in the areas of hunger, poverty, nutrition, health, mortality and infrastructural development. The Working Group will also assess the overall cost effectiveness of the OFFP.

The Working Group will examine trends in several broad development indicators over three distinct phases:

- 1) Mid-1980s (before the Gulf War of 1991)
- 2) Period of sanctions pre-OFFP (1990–1996)
- 3) OFFP (1996–2003)

The Working Group will conduct some primary research by way of limited interviews and data collection. Most of the research will be conducted by reviewing, evaluating and synthesising existing data, surveys and reports. The specific tasks are described in points A–D below.

The working group will, to the extent possible, undertake the following tasks:

- A. Describe changes through time in outcome indicators (of mortality, nutrition, health, hunger/poverty), for different groups (at least North vs South/Centre), identifying and evaluating the data sources (e.g. household survey, administrative records, registration (vital, ration, etc), anecdotal); commenting on the likely validity, suggesting priority for further checking (e.g. how far does the impact assessment depend on the result's truth?), and means of obtaining confirmation. It was anticipated that four members of the working group will each take the lead in one of the four areas.
- B. Describe changes through time in selected factors (e.g. from conflict, sanctions, internal oppression) that are important likely causes of the changes described in A (e.g. damage to sewage treatment plants causing increased exposure to pathogens causing increases in diarrhoeal diseases); again commenting on sources, suggesting checks, etc., as for A.
- C. Describe the plans, objectives, and implementation of the OFFP—this will require specifying process indicators—focussing particularly on activities designed:

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- (i) to mitigate the negative effects of conflict, sanctions, etc. (e.g. to repair sewage treatment plants; to provide oral rehydration therapy or antibiotics to manage diarrhoea).
  - (ii) to otherwise alleviate the humanitarian crisis (e.g. due to migration and destitution) or to improve the situation (as measured by mortality, health, etc.).
- D. Undertake analyses of the descriptive data from steps A–C, to relate OFFP activities (changes in causal factors) to outcome trends (including careful consideration of alternative explanations (confounding) and effect modifiers (interactions), to draw conclusions for which the following questions are illustrative:
- (i) By how much did the OFFP change the mortality rates (especially infant and child), compared with what they would have been without the OFFP, between 1996 and 2003 (as feasible by year, geographic area, population group)?
  - (ii) By how much did the OFFP change nutritional status (including birth weights), compared with what they would have been without the OFFP, between 1996 and 2003 (as feasible by year, geographic area, population group)?
  - (iii) By how much did the OFFP change the supply, distribution, and consumption of food (kilocalories, micronutrients), compared with what they would have been without the OFFP, between 1996 and 2003 (as feasible by year, geographic area, population group)?
  - (iv) In the light of changing disease patterns, how far was the OFFP able to reduce incidence, severity and duration (and contributions to mortality) of infectious and non-communicable diseases, through contributing to prevention and disease management?
  - (v) By how much did the OFFP change the extent of poverty (and hunger if measurable), compared with what they would have been without the OFFP, between 1996 and 2003 (as feasible by year, geographic area, population group)?
  - (vi) Lessons for humanitarian assistance in future.

Research began in November 2004, and a first meeting of the Working Group, supported by written background material, took place on 10–12 January 2005. An interim report with preliminary conclusions was prepared for internal use. The group was expanded to include three additional members to study OFFP resource flows and expenditures, and to relate these to humanitarian outcomes. A second meeting of the Working Group was held on 9–10 May, at which the main conclusions were agreed upon. This Report has been constructed from background papers and analyses by the Working Group members and research assistants, and represents the consensus of the group.

The indicators—or measures—of “the lives and well being of the people of Iraq, specifically in the areas of hunger, poverty, nutrition, health, mortality and infrastructural development” were identified based on a balance of conventional use, data availability, and the assessed reliability of the data. In practice, this came down to economic estimates of income and prices; average food availability, estimated as food energy in kilocalories/capita/day (for which the average requirement was about 2,200 kcal); child nutritional status, assessed by anthropometry, including growth; reports of infectious and

chronic diseases and access to health services; estimates of child mortality rate as the probability of dying before the age of five years (the “under-five mortality rate” or U5MR); and, as feasible, reports of the condition and functioning of critical infrastructure, focussing on water supply, sanitation, and electricity.

Usually, the validity of the data could only be assessed by considering the sources, cross-checking with other indicators, and judging the plausibility of the data. The important distinction between representative survey data and administrative reports (e.g., cases of sickness seen in health centres) was kept in mind, with survey (or census) data being preferred. Only rarely were original data available. The intent here is to identify the sources as the results are presented and to describe these in more detail in Section II. We have also relied substantially on anecdotal and descriptive information and sought to cross-check between these. If what is reported from interviews and reports at the time matches what the quantitative information is saying, then the conclusion is more solid; but if these do not match, we have checked both, as far as feasible, and aimed to report where there are doubts from either approach. Similarly, when different numbers do not match, we have tried to synthesise across different sources. Excess mortality estimates (Chapter 2) are a prime example of this approach.

## **STRUCTURE OF THIS REPORT**

The impact of the OFFP on the Iraqi people is first described here as a narrative, with supporting evidence, in Section I of the Report. This is done to bring the main findings together in one section, so the reader can understand the overall story by reading Chapters 1 through 3.

In this first chapter, the context is set primarily from the 1980s through to the start of OFFP in 1997, stressing the living conditions of the people of Iraq. The OFFP was operating from 1997 to 2003, and the impact can only be properly understood in the context of sanctions, starting in 1990, and of the earlier conditions in the 1980s and how they evolved. Chapter 2 describes the effects of the OFFP, from 1997 up to the outbreak of war in 2003, on food and agriculture, nutrition, environmental infrastructure and health, and child mortality, presenting key findings as graphs and tables and interpreting these in terms of what they meant for the people of Iraq. For continuity, to a limited extent in Chapters 1 and 2 the narratives overlap in time. In Chapter 3, the disposition of the resources available through OFFP is analysed, focussing on those resources intended to support food and agriculture, and environmental infrastructure and health. Then some implications for how resources might have been used to greater effect are put forward.

Section II of the Report (Chapters 4 and 5) gives details of methods, data sources, calculations leading to the evidence displayed in Chapters 2 and 3, and some additional findings. Chapter 4 supports the evidence on humanitarian outcomes (i.e., relating to Chapter 2), and Chapter 5 similarly provides additional financial data, supporting information in Chapter 3.

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The conclusions of the report, with brief comments and recommendations of the Working Group, are given in Section III, Chapter 6.

The Working Group affirms that it acted and reports independently of the IIC itself. We received administrative support from the IIC Secretariat, which efficiently facilitated access to information and provided valuable guidance on what questions to pursue, which was often but not always followed. This Report and its conclusions are put forward on the responsibility of the group, and we would reiterate that at no time have we felt any encroachment on our independence.

We need to add the caution that we can only put forward our best judgement on the balance of the information available. The Working Group is made up of scientists with diverse experience according to their disciplines and regions of the world. We have evaluated the information available with a particularly critical eye, recognising the potential for controversy and the possible consequences of drawing wrong conclusions (as well as failing to draw conclusions because of excessive caution). What we can say is that this is our best and most judicious estimate of what happened. A concern is that for practical reasons the Working Group was not able to interview a number of key informants. Unfortunately, moreover, existing information did not allow much to be said about different areas of the country; it would have been preferable to have had more disaggregated data, but such data were not available, at least for analysis in the time available.

## **CONTEXT**

### **Life in Iraq**

This Report is about the people of Iraq over the last quarter-century.

Most of Iraq's people (around 15 million in 1985 and 23 million in 2000) live in cities near one of two main rivers. About 70% of the population is urban, the West and South being mainly desert (Fig. 1.1). The Centre/South has more than 80% of the population, with Shia Arabs predominant in the Southeast, Sunnis along the Tigris River between Baghdad and Mosul, and a mixed population around Baghdad, roughly between Samarra and Karbala. The North and Northwest, bordering on Turkey and Iran, are mostly Kurdish areas.

Historically, the three governorates of northern Iraq had been less developed than the rest of the country. Many more of the people lived in rural areas, where rain-fed crops and mountainous terrain permitted self-sufficient agriculture. There was far less infrastructure in the North, and fewer people had running water or sanitation than in the rest of the country. The rate of literacy was lower, and there were fewer teachers and doctors. Administration of the region had always been under the control of delegates from Baghdad.

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Consider babies born in Iraq in 1980—take fraternal twins, a boy and a girl—growing up in a typical family. They have a good chance of surviving birth and early childhood, better than in some neighbouring countries; under-five mortality at that time was about 100 per thousand live births. A trained midwife would probably have attended their delivery in a health facility with clean, modern equipment. Birth complications could have been referred to facilities staffed by highly qualified and well-paid doctors, and most medications would have been imported from Europe. They would probably have been breastfed for at least the first six months of life, but in any event, with piped water supplies formula feeding was not very risky. Their growth rate would have been good by international standards, and their immunization against childhood illnesses would have been up to date. With the water supply treated and most houses connected to sewage disposal, childhood diarrhoea was no longer a major threat. Their chances of becoming malnourished were only about 15%.

Both children would have started primary school in 1986 at around six years of age. The rate of school enrollment was high and was similar for boys and girls. Literacy among mothers was low but was rising rapidly, as was enrollment in secondary school (the rate of attendance in 1990 was 35% to 50%) (UNICEF, 1997) and universities (Fig. 1.2). But life was becoming unsettled. Many men were sent to fight against Iran, and a total of nearly a million young men from both these countries may have died in the eight-year war. Even so, the necessities of life remained readily available, with food in the shops at reasonable prices; 70% of food was imported and sold at subsidized prices, paid for by oil revenues.

In August 1990, the Iraqi army invaded Kuwait. Sanctions were imposed by the international community, drastically cutting the export of oil and thus the funds for buying food, medications, and other imported goods. The Government established the Public Distribution System (PDS) for food, which entitled most Iraqis to nearly as much food as they had previously been able to buy. Although times got harder, there was not much shortage of food, water, or electricity for most people (provided that they were not considered enemies of the Government). The infrastructure of a middle-income state continued to function. Power plants produced electricity. The main water supply system functioned for the 90% of all households and the 70% of rural households that were connected to it. Almost all households had toilets and electricity. Food availability dropped somewhat, from a high of 3,500 kcal/capita/day (considerably more than the average requirement, or recommended daily allowance) to around 3,200 kcal/capita/day, but the rate of malnutrition in children remained low at 12%.

The bombing that started in February 1991 put most pumping and sewage treatment plants out of action. Electric generating capacity dropped by 75%, with 20 of the 24 power stations not working. Loss of water supply, sewage treatment, and electricity-generating capacity led to contamination of the water supply, starting a whole sequence of events that caused health to deteriorate drastically. UN Under Secretary General Maati Ahtisaari, visiting Iraq in early March 1991, noted that

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nothing that we had seen or read had quite prepared us for .... the devastation which has...befallen the country. The recent conflict has wrought near-apocalyptic results....Iraq has for some time to come been relegated to a pre-industrial age. (Ahtisaari, 1991).

The conditions of living indeed deteriorated to those of a pre-industrial state. Oil fires polluted the air, and oil spills got into the water table, reducing water quality. Even if our family was not politically suspect and not targeted for retribution, schooling quality declined, fathers and brothers went missing, the rate of unemployment climbed, and families became dependent on Government-supplied food rations.

Most people knew that international forces had defeated the Iraqi army and that strict economic sanctions were being enforced by the same coalition. (Was it exactly the same? People were not sure; the United Nations was a common feature of both.) For the next two years the Government supplied nearly adequate but declining rations. Infrastructure and plant for electricity, water, and sewage treatment were repaired by using spare parts and by cannibalizing other plants. But this was not sustainable, as equipment continued to break and spare parts were not imported.

Health deteriorated rapidly from 1991 onwards. Loss of infrastructure led to greatly increased exposure to common pathogens and a rapid rise in the incidence of diarrhoeal diseases. Whether this was part of the strategy to win the war is not clear; but the massive increase in exposure to common pathogens was clearly an objective, as sewage and water treatment plants were successfully destroyed in the earliest stages of the attacks. Without external assistance to repair the damage as a top public health priority, the consequences were equally predictable. The available data (see Chapter 2) plausibly document dramatic increases in diarrhoeal diseases, including outbreaks of cholera.

Children born in the 1990s had a much greater risk of becoming malnourished and a significantly greater chance of dying in infancy than those born in the 1980s. During the latter 1980s, the decline in infant mortality came to a halt. In the 1990s, infant deaths rose. The twins we are thinking of, now teenagers, would have struggled in a household with rapidly falling real income and deteriorating amenities. Many people suffered from stress and depression (IST, 1999). The disease and death profile of Iraq changed from that of a relatively advanced middle-income country to that of a poor and underdeveloped one.

The pace of decline in living sped up after 1991. The price of food rose a great deal, and jobs became scarce. To lay out this part of the context, we briefly review economic changes through 1990, before returning to the illustration of particular children—the twins introduced earlier.

### **The Economy in the Early 1990s**

Before the first Gulf War of 1991, Iraq's social and economic indicators were close to or above regional averages. In 1989 the gross domestic product (GDP) was US\$31 billion for a population of 18.3 million people. This corresponds to about \$1,700 per head in 2002 dollar equivalents (Fig. 1.3). The GDP had increased at the high rate of 10.4%

yearly from 1974 to 1980. Some of the increased funds were invested in infrastructure. Even during the 1980–1988 war with Iran, the road and railway networks were expanded (Economist, 1999). Iraq's GDP fell sharply after the invasion of Kuwait and the imposition of sanctions. This was followed by a small recovery in 1992 and then by another drop in 1993.

The currency also collapsed: the unofficial market rate fell from about US\$1 = ID (Iraqi dinars) 4 in early 1990 to US\$1 = ID 50 in 1993, US\$1 = ID 500 in 1994, and US\$1 = ID 1,000 in the early part of 1996. When the OFFP was initiated, the rate rose briefly to US\$1 = ID 450 then quickly declined again to US\$1 = ID 1,000 before declining further to US\$1 = ID 1,500 at the end of 1997 and US\$1 = ID 1,850 in early 2000.

In addition, the oil extraction sector collapsed over this period (Fig. 1.4), and commerce, manufacturing, banking, and public and private social services were affected to varying degrees. Production in the agricultural sector declined by 25% in 1991 and then recovered temporarily; production in other sectors fell by as much as 37% (manufacturing) or 79% (construction). Manufacturing output dropped sharply in part as a result of the lack of raw materials but also because of the shortage of energy.

The economy of Iraq was heavily dependent on export earnings, with oil accounting for 60% of the country's GDP and 95% of its foreign currency earnings. In the 1970s, Iraq had been producing as many as 3.5 million barrels per day, but production declined somewhat to 2.8 million barrels per day by 1989. The massive fall in 1990 (Fig. 1.5) due to sanctions started the whole process of economic disaster. Under the OFFP, oil exports did not begin to climb again until 1997 and only reached 1989 levels (temporarily) in 2000. The low levels of production and export in the early 1990s resulted in a massive decline in national income: some sources estimated per capita GDP as low as US\$450 in 1995 (Financial Times, September 11, 1995).

### *Employment*

Prior to 1989, more than 90% of the workforce was employed. The employment rate fell to a little more than half of all eligible people during the 1990s. According to the Ministry of Planning, the unemployment rate in January 1997 was 28%, and the official rate of underemployment was 21.6% (Department of Defense, USA, 2004); these official figures are now understood to underestimate the extent of underemployment at that time. A particularly deleterious effect of sanctions, therefore, was the widespread unemployment that began in 1991. The extensive infrastructural destruction caused by the Gulf War stopped a large fraction of industrial production. This included products of light industries supplying mainly the local market with clothing, processed foods, furniture, electrical implements or light machinery, paper, and related commodities. These industries relied to a large extent on imported raw materials, machinery, chemicals, pulp, plastic, and spare parts and components of machinery. The fall in industrial production, which had declined by more than 50% between 1989 and 1991 (Fig. 1.5), caused frequent layoffs and the extensive unemployment.



### *Food and Agriculture*

Food availability in Iraq in the mid-1980s was around 3,200 kcal/capita/day. This was fairly typical of the region (e.g., in 1990 food availability was 3,000 kcal/capita/day in Syria and 3,300 kcal/capita/day in Egypt) and was quite adequate on average. Long before the Gulf War of 1991, the Government to a large extent controlled food marketing, and the prices of most food items destined for mass consumption were largely subsidised. Most private trade on the free market dealt with meat, milk, cheese, vegetables, and fruits. Every citizen or household not associated with a dissident group was assured of an adequate supply of food at affordable prices. Consequently, overall lack of food was not a great problem; this was illustrated by the findings of a 1988 survey of primary schoolchildren in Baghdad, conducted by FAO in collaboration with the Nutrition Research Institute of Iraq NRI, that 7% of the children were obese. Nationally an estimated 12% of children were underweight (ACC/SCN, 1993).

Iraq's average annual sale of oil was more than US\$10 billion, representing 61% of the GDP, before the 1991 Gulf War; after the war, Iraq was able to generate only approximately US\$800 million a year from the smuggling of small quantities of oil to Turkey and Jordan and from the liquidation of hidden foreign accounts and Government gold reserves. In the 1980s, Iraq thus had the foreign exchange to import large quantities of good-quality food, at an average estimated cost of US\$2.5 billion a year, rising to US\$3 billion in years of poor agricultural production. Among the most devastating results of the war and sanctions after 1990 was the abrupt drop in oil revenues to pay for food imports. Subsequently, oil exports authorised under the OFFP remained insufficient to permit a level of food importation similar to that of the 1980's.

In September 1990, the Government introduced a rationing system in order to overcome the deteriorating food situation; this system became the Public Distribution System, on which the population increasingly depended for its survival.

The complex agro-industrial network of intermediaries, food-processing plants, and related physical structures was greatly weakened by destruction in the 1991 war (Aga Khan, 1991). In less than six weeks, 75% of power-generating capacity was rendered inoperable. The reduction in available electric power affected food-processing plants, agricultural research stations, laboratories, food storage facilities, industrial complexes, oil refineries, sewage-pumping stations, and radio and television telecommunications facilities; roads, railroads, and dozens of bridges were destroyed. It became very difficult to transport, process, store, or deliver food.

### *The Growing Crisis*

The decline of the economic apparatus from 1991 to 1996 led the vast majority of Iraqi civilians to a state of extreme deprivation, where basic services operated at a minimal level or not at all. It has been said with reason that the Gulf War and more than six years of economic sanctions erased most of Iraq's social and economic achievements of the previous two decades. As indicated in 1999 by the United Nations Development

## Chapter 1

Programme field office, "the country had experienced a shift from relative affluence to massive poverty" (UNDP, 1999).

Health conditions deteriorated quickly after 1991. Diarrhoeal diseases spread rapidly with the lack of sewage treatment—especially around Baghdad—and the decrease in the quantity and increase in the level of contamination of the water piped into houses. Children got sick more often, and treatment was harder to get. Health centres lost staff, and medications were in increasingly short supply. Food available through the rationing system was monotonous and unappealing, and the cost of buying food in the market grew prohibitive for most.

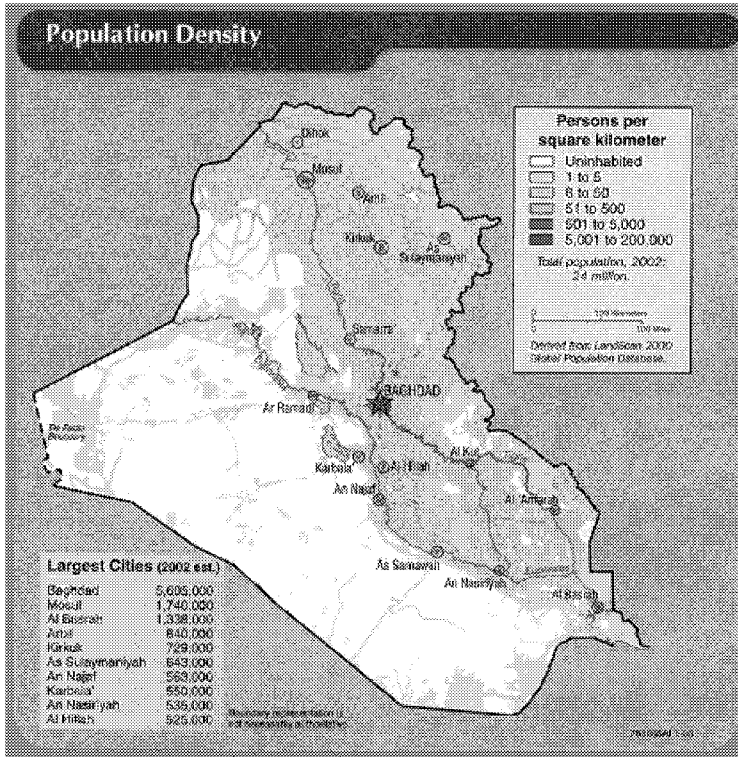
Nevertheless, for some time through the use of reserves and by various other means, some of them illicit (under the terms of the sanctions), barely adequate amounts of food were kept available and the infrastructure was just able to keep functioning.

The Government of Iraq rejected United Nations suggestions for a deal whereby oil sales would be permitted to allow imports of essentials. It did not agree to a "humanitarian programme," to be financed from Iraqi resources but kept under strict UN control, because of national pride and the hope of returning to political normalisation after the withdrawal of Iraqi forces from Kuwait. As the situation deteriorated, the United Nations launched international appeals for contributions to finance emergency health and feeding programmes. Five appeals during the period from January 1992 to March 1996 identified requirements valued at US\$1.4 billion. The international community, however, donated only US\$ 419 million, or 32% of these resources.

By 1994, food supplies were starting to fall again and the infrastructure was wearing out. For households, unemployment and price inflation were driving people to desperate measures. Returning for a moment to consider children born in 1980 – their prospects had changed utterly entering adolescence from that of their childhood. People were forced into begging and some girls into prostitution. The future was bleak indeed for most Iraqis.

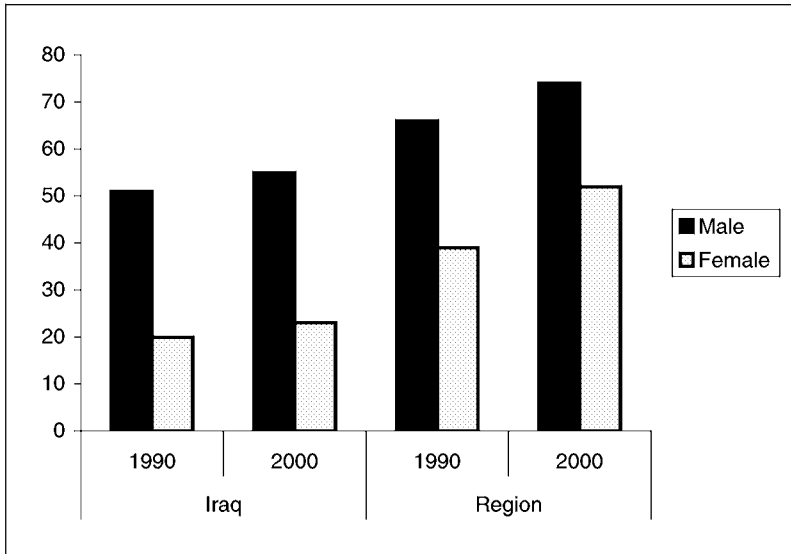
By 1995 the situation was dire. The Government of Iraq agreed to the Security Council's terms for oil sales. It kept the responsibility for procurement of food for the whole country, and for distributing imported goods for humanitarian needs in the 15 governorates of the Centre/South (which constituted the majority of the country) with the United Nations running the Programme in the three Northern governorates. This became known as the Oil-for-Food Programme (OFFP).

**Figure 1.1. Map of population density in Iraq.** Source: University of Texas, 2005.

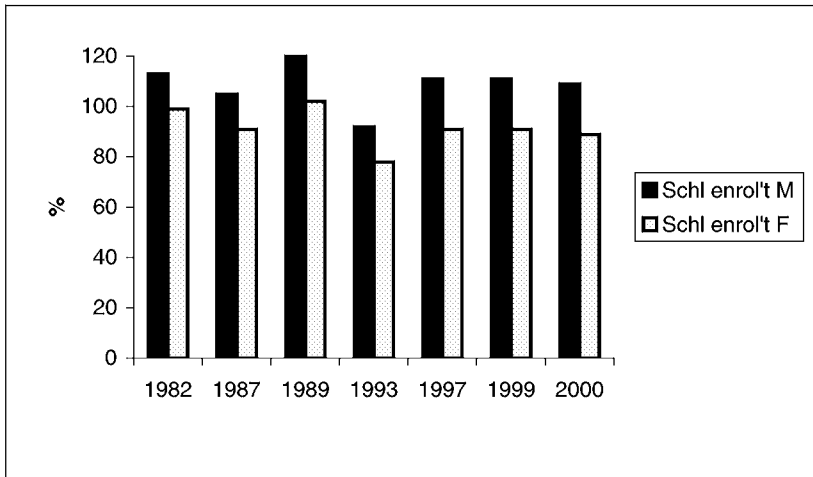


**Figure 1.2. Education in Iraq.** Source: UNICEF, 2005.

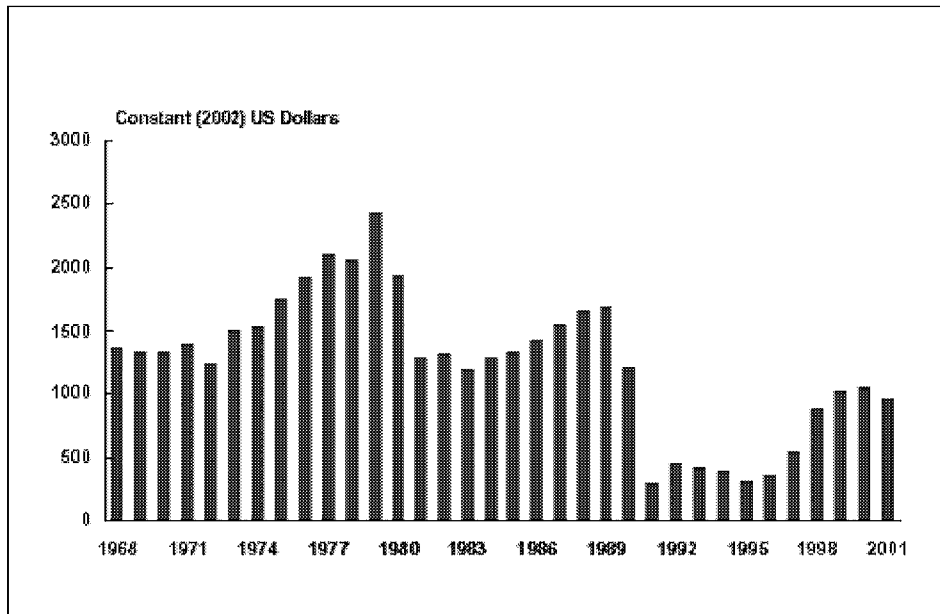
**A. Adult literacy in Iraq and in the Middle East/North Africa Region in 1990 and 2000**



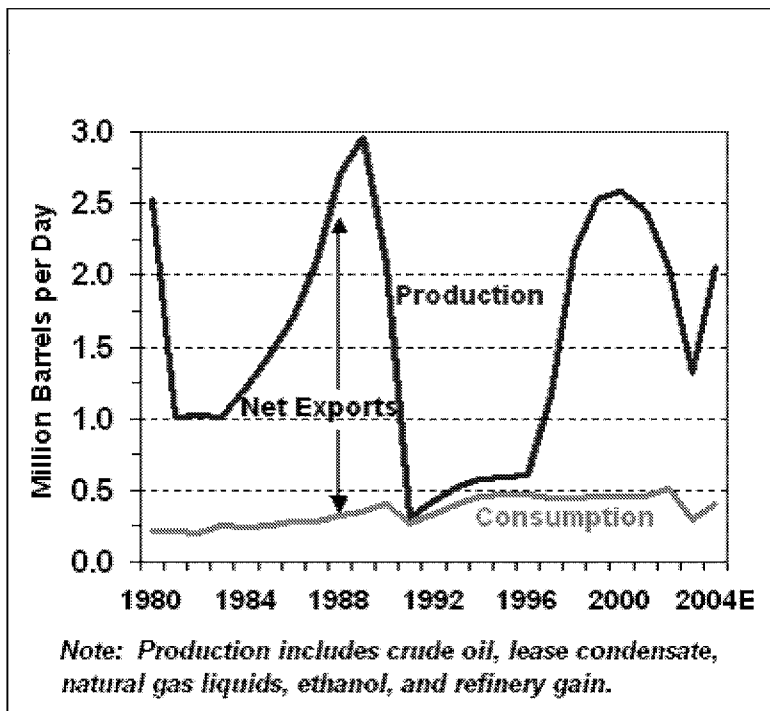
**B. Primary school enrollment in Iraq, 1982–2000**



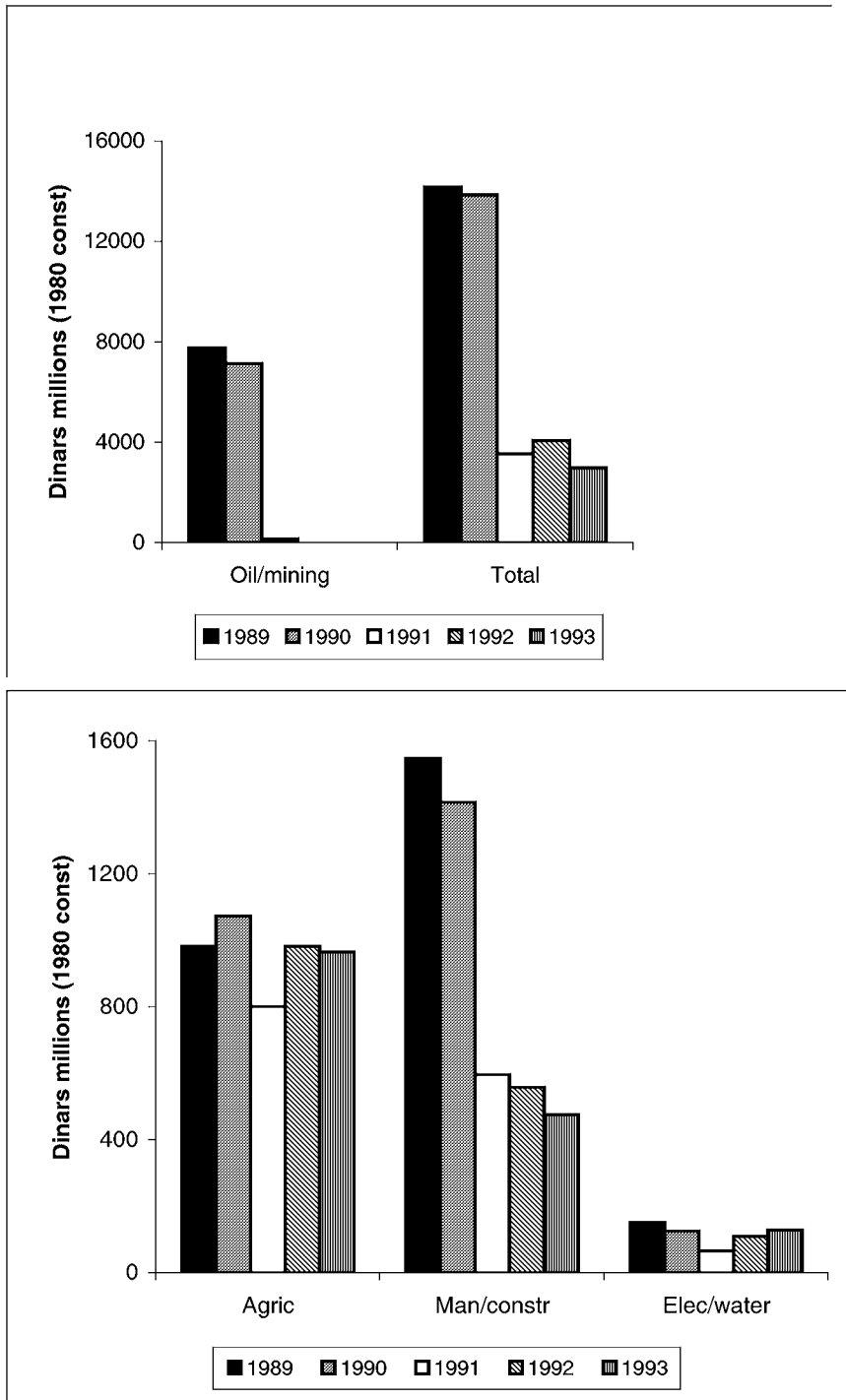
**Figure 1.3. Per capita gross domestic product (GDP) in Iraq, 1968–2001, in 2002 U.S. dollars.** Source: Ministry of Planning, CPA estimates.



**Figure 1.4. Oil production and consumption in Iraq, 1988–2004.** Source: Energy Information Administration. <http://www.eia.doe.gov/emeu/cabs/iraq.html>.



**Figure 1.5. Gross domestic product (GDP) of oil and selected sectors in Iraq, 1989–1993.** Note that scale of top chart is 10 times that of lower. Source: Central Statistical Office of Iraq, 1999.



## **CHAPTER 2. WHAT CHANGED DURING THE OFFP**

### **BACKGROUND**

Sanctions were first imposed in August 1990 by Security Council Resolution 661. Sanctions largely prevented the sale of oil and severely constrained imports, including those of food and medications. The Gulf War of 1991 followed in January and February, and sanctions continued during and after the conflict. In August 1991, a further Security Council Resolution (706) proposed allowing the sale of oil to finance essential imports, but this was rejected by the Government of Iraq. From 1990 to 1996, strict economic sanctions were in force, and the supplies of food and medicine dwindled. In April 1995, further negotiations to allow the sale of oil for essential imports resumed with Security Council Resolution 986; in May 1996, a Memorandum of Understanding was signed between the Government of Iraq and the United Nations, and the Oil-for-Food Programme (OFFP) delivered its first supplies to Iraq in early 1997.

The official objectives of the OFFP from Security Council Resolution 986 (1995) derive from the Security Council statement that it was “concerned by the serious nutritional and health situation ... and convinced of the need as a temporary measure to provide for the humanitarian needs of the Iraqi people.” Excerpts from Security Council Resolution 986 and the ensuing Memorandum of Understanding of May 1996 are in shown in Box 2.1 (United Nations, 1995, 1996).

Some twenty sectors were covered by the OFFP, with food the largest in financial terms. A total of about US\$39 billion was available in 1997–2003 for humanitarian supplies, amounting to an average of about 90 cents per person per day over the six-year period 1997 through 2002 (see Chapter 3). In its initial design the OFFP was defined by the UN Security Council resolution 986 of 14 April 1995 as “a temporary measure” and as “supplemental” to Iraq's own locally available commodities such as food. This chapter describes what changed during OFFP in terms of people’s well-being, particularly access to food, health, and child mortality. These are linked to resources provided through the OFFP, in the context of sanctions and the aftermath of conflicts in the 1980s and 1991, as introduced in Chapter 1. In Chapter 3 the flows of resources are described, with some attempt to link these to changes in humanitarian outcomes.

A summary of the timing of key events is given in Box 2.2 and the phases of the OFFP are given in Box 2.3.

## FOOD AND AGRICULTURAL ECONOMY

Iraq had for years depended on imports for about two-thirds of its food supply, which were normally financed from oil export revenues. Domestic agriculture supplied animal products, fruits, and vegetables, with considerable reliance on irrigation, as rainfall is sparse and unreliable in much of the country. The average family spent only about a third of its budget on food, and only the very poor—and those in political disfavour—had to worry about hunger. The average food availability, measured as the dietary energy supply (DES), was around 3,200 kcal/capita/day, well above the average requirement for food energy to support a moderate level of activity, which was calculated at around 2,200 kcal.

Economic sanctions, from August 1990 on, changed the food supply situation within weeks. Initially, food imports themselves were sanctioned, and removal of sanctions on food was recommended by the United Nations in March 1991 (Ahtisaari, 1991). However, with funds for food importation reduced by the absence of oil revenue, the amount of food available on the market declined rapidly, with associated price inflation. The Government moved quickly to set up in September 1990 a Public Distribution System to provide most of the population with a basic food ration at controlled and initially affordable prices.

The economic situation of the food and agricultural sector is a key factor in determining what happened. Privatisation of agriculture took place during the Iran–Iraq war (1980–1988), encouraged by the Government of Iraq. By the end of 1989, the total amount of land transferred to the private sector reached 1,180,000 hectares, about 15% of the total arable land of Iraq. State farms and agricultural cooperatives were gradually closed as their assets were transferred. Most of the transfer contracts dealt with irrigated land in the vicinity of large towns where vegetables and fruits were grown and dairy cows, sheep, and poultry were raised. These enterprises had much higher profit margins than cereal farming and attracted numerous investors both from Iraq and from outside the country.

Privatisation of the agricultural sector brought favouritism in the use of public resources such as irrigation water, state supplies of fertilisers and seed, state farmland, and state machinery. Members of the extended family of Saddam Hussein and their associates were among the most prominent beneficiaries. They developed new networks of imports from Lebanon, Syria, and Turkey. The institution of the PDS in 1990 in response to sanctions and later the OFFP led to extended control by the state over most of the channels of food distribution. This was a reversal of the trends observed in the late 1980s that had seen a progressive withdrawal of state ownership and involvement in the agricultural and food sectors.

When the OFFP was instituted in 1996–1967, numerous private economic activities had been affected so severely by sanctions from 1990 to 1996 that their businesses had been run down, and restarting these was very problematic. For the food industries, importing the necessary materials became so difficult and complicated under sanctions that cooperation with outside partners was often eliminated. On the other hand, the situation



forced a sizeable fraction of the unemployed to return to agricultural production: the percentage of the workforce employed by the agricultural sector was estimated as 31% in 1975, 30% in 1977, 12% in 1987, 20% in 1990, and 40% in 1996 (FAO/WFP, 2003). The proportion of the population employed in agriculture thus doubled between 1990 and 1996, as other jobs became scarce.

Both the PDS and the OFFP indirectly encouraged local agricultural production of those foods not included in the ration (mainly fruits and vegetables, and animal products) because of the limited diversity of the food basket supplied. They also contributed to a flourishing "parallel" food market with an unprecedented increase in food prices (see below). On the other hand, the system led to severe disincentives to the production of cereals and other large-scale crops, largely because domestic procurement of imported food commodities was not permitted with the use of OFFP funds.

The OFFP did not directly support employment, even though unemployment was among the largest of the country's humanitarian problems. This has parallels with programmes in refugee situations that provide handouts and do not address the need (and people's capacity) for providing schools, jobs, etc. Among the significant negative effects of the policy disallowing use of OFFP funds for local food procurement<sup>1</sup> was a missed opportunity to support employment. The alternative to fostering local production of food, rather than reliance only on imports for staples, would have been to redevelop agriculture, strengthen livelihoods and employment, and move away from reliance on only rationed food distribution.

### **Food Prices and Rations, 1990–1996**

The prices of basic foodstuffs rose phenomenally after 1990, as shown in Fig. 2.1. The price of wheat flour in August 1995 was about 33 times the price in 1993 and more than 11,000 times the prewar price. Compared with prices before the 1991 war, the prices of most food items on the open market were several hundred times higher. Numerous food items were sold on the open market at prices that were beyond the means of most salaried people (Brun, 1991, FAO, 1995), let alone people in the lowest economic groups. Both from recorded data and from anecdotal evidence, it is clear that a gradual but massive decline occurred in the ability of the food system to supply an acceptable diet at an affordable price. The estimated percentage of family income spent on food was 60% in 1993. (FAO, 2002, 2003a).

The ration from the PDS provided about 1,400 kcal/capita/day in the early 1990s (Fig. 2.2) at a price that was fixed at a low level of approximately 250 dinars/capita/month. But in addition, families needed to buy about the same amount of food on the market to get enough calories and to provide dietary quality above that of the staple foods in the PDS

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<sup>1</sup> Security Council Resolution 1284 (1999) requested the Secretary-General to "make the necessary arrangements, subject to Security Council approval, to allow funds ... to be used for the purchase of locally produced goods and to meet the costs for essential civilian needs ..." No data on this use of funds for local purchase were found in the database available to the Working Group. The impression is that such use of funds was not extensive.

ration. According to the FAO 1995 report: “As a result of this hyperinflation, a monthly food basket for a family of six—providing 3,000 kilocalories per person per day—which cost only 100 dinars in July 1990, cost nearly 2,500 dinars in January 1993, and almost 200,000 dinars in July 1995” (FAO 1995). The rapid increase in price of an Iraqi food basket compared with the negligible rise in monthly salary levels became dramatic. “Even taking into account the provision of government food rations, a family of six would still need approximately 125,000 dinars monthly to purchase the shortfall in food. The average monthly income in July 1995 was approximately 3,000 to 5,000 dinars. Although only a nominal fee of ID 250 (US 12 cents) per person was paid to the Government of Iraq for the ration, for those who were too poor to supplement the ration from other sources, nutritional problems continued and worsened (FAO/WFP, 2000).

For the very poor, survival depended mainly on wheat flour and bread, which apparently remained available at very low prices throughout. Some people are said to have lived on little else for extended periods. Although the ration allocation did not provide enough food energy to live on, additional quantities of rationed commodities, such as wheat flour, could be obtained at low prices, presumably because some people sold their allocations. Thus, the reason that hardly anyone actually starved, in the face of quite unaffordable food, seems to be that wheat flour remained available to almost anyone. Living by bread alone, however, is not feasible in the long run for anyone, and not in the short term for babies and young children.

It was estimated that about 10% of the population was close to the Government and well taken care of and that about 30% had enough of their own resources to cope. This left 60% heavily dependent on the food ration for their livelihood.

In 1988, according to the exchange rate of the dinar on the free market, the average monthly per capita income was estimated at US\$340. As a result of devaluation, the average monthly per capita income fell to US\$65 in 1991 and to US\$ 44 in 1992. At that time, the poverty line for Iraq, according to World Bank indicators, was at US\$100 per capita per month, and therefore most Iraqi families did not earn enough income to purchase an adequate diet. A large proportion were far below the poverty line and sold personal assets to meet the basic needs of their families.

The average wages increased (in local currency terms) several times between 1991 and 1996 and again between 1996 and 2003, which to a limited extent offset the decline in the purchasing power of households. But these increments were nowhere near sufficient to keep pace with the spectacular inflation. In 1993, for example, the average monthly wages for civil servants ranged from 2000 to 5000 dinars. This was already a two- to three-fold increase from the August 1990 levels, but at the same time, Iraq’s food price index increased nearly 75-fold.

### **Security Council Resolution 986 (1995) and the OFFP (1996–2003)**

The Government of Iraq agreed to Security Council Resolution 986, whereby certain levels of oil exports would be permitted and the revenue used for imported supplies, on

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14 April 1995. The Memorandum of Understanding was signed in May 1996, ending years of negotiations. It is widely thought that this followed the realisation that the regime had exhausted its resources, that food supplies were almost depleted in state warehouses, and that social unrest had reached a level that threatened the survival of the regime itself. In 1995–1996, it must have become apparent to the Iraqi authorities that the technical and financial burden of sustaining the Government system of food rations could no longer be supported from existing resources. In the food sector alone, reduced availability of grain and the cost of the food basket in foreign exchange made it increasingly difficult for the Government to maintain the rations.

Although the UN sanctions were intended to force the Government of Iraq to comply with demands, the Security Council accepted the turnaround in the Government's position and reached a deal similar to that put forward some five years earlier. The Government's public position itself shifted from defiance in the face of international sanctions to highlighting their humanitarian consequences. This shift should be recognised in viewing the information at this time and its changing official interpretation (e.g., in relation to mortality estimates), as discussed later.

The Security Council had permitted food imports to resume in April 1991, but the flow of food did not increase substantially until after OFFP imports started, in 1997. Before that, imports were constrained not only by finance but also by the extensive destruction of infrastructure (such as roads, railroads, trucks, and processing plants), by the exodus of numerous participants in running the food economy, and by the collapse of many private and public enterprises. Sanctions had not only prevented new imports, but also caused millions of dollars worth of supplies (ordered and paid for before the Gulf War) to be cancelled or delayed severely. In spite of sanctions, a limited amount of postwar reconstruction took place as early as 1991 to repair some power plants, sewage stations, and water pumping stations in major cities.

The Food and Agriculture Organisation (FAO) estimated that ID 270 billion plus US\$258 million would be required to maintain rations in 1995–1996 at the previous level (FAO 1995). Even with its distribution shortfalls and the inadequacies of the food distributed under the PDS, the continuation of some form of Government food-rationing system remained the key to preventing widespread hunger and malnutrition among the civilian population (FAO 1995). The lack of Government funds imperilled the system of food rationing, and this consideration presumably contributed to the agreement that was reached in April 1995 leading to the OFFP.

## **Impact of the OFFP on Food Availability**

### ***Pre-OFFP Food Availability***

Estimates of food availability (Fig. 2.2) show that the DES fell to about 2500 kcal/capita/day in 1991, a level sustained through 1992 and 1993. This availability is still about adequate on average, but distribution was unlikely to have been very equitable or according to need, and some households undoubtedly began to experience shortages.

After 1991, an increasing proportion of food, reaching nearly two-thirds by 1993, was distributed through the PDS (FAO, 2005). The routing of food from imports and domestic production is described in Section II of this Report, also distinguishing cereals, which typically supplied 60% or so of the DES, from non-cereals (FAO, 2005). The calculations of food production and supply are those conventionally used for the FAO Food Balance Sheet procedures, in which the amounts of food used for seed or animal feed or wasted are subtracted from the amount of production and imports. The largest of these amounts is accounted for by food used for local animal production, and when domestic food production is low, imported food may be used for animals (shown as negative supply domestically later, e.g., Table 4.1). The remaining supply is used as an estimate of food consumption, called Dietary Energy Supply (DES) in kcal/capita/day; the RDA is approximately comparable to this figure.

By 1994 (FAO, 2005), domestic production and imports were both lessening, and the overall daily per capita food supply fell to 2,000 kcal and to still lower levels in 1995–1996 (FAO, 2005; FAO/WFP, 2000, 2003) (Fig. 2.2). These levels are too low to be compatible with adequate nutrition. Even with perfect distribution, they would not meet the minimum requirement (for moderate activity) of about 2,200 kcal/capita/day. Less than 2,000 kcal/capita/day is more typical of a drought-affected country in Sub-Saharan Africa and is associated with extensive and rising malnutrition. By this time a large proportion of household income—which itself was drastically reduced—was being spent on food. The PDS ration fell to 1,100 kcal/capita/day by 1995. Much of the gap was supplied by illegal trade and sold at exorbitant prices.

### ***From 1996 to 1999***

The OFFP began to deliver food resources in early 1997. Food availability increased in 1997 back to 1991-3 levels (Fig. 2.2) (FAO/WFP, 2000; FAO/WFP, 2003) and to nearly 3,000 kcal by 1998 (FAO, 2005; WFP, 2005). The new food resources were distributed mainly through the PDS. The equity of distribution cannot be judged from the data, but anecdotal reports suggest that Government employees and others favored by the regime received double rations, or at least increased access. It has been widely reported that the PDS continued to be used as a means of controlling the population.

The levels of the rations available in 1996 prior to OFFP (Table 2.1) were about half those available as subsidized commodities in 1989: for example, 7 kg of wheat/capita/month compared with 15 kg/capita/month; 1.2 kg rice compared to 3.3 kg.

## Chapter 2

The levels increased with OFFP and by 1999 were nearer those of 1989 – including 9 kg wheat flour and 3 kg rice. Still, the amount of wheat in the 1999 ration did not reach the 1989 level, whereas the quantities of rice, vegetable oil, and milk powder were restored to about the 1989 levels.

In the 1980s, Iraqis enjoyed a fairly large choice of subsidised foods, including chicken, fish, red meat, cheese, and vegetables, as well as other basic commodities. The rationing system introduced in 1990 by the Government of Iraq which continued with the initiation of the OFFP in 1997, covered only the six most basic foods (Table 2.1): wheat flour, rice, sugar, tea, cooking oil, and children’s powdered milk. It also supplied soap and washing powder. However, by 1996 the per capita quantities of these commodities in the rations were significantly less than had been consumed previously. However, the OFFP did not reinstate the subsidies to restore the accessibility of poultry, red meat, fish, vegetables, and fruits to consumers. It was only after 1999 that the OFFP, in part through FAO technical assistance, was able to increase national production of eggs and poultry markedly enough to bring prices down and supply the local markets.

Together with the Ministry for Trade, WFP and UNOHCI calculated every semester the total amount of food to import for distribution to a population estimated at about 20 million at the beginning of the OFFP and increasing gradually to about 23 million. On the other hand, only about 60% to 70% of the population depended totally on food distribution, and the remaining 30% to 40% collected their allotted rations only in part or infrequently or not at all, as they had other resources or benefited from different supply channels from the Baath Party. WFP could verify, through hundreds of observers, that almost all the population had access to a food basket at an affordable price. It could not verify that the total volume of food delivered for the Centre/South corresponded to the actual population in the absence of an official Census at that time (but see footnote 7 in section on “Child Mortality,” below). An unknown number of “rations,” perhaps as much as or more than a million, represented a large volume of food actually delivered by WFP to the Government of Iraq but used by the Baath party for its own needs.<sup>2</sup>

OFFP food distribution was reported as incomplete and erratic, “covering about 80% of the planned ration in the first half of 1997” according to the 2000 FAO Mission (FAO/WFP, 2000). The Mission further noted that the monthly distributions from mid-1997 to phase VII “improved to cover about 95% of the target,” yet “despite improvements in performance covering the Government of Iraq monthly requirements, food basket targets were only met in 6 out of the 38 monthly distribution cycles. In fact resource allocation was only adequate during DP VI due to an increase in oil revenue as a result of increasing oil prices” (FAO/WFP, 2000). According to the Mission, the reasons for the shortfall included stalled contract submission on the part of the Government of Iraq, as well as “delayed processing of contracts by the United Nations and untimely delivery of goods by suppliers to Iraq” (FAO/WFP, 2000).

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<sup>2</sup> Discussions with Hans von Sponeck and Jutta Burckhardt, head of the WFP in Iraq.

For this particular calculation, the lack of distributional data does not completely obscure the interpretation. With the OFFP food imports, the overall availability of food energy started to exceed requirements by 1997 (Fig. 2.2), and most people probably began to get nearly enough food. This level continued, on average and despite increased economic difficulties and severe drought, up to 2003. But the diet remained very monotonous. We have testimonies indicating that more than half of the population ate mostly bread because wheat flour remained always accessible in sufficient quantity, in contrast to most other foods.

It was estimated that about 5% to 10% of the population was close to the Baath Party and well taken care of and that about 20% to 30% had additional resources of their own beyond the OFFP food basket to cope. This left 70% to 60% almost totally dependent on the food ration for their livelihood. In addition, on numerous occasions delegates from the predominantly Kurdish areas complained that the Government of Iraq was delivering spoiled or contaminated food to the northern governorates. However, this was investigated by WFP and found to be of minor significance in view of the very large volume of food delivered in perfect condition and of identical quality for the Northern and Central/Southern governorates.

### ***Drought in 1999-2003***

Although the national average daily per capita food supply was sustained at nearly 3000 kcal throughout 1997–2003, domestic agriculture declined drastically during the three crop years of 1999/2000–2002/3 (Fig. 2.3, which shows estimates of net production of cereals and non-cereals). This decline probably caused segments of the population that were more dependent on farming to plunge further into poverty and hunger, followed by a deterioration in the quality of the diet, as the imported ration under the OFFP was restricted to a few commodities designed primarily to supply kilocalories, and local production and trading was expected to provide diversity and dietary quality. The collapse in domestic food production is ascribed to a combination of severe drought and deterioration of agricultural productive capacity (see Chapter 4), to which Iraqi agriculture was particularly vulnerable, as it relies heavily on irrigation and inputs such as fertiliser. The inability to keep equipment powered up and in working order, which was due largely to sanctions, plus the drought, which was described at the time as leading to the “lowest river levels since recording began in the 1930’s” (FAO, 1999) had a devastating effect (Figs. 2.3 and 2.4). Thus, the OFFP was required to fill a large gap during this period. The programme responded, becoming the bulwark of the Iraqi food supply by increasing contributions through the PDS (see Chapter 4).

### ***Post-drought to 2003 War***

In 2003, domestic agricultural production appears to have been restored to 1990s levels. Rainfall was back to normal, but with the disruptions of the 2003 Gulf War, beginning in March, it would be surprising if repairs to equipment had been completed in time for the harvests, which are mostly in the middle of the year. (Data on areas planted are given in Chapter 4.) This suggests that the drought, more than sanctions alone, was responsible

for the low production in 2000–2002; and better rainfall more than repair to infrastructure gave higher production in 2003.

The prices of staple foods began to fall as soon as supplies financed by the OFFP started to flow (Fig. 2.1). The price of wheat, for example, fell by nearly 50% between mid-1995 and mid-1997, and the prices of other imported commodities, such as vegetable oil, also fell. This increase in affordability of food (although prices were still very high compared with earnings) is in line with the increase in consumption. Interestingly, domestic products such as meat and eggs (from the available data) showed virtually no drop in price, as imports did not cover these, and there was little support for domestic production through OFFP. No doubt these continued to be unaffordable for most households; fruit and vegetables are other such items, for which no comparable data are available. The price of chicken declined by about half by 1999 when OFFP goods reactivated the poultry industry.

### *How Reliable Are These Findings?*

The increase in the food supply from 1996/7 to 2003 is a major impact of the OFFP. How sensitive is this conclusion to doubts about the data so far used? The DES levels prior to 1990 were estimated with no particular reason for exaggeration, and have not been questioned (as far as we know): Iraq at that time had a good food supply (see Chapter 4; crop production may be systematically underestimated as based on sales to government, but this bias is thought to be constant through time). Moreover, the supply levels once the OFFP started in 1996/97 were closely watched (if not really measured), and again no reasons have been put forward to doubt their general relation to reality.

The least well-known period is 1991–1995/6 ( although FAO missions made periodic assessments during this period; see Chapter 4), when the Government of Iraq was expecting that putting a brave face on the difficulties might encourage the view that sanctions would not work (while at the same time blaming the United Nations for increased child deaths). Food supplies were not reliably or independently measured; but any distortion was probably in the direction of minimising the effects of sanctions, until the Government's hand was forced by imminent severe food shortages in 1995/6. The estimated DES of around 2000 kcal in 1995 is the base from which the DES was increased by the OFFP, and represents the probable counterfactual continuing situation had the OFFP not been implemented. Thus the apparent impact of the OFFP depends on this pre-OFFP estimate. But we have come across no reason—from statistics or anecdotal reports—to think that this is in fact an underestimate of the actual food supply in 1995–1996. Moreover, the food supply data are broadly consistent with the nutritional data discussed later.

### **Background to Agriculture**

Iraq has 11.1 million ha of land that is classified as suitable for cultivation (27% of the total land area of 43.3 million ha) (Box 2.3). Of this 11.1 million ha, 4.4 million ha (40%)

are considered “highly suitable” and 4.7 million ha (42%) are considered “moderately suitable,” leaving 2 million ha (18%) “less suitable” (FAO/WFP, 2000). Half of this cultivable land is rain-fed and the rest is irrigable (FAO/WFP, 2000). Abundant water resources from the Tigris and Euphrates rivers provide most of the irrigation water (44 to 77 billion m<sup>3</sup>, depending on the river levels) (FAO/WFP, 2000).

Rain-fed agriculture is concentrated in the three northern governorates of Dohuk, Erbil, and Suleimaniya. Irrigated systems are found mostly in the Centre and South regions, particularly between the Tigris and Euphrates rivers from Baghdad to Basra, representing 40% of the total cultivable land and providing 70% of domestic agricultural production. The main crops are wheat and barley, which are sown in October and November and harvested in May and June. Perennial crops (fruits, dates, and nuts) cover some 340,000 ha, while summer crops (cotton and sunflowers) fill the balance of 20%. Both the rain-fed and the irrigated agricultural sectors are characterised by a land-tenure system that is composed of individual growers and sharecroppers, small owner-operators, and large agribusiness leaseholders (FAO/WFP, 2003).

Agriculture was hit in different ways, depending on the product, by the 1990 war and by sanctions. Production estimates for cereals, fruits and vegetables, and livestock are summarised in Fig. 2.4. Imports from the World Food Programme (WFP) before 1996, and under the OFFP after that, provided mainly wheat flour, rice, sugar, beans, and vegetable oil, thus compensating for shortfalls in staple foods, but not in fruits, vegetables, and animal products.

Overall cereal production remained relatively steady at more than 3 million metric tons through 1993, but then it started to fall, reaching 2.2 million metric tons in 1997. Cereal production was badly affected in the 2000 drought, reaching only 0.8 million metric tons in that year. For guidance, in poor countries where cereals are the staple and production is used for human consumption (not animal feed), a rule-of-thumb is that about 160 kg/capita/year of cereals, supplying about two-thirds of total kilocalories, is just adequate; 3 million metric tons in Iraq represents around 150 kg/capita/year (but some was used for animal feed). In the early 1990s, this domestic cereal production contributed around one-third of the food energy supply. The falling production after 1993 was due to running down of agricultural equipment, lack of inputs such as fertiliser, and shortage of power to operate pumps. The production facilities for fertiliser had been destroyed, spare parts could not be imported, and supplies of the chemical ingredients were limited. The food economy in Iraq, in which 70% of food was normally imported, was well developed. Domestic cereal production was used to a considerable extent for animal production, which itself may have provided a temporary buffer when imports were restricted, but these restricted imports also hit the animal sector hard.

In the light of the decline in imports under UN sanctions, the Government of Iraq, starting in 1990, took steps to increase local production of food by stimulating the agricultural sector. This effort included repairs to agricultural infrastructure, a ban on the manufacture of any products that used sugar, a virtual shutdown of food industry production (except for pickles and date products), and an increase in total crop plantings.



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The Government of Iraq gave farmers increased incentive with fixed cereal procurement prices at high levels, low-interest loans, cheap rent rates on state-owned land, and increased fertiliser supplies. As a result, cereal production increased to 3.45 million metric tons in 1990. Unfortunately, the situation was unsustainable, since inputs crucial to the agriculture sector were largely unavailable under UN sanctions, and by 1995/96 cereal production had declined to 2.4 million metric tons. In the 1998–1999 crop season, drought conditions began, which resulted in a further reduction in planted area and yield, and the already dire situation for domestic production of cereals was exacerbated. Drought continued through most of the 1999/2000 crop season, and as a result of this, combined with an inadequate supply of essential agricultural inputs, cereal production continued to fall. By 2000/01, domestic production of cereal was at 0.79 million metric tons. This downward trend slowed from 2001 to 2003 and reversed in 2003/04, when cereal production was estimated at 4.1 million tons despite the war in Iraq. This increase may well have been more than just post-drought recovery, and may be attributable to OFFP-supported inputs (FAO, 1995; FAO/WFP, 2000, 2003).

Vegetable production followed a similar pattern to cereal production, first being maintained, then falling as agriculture ran into increasing difficulties around 1995, and dropping disastrously with the drought in 1999/2000. Fruit production was estimated to have been relatively less affected, running at around 1.3 million metric tons for most of the period (FAO, 1995; FAO/WFP, 2000, 2003).

Livestock numbers were among the first casualties after the 1991 war. The Aga Khan mission in 1991, soon after the war, flagged the issue:

Lack of feed, aggravated by the diversion of barley to food use, and unavailability of veterinary drugs have resulted in increased mortality and slaughter rates. Moreover attractive prices across the borders have encouraged migration of cattle particularly sheep and goats, to the neighboring countries, mainly to Saudi Arabia and Turkey. Large flocks were also taken across the border by Iraqi refugees during the civil strife. (Aga Khan, 1991)

Livestock numbers dropped by a factor of three from 16 million head in 1990 to 5 million in 1991. The numbers stayed low, increasing slowly, and did not reach the 1990 level again until 2003.

Fish and poultry production fared worse. The poultry industry essentially disappeared: an FAO mission noted that no large-scale poultry production facilities were functioning by 1995, and that what remained of previous projects were “now just empty compounds with some remains of equipment and machinery scattered around” (FAO, 1995). At the same time, fish production (from the sea and fresh water) had reached very low levels.

In effect, sanctions, coming on top of the destruction of infrastructure from the bombing in the first Gulf War, took about four years to bring the population to the brink of starvation. The people and the food supply system showed considerable resilience, gained at the price of a diet restricted in quantity and much poorer in quality, diversity, and palatability. But in the end, by 1995, neither domestic production nor the circuitous

means of importation could any longer put off the gathering danger of a massive food crisis.

### **Impact of the OFFP on the Agricultural Sector**

We need to differentiate between the effects on agriculture caused by war damage, sanctions, and OFFP resources. OFFP resources were only allowed to contribute gradually to the restoration of agricultural production. Sanctions caused severe shortages of fertilisers, seeds, pesticides, and spare parts for water pumps, tractors, ploughing equipment, harvesting equipment, and food-processing equipment. These shortages were only partially made up for by the OFFP. The OFFP was unable to correct for some severe effects of the 1991 War, such as the extensive disruption of transportation and markets; the destruction of electric power stations and supply networks for gas and oil fuel necessary for irrigation pumps, refrigeration chambers, and processing plants; and the displacement of large segments of the population, including hundreds of thousands of migrant agricultural workers such as the Egyptian farm workers who returned to Egypt. The partial destruction of the irrigation system and the introduction of the OFFP accelerated the withdrawal of the Government from agriculture. The supply of pesticides and herbicides during the operation of the OFFP remained at less than 10% of the needs in the Centre/South. By contrast, in Northern Iraq the programme had a more positive impact, even though the free distribution of wheat flour had a negative effect on the local wheat growers by depressing market prices.

In the livestock sector, an outbreak of foot-and-mouth disease in 1998 resulting from a lack of veterinary care affected approximately one million cattle and sheep, causing high mortality. Iraqi authorities reported that the laboratory producing the vaccine was forced to halt its activities when the United Nations Special Commission (UNSCOM) destroyed its equipment, although UNSCOM contested this. The FAO pointed out that even if sufficient vaccines could have been made available, the necessary trucks and cold storage units required to contain the spread of the disease were not available (FAO, 1999).

The policy within the OFFP was aimed mainly at short-term provision of food imports distributed through the Public Distribution System. The programme's renewal every six months reflected the absence of priority for rehabilitation of the agricultural sector. Because funds generated from oil sales were not permitted to be used for procurement of domestically produced foods, the OFFP effectively held down Iraqi agriculture by removing incentive. This was done, we understand, to prevent hard currency from becoming available in Iraq. Overall, the OFFP did contribute to a limited extent to agriculture (which by the late 1990s was the source of employment for 40% of the population), but this was not a top priority.

Shifting some resources to domestic production – or providing additional resources for domestic production above those provided for food imports – could have been effective both in providing increased access to food energy (by increasing the food supply and by increasing the income from agriculture) and in improving the (by then) dismal quality of

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the diet. As it was, the policy resulted in increased dependence on the PDS ration for a large proportion of Iraqis (and hence greater Government control of the population).

The lack of price incentives, especially to wheat farmers in the northern governorates, reduced yields. This was compounded by “insufficient quantities of essential inputs” and a “marked deterioration of soils in rain fed areas and an increase in salinity and water logging on irrigated areas” (FAO, 2003). Where the OFFP was able to address the shortfall of basic inputs, this was reported to have “[enhanced] productivity and [increased] cultivated area at the beneficiary level,” although the “overall trend of the decreasing crop yield remained mainly as a result of the incomplete nature of the Programme, where many essential inputs were not included” (FAO, 2003).

In the North, the OFFP nonetheless increased food availability by increasing crop productivity on irrigated and rain-fed lands, and it enhanced land and crop preparation and harvesting (FAO, 2003). Programme activities aided in the rehabilitation of canals, facilitated the lining of irrigation channels and drainage canals, contributed to land reclamation, and enhanced water availability for irrigation and livestock use (UNOIP, 2002). Collection of firewood in the northern governorates increased as a result of the lack of fuel for cooking, leading to deforestation which ultimately affects the agricultural base.

Throughout the country, the OFFP contributed to the rehabilitation and construction of grain silos, which resulted in reduced storage and handling losses. Rehabilitation of machinery and enhancement of power supplies by the programme resulted in improved milling operations. The programme contributed some direct assistance in the Centre/South by providing agricultural machinery parts and equipment; cleaning and building canals, irrigation, and drainage systems; and enhancing water availability for livestock (UNOIP, 2002). Specifically, in the Centre/South, OFFP resources played a large role in the doubling of poultry meat and egg production between 1995 and 2000.

In sum, the resources from the OFFP were far from adequate to rehabilitate, or even to maintain, agricultural production. Those that were available appear to have been used reasonably effectively for repair and maintenance of infrastructure, but consumable inputs needed regularly, such as seed, fertiliser, and animal vaccines, were in short supply. These shortages are understood to have resulted in part from the Supervisory Committee of the Security Council (661 Committee) not granting permission to import (placing “holds” on imports), in an interpretation of the applicable Security Council Resolution (these procedures are discussed further in Chapter 3). Other reasons included the failure of the Government of Iraq to follow such procedures in requesting supplies. The population would have benefited from more support for agriculture, both to increase local supply (including much-needed fruits and vegetables) and to generate employment for the increasing numbers of people who depended on agriculture for their livelihood.

The success of the OFFP in meeting the immediate humanitarian needs of the Iraqi population is contrasted with its inadequacy in supporting development or rehabilitation. This reflects the design of the programme as “a temporary measure to ease the

unintended consequences of United Nations sanctions on Iraq's civilian population" (UNOIP, 2002) in the face of long-term and deep-seated problems that resulted from the sanctions and damage from wars.

### **Operational Issues of the OFFP Affecting Food and Agriculture**

The OFFP was never intended to restore prewar infrastructure, diversity, and quality of food supply nor to protect the social and economic fabric of Iraq. It was a system to provide only "the bare necessities for survival," such as can be provided to refugees on a temporary basis. The humanitarian impact of the OFFP was greatly constrained by the design of the programme, as this design from the start included strict limitations on the possible use of resources. For example, the resources could hardly be used for restoring livelihoods, or repairing, still less developing, much crucial infrastructure.

The Sanctions Committee did not provide suppliers and nongovernmental organisations (NGOs) with clear instructions. Most of these groups complained for several years about the absence of published lists of authorised commodities. Many were concerned about incurring a public reprimand by the Security Council itself. As a result, the Sanctions Committee was faced with a long list of requests for clarifications, complaints, and requests of all kinds, which delayed the approval of the authorised commodities. The excessive turnaround time created enormous frustration among most suppliers and encouraged all forms of illegal practices designed to go around the imposed complex procedures.

It has been pointed out that<sup>3</sup> the blocking of humanitarian supplies, identified as such by UNOHCI, by the UN Security Council, out of concern for dual use by Iraq, appears to disregard Article 24(2) of the UN Charter, which explicitly states that the UN Security Council must discharge its duties "in accordance with the Purposes and Principles of the United Nations." The 661 Committee blocked a wide variety of items, ranging from educational materials to equipment for health treatment, health care, electricity and water supply, chemicals, laboratory equipment, generators, chlorine, water purification inputs, and communication equipment, all suspected to be for "dual use." For example, it took over a year to release ambulances on the grounds that they contained (as they should) communication equipment. Thus for over two years there was no access to new ambulances.

Former suppliers to the private sector lacked the basic expertise to negotiate with the OFFP Sanctions Committee. Even in the domain of non-UN humanitarian groups or organisations, most people were unfamiliar with UN restrictions and did not know how and where to apply for required approvals. International NGOs were irritated and discouraged by complex application procedures, long delays, and questionable interpretations of the sanctions regulation by committee members.

Gradual improvement was made, mostly after 1998, in the Sanction Committee's

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<sup>3</sup> Interview with former UN Humanitarian Coordinator in Iraq, Hans von Sponeck, 17 August 2005.

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procedures, and approval of requests was expedited more efficiently. Lists of pre-approved items were published to guide applicants and NGOs.

The absence of a “cash component” was in many respects a major obstacle to the implementation of the OFFP in the South/Centre Governorates. In contrast, in the North some funds were available to hire staff to run the programme. Under the relevant Security Council resolutions the Government of Iraq could not have “direct or indirect access to revenue” raised under resolution 986 (1995). This limitation created difficulties in the distribution of some humanitarian supplies that the Iraqi administration was unable to solve. Given this situation, it was suggested to the Security Council (Amorim, 1999), that a "cash component" for the Centre/South should be established on the basis of plans submitted by Iraq. Aside from other issues, it was argued that this would show increased respect for the legitimate national sovereignty and concerns for dignity of the Iraqi civil services in the negotiation of appropriate arrangements. However, this was not accepted.

Some of the difficulties lay with the Iraqi authorities, who raised all sorts of obstacles and did not respond to requests to the best of their ability. For some groups close to Saddam’s regime, it was not in their interest to see their former import channels replaced by the United Nations–monitored system, which deprived them of their lucrative activities as importers and traders. They had managed to resist the imposition of the UN mandate for five years and did not cooperate willingly.

In assessing the impact of the OFFP, it should be stressed that it was designed in such a way that it was quite easy for the Government of Iraq to organise an elaborate system of corruption. The Government under Saddam Hussein overpriced imports systematically by a flat rate of 10 %, and the importers would return the overcharge to bank accounts controlled by members of the Iraqi Government who were faithfully serving the regime or to members of Saddam’s family. The same group of people imported a very large array of luxury goods that entered the country in breach of the UN sanctions regime. If the OFFP mechanisms for controlling imports had been conceived differently, these pernicious effects might have been avoided.

By creating a new supply system for an entire country, without the means to prevent widespread fraud and severe distortions, the OFFP contributed greatly to the deterioration of the civil functioning of Iraqi society. Privileged groups, through their relationship with Saddam Hussein’s regime, were in many cases able to maintain and in some instances increase their wealth. For example, prominent members of well-to-do Iraqi families owned a number of Iraqi companies installed or represented in Jordan, and their access to foreign currency, which was necessary for commercial imports, made it easier for them to go around the embargo to import a large number of forbidden items. Overall, the result was described by some (e.g., Hoskins, 1997) as contributing to a decline in essential moral values; in the words of a UK House of Commons Select Committee<sup>4</sup>:

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<sup>4</sup> Report of the Select Committee on International Development, of the UK House of Commons, 27 January 2000. <http://www.publications.parliament.uk/pa/cm199900/cmselect/cmintdev/67/6707.htm>.

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The impact of sanctions on governance and social institutions was also described to the Committee, "Official pay is miserably inadequate, forcing most to supplement their income on bribery and corruption right across the establishment. Petty crime and home insecurity were practically unknown prior to sanctions...regrettably prostitution, which is socially unacceptable, has been allowed in by sanctions. Of particular concern to others was the erosion of the professional classes who were being replaced by a new class of "fixers, manipulators, profiteers, people who simply take advantage of the circumstances."

### **The North Compared with the Centre/South**

The North started from a lower level of social development and poorer humanitarian conditions prior to 1990. The region then suffered a 'double embargo' in the first years of the 1990s. Many people were displaced to camps and local political figures were just beginning to initiate local administrative authority. The region did not receive the rations that Baghdad provided to the rest of the country, and at first was cut off from neighbouring countries. Periodic incursions of army troops and internecine fighting among parties in the North kept conditions unsettled.

Conditions deteriorated more rapidly during 1990-1994 in the North than in the Centre/South, under the multiple stresses of national sanctions, lack of access to the rations from Baghdad, the collapse of administrative structures with the pull-out of Baghdad's administration, large scale displacement of the population, and isolation from wary neighboring states. However, social conditions began to improve again in the North by 1995, while they continued to decline in Centre/South. These improvements resulted from a partial opening of borders for trade, development of a local administrative capacity, funding from major powers, and the presence of many NGOs. On average comparing 1991 with 1996 (see later) child nutrition deteriorated more in Centre/South than in the North, where prevalences of malnutrition were static or even improved slightly.

The positive factors for the North were enhanced when additional goods became available on a large scale via the OFFP. Access to OFFP goods was better than in the Centre/South, although this difference was not great. More crucial factors were the ability to plan locally the use of OFFP goods, to supplement OFFP with resources from UN organisations and NGOs, and the improving local economy. While in Centre/South OFFP provided immediate relief, in the North this was mixed with using resources for locally led development.

Other reasons for the better performance—despite a large internally displaced population of approximately 500,000 individuals (compared with 80,000 in the Centre/South) – included, first of all, somewhat higher per capita allocation of OFFP funds (about 15%). In addition, distribution of food and medicine through specialised UN agencies was comparatively more efficient than distribution by the Government, which lacked the "cash component" to hire and pay personnel. Northern borders were also more permeable to embargoed commodities than the rest of the country. The north received

food rations directly under the OFFP, finally overcoming the isolation that had been imposed on them from Baghdad. By the mid-1990s local administration was improving, relations with neighboring countries had been developed and trade became possible. The North used rain-fed agriculture to grow fruits and vegetables that were in demand in the South. International NGOs and UN organisations either administered or assisted to develop the administration of the north by local staff.

OFFP supported better food availability via higher crop productivity on irrigated and rain fed lands in the North, and enhanced land and crop preparation and harvesting ( FAO, 2003, pg. 17-18). Program activities aided in the rehabilitation of canals, facilitated the lining of irrigation channels and drainage canals, contributed to land reclamation, and enhanced water availability for irrigation and livestock use (UNOIP, 2002).

The North was for 1990-96 not provided with a ration from the PDS, so that food was in shorter supply than in the Centre/South where a rationing system had been in force in Southern and Central Iraq since the fall of 1990. No such system existed in the Northern Governorates between April 1991, when the GOI lost control over the area, and the beginning of OFFP. Although some interim programs operated, the major improvement came when WFP food rations were finally distributed starting in 1996-7. OFFP had a less spectacular impact in Central and Southern Iraq, because prior to the resolution's approval the PDS already provided a basic survival diet. Thus OFFP from 1996 onwards probably had a greater impact on food availability and nutrition (see later) in the North.

### **Addressing Specific Social Problems**

One of the weaknesses of the OFPP has been its relative inability to improve the condition of Iraqi women. Because of the two consecutive wars, many women were widows, were the sole wage earners, or had an unemployed husband decommissioned from the army or laid off, and were faced with severe economic hardships.

In contrast to the Northern Governorates, where a number of agencies attempted to promote female education and support (microcredit, handicrafts, household production, etc.), in the Southern Governorates employment remained extremely difficult to find, and more women had to join the informal working sector, selling such things as miscellaneous food items, tea, and vegetables on the streets and in the markets. Selling jewels or other of their personal belongings became very frequent. Forty-eight percent of families surveyed by the International Study Team in 1991 already had incurred heavy debts (Hoskins, 1997). Begging or, in more extreme cases, prostitution developed.

To our knowledge, no programme from any agency of the OFFP was able to address the rising incidence of psychological disorders resulting directly or indirectly from aggravated poverty and the acute shortage of food. Among the families surveyed by the International Study Team in 1991, 60 percent of women interviewed said that they suffered from psychological problems including insomnia, depression, anxiety, persistent headache, weight loss, menstrual irregularity, and inability to breastfeed. The combined

stubbornness of the Iraqi Government and the Security Council in refusing to compromise earlier than 1996 to find an acceptable solution to the deadlock led to severe destitution that was very difficult for the OFFP to deal with.

Considerable numbers of well-trained professionals had no chance to work to their full capacity but had to work at a much lower level than what they were trained for. This also led to “emigration without noise,” people who just quietly left because they could no longer accept this situation. Sanctions and the OFFP combined to create a “hand-out society” and deprive another generation of the opportunity to become responsible national and international citizens of tomorrow; and that might be one of the most serious aspects of it all.

Another impact that the OFFP was unable to correct for has been the severe increase in the inequality of income distribution after 1991. Whereas a new business group emerged as a result of new supply channels (including senior members of the Baath party, former privileged groups with assets outside the country, former businessmen from the upper strata of the civil services, the security forces, and army officers close to Saddam Hussein who benefited from protection by the Government), the majority of the population suffered from a sharp decline in employment and income. During the entire OFFP the Government continued to extend preferential treatment to these powerful groups in the import trade business and those engaged in reconstruction.

Household and Demographic Surveys<sup>5</sup> demonstrated a worsening income distribution between 1988 and 1993. Families at the 25th percentile of income received 8% of all income in 1988. This fell to 6% in 1993. Those at the 50th percentile declined from 36% of all income in 1988 to 31% in 1993, while those at the 75th percentile rose from 58% to 63% of all income. Iraqis on average devoted less than 50% of their income to food in 1988. This rose to an alarmingly high 60% in 1993. The purchasing power of all three income groups declined a great deal in this period. In this five-year period, the purchasing power of above-average income families dropped by half, while those with average incomes declined by two-thirds and those with below-average incomes dropped by three-quarters. The below-average income families essentially lived on the ration alone. Ten years later, this remained largely unchanged, as WFP surveys found that 25% of all families were entirely dependent on the ration.

The OFFP did not address in a satisfactory manner the problem of the “ultra-poor.” Although only a nominal fee of ID 250 (US 12 cents) per person had been paid to the Government of Iraq for the ration, for those who were too poor to supplement the ration from other sources, nutritional problems continued (FAO/WFP, 2000). As noted earlier, according to the 2000 FAO Mission, less than 100% (e.g., 80%) of the planned food distribution coverages were achieved (FAO/WFP, 2000), and most likely the very poor were preferentially excluded.

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<sup>5</sup> <http://www.humanitarianinfo.org/sanctions/handbook/chapter4-3.htm>.



## Conclusions

Overall, the OFFP, starting in 1996–1997, was successful in its efforts to avert a humanitarian crisis, in particular famine. However, the mass suffering, morbidity, and mortality experienced by the people of Iraq, even with the benefit of the OFFP, cannot be denied. In light of the war in 2003 and the ongoing fighting, it is uncertain to what degree the positive impact of the OFFP will be sustained, if it has not already been eroded. Furthermore, the failure of the OFFP to meet the long-term developmental needs of Iraq during the sanctions era may prove to be even more detrimental in these uncertain times than it was in the sanctions period.

The words of the Amorim report from 1999 on this topic seem accurate today:

As a result of the substantial shortfall in oil revenue for the implementation of approved distribution plans, the ‘oil for food’ programme has not been able to achieve fully its objectives. It is recognised by the UN that even if all humanitarian supplies had been provided in a timely manner, the humanitarian programme could admittedly only meet but a small fraction of the priority needs of the Iraqi people. Regardless of the improvements that might be brought about in the implementation of the current humanitarian programme—in terms of approval procedures, better performance by the Iraqi Government, or funding levels—the magnitude of the humanitarian needs is such that they cannot be met within the context of the parameters set forth in resolution 986 (1995) and succeeding resolutions, in particular resolution 1153 (1998). Nor was the programme intended to meet all the needs of the Iraqi people. (Amorim, 1999)

## NUTRITION

### Malnutrition in Young Children

The growth of children is one of the more common and objective measurements available, with implications for both children and the society. If the children are growing well, we may conclude that the situation cannot be too bad; and a society that can look after its children and foster their health and survival is at least secure and able to protect itself. Children could not be adequately protected during the 1991 war and the sanctions, which caused extensive suffering among children. How much was the OFFP was able to counteract this?

Child nutritional status is most often assessed from overall growth, as weight compared to the expected weight for the child’s age, and the percentage of children underweight (or prevalence) is a well-understood indicator (Beaton et al., 1990). Inadequate linear growth, estimated as height for that expected, is also particularly useful since it is only slowly reversed and thus persists; the associated indicator (‘stunting’) is thus more stable and also can allow some interpretation of previous malnutrition (see later). Both underweight and stunting are used here. Rates of change in underweight prevalences have been assessed widely in recent years, so that the changes estimated in Iraq can be compared with experiences in other countries and situations. Wasting or thinness can also provide some information on recent events, but often adds little to conclusions from underweight.

The prevalence of child malnutrition indicated by underweight in Iraq prior to 1990 was around 12% (ACC/SCN, 1993). For comparison, the average prevalence of underweight in the region (Near East and North Africa) was 15% in 1985, 13% in 1990, and 11% in 2000 (ACC/SCN, 1992; Mason et al., 2005). The prevalence of stunting in Iraq in 1990 was around 20%, compared to the region overall, estimated as 25% in 1990 and 21% in 2000 (ACC/SCN, 2004). Thus, child nutrition in Iraq in 1990 was somewhat better than the regional average.

Data from surveys indicate differing patterns of child malnutrition in the North and Centre/South between 1991 and 2002, as illustrated in Fig. 2.5 (the actual prevalences and changes are given in Table 2.2). In the North in 1991, stunting was extensive, with a prevalence of 30%, 10 percentage points (ppts) higher than in the Centre/South, presumably as a result of deprivation in the preceding years. However, in the North stunting decreased from 1991 to 1996, and this improvement continued (or even accelerated) in 1996–2000. In the Centre/South, child malnutrition (as either underweight or stunting) appeared to increase greatly in 1991–1996 – nearly doubling in prevalence – and then improved during OFFP, back to about the 1991 prevalences.

The rate of improvement in underweight during the OFFP was more than –2 ppts/year in the North. In the Centre/South, the estimated prevalence of underweight increased by nearly 3 ppts/year in 1991–1996, and then fell again nearly as rapidly in 1996–2002, at –2.3 ppts/year.

For comparison, an improvement of –0.5 to –1.0 ppts/year in underweight represents good progress: the global (developing country) trend was –0.4 to –0.5 ppts/year in the 1990s, with no region reaching –1.0 (Mason et al., 2005); countries going through a nutrition transition (e.g., Thailand in the 1980s and 1990s) reach –1.5 to –2.5 ppts/yr. Thus, the large improvement rates of around –2.0 ppts/year (in underweight or stunting) are more characteristic of the rehabilitation of transient severe malnutrition—as is seen in refugee situations—than of the normal course of development. Similarly, the increases in stunting and underweight in the Centre/South, both of which increased by 14 ppts in the five years from 1991 through 1995 (i.e., +2.8 ppts/year), were greater than any observed at the national level in recent times (ACC/SCN, 1996; ACC/SCN, 1998; Mason et al., 2005).

Thus there is no other documented example of child nutrition deteriorating this fast in a large population, although it would be expected that droughts and complex emergencies in Sub-Saharan Africa could show a similar pattern (ACC/SCN, 1994). Wasting provides a sign of increased mortality, the relation being strongest with severe wasting (< –3 SD) (Mason, 2002); since the prevalence of moderate wasting increased to 11% in the Centre/South, that of severe wasting may well have exceeded the 1% level associated with increased mortality in these populations. The 1996 pattern of wasting and stunting in the Centre/South (with prevalences of 11% and 32%, respectively) is typical of drought-vulnerable African countries (e.g., Chad, 2000: 11% and 29%; Sudan, 1992/3: 13% and 34%) or failing states (e.g., Uzbekistan, 1996: 12% and 31%), but is not as bad

as that in Yemen (1997: 13% and 52%). In contrast, by 2000–2002, the rates of wasting and stunting in the Centre/South of about 5% and 22% were similar to those of other countries in the region, such as Syria (2000: 4% and 19%) and Egypt (1998: 5% and 21%) (ACC/SCN, 2004).

The data for the period between 2000 and 2002 are less consistent. A drought such as that in 1999–2001 would normally have a negative influence on child nutrition. The rate of stunting appeared to continue to decrease in the North, but in the Centre/South it remained at around 20% and showed no further improvement. On the other hand, the rate of underweight continued to fall, in line with the further decrease in the rate of wasting, which was already low by 2000.

The overall picture is therefore one of greatly worsening child nutrition in the Centre/South from 1991 to 1996, followed by apparently rapid recovery until 2000, after which recovery may well have slowed. In the North, a bad nutritional situation in 1991, in part carried over from earlier years, improved substantially between 1991 and 1996 – in contrast to the Centre/South – and continued to do so until 2000 and possibly until 2002. In the Centre/South, improvement may have slowed or largely ceased by 2002.

### **Using Stunting According to Age Band to Probe Trends**

Trends in child malnutrition may be the most objective measures of changes in the humanitarian situation that we have available. On the surface, they lead to the conclusion that the OFFP had an extensive effect on children and, by implication, more widely on the Iraqi humanitarian situation. Trying to validate the results was thus a priority. Unfortunately, original data were available only for the 2000 survey. Data from other sources are not consistent, with data from sample surveys being mixed with data from health facilities. Diagnostic methods were therefore used to probe further into the likely validity of these conclusions.

Two related approaches were used, based on the usual growth patterns of children in poor environments, in which they tend to fall behind in linear growth at around 6 to 24 months of age and then maintain but not increase this deficit up to 5 years or so (Beaton et al., 1990). The extent of linear growth deficit (called stunting) at 3 to 5 years can be used to reflect what happened around 1 to 2 years of age.

The first method used the relative rates of stunting in age bands of 2 to 3 years, 3 to 4 years, and 4 to 5 years, measured at a single point in time, with the expectation that, if the child nutrition situation was now improving, the prevalence at 4 to 5 years would be greater than that at 2 to 3 years. In other words, children at the age when stunting occurs (up to about 2 years) would be less stunted than the older ones, whose earlier stunting would persist. If the child nutrition was deteriorating, then older children would be relatively less stunted. Examining the relative prevalences of stunting at these ages from 1990 to 2003 did indeed support the view that child nutrition deteriorated from 1991 to 1996, improved from 1996 to 2000, then stayed stable during 2000 to 2003, and these results are described in detail in Chapter 4.

The second related method uses the observed stunting prevalence at different ages as an indicator of what the stunting might have been at the time that an age band was 1 to 2 years of age. For example, the observed prevalence of stunting among 3- to 4-year-olds in 2000 is used as a proxy for the expected stunting of 1- to 2-year-olds in 1998. This is based on the assumption discussed above that stunting occurs at around 1 to 2 years and then persists.

The results of this assessment, shown in Fig. 2.6, closely approximate what we think the changes in child malnutrition actually were on the basis of synthesising from several sources of child nutrition data (see Chapter 4). The rate of stunting increased rapidly between 1990 and 1991 and then again from 1993 to 1994, remaining high through 1996, as indicated in Fig. 2.6. The prevalence then fell quite rapidly in 1996–1997 and continued to fall until 1999. From 1999 through 2000 – the period of drought – the prevalence remained stable. These trends are similar to those already seen in Fig. 2.5 but are derived from a different calculation. The prevalences are not quite comparable between the figures, as Fig. 2.5 gives the average rate of stunting for children 0 to 5 years old, and Fig. 2.6 gives estimates for children 1 to 2 years old (and the rate of stunting is lower at 0 to 2 years).

### **Other Anthropometric Data**

#### ***Body Mass Index***

For adults, the degree of fatness or thinness is usually assessed by calculating the body mass index (BMI) from the weight and height by the formula  $BMI = \text{weight in kilograms} / \text{height in meters squared}$ , with recognised cut-points defining thinness and overweight. No nationally representative estimates of BMI are available for Iraq during 1990 to 2003, but some selected sites were surveyed by FAO missions. In 1993 an FAO mission (FAO and WFP, 1993b) measured a sample of adults in low-income areas of Baghdad. The results showed that 38% of women and 32% of men in this area had BMI values greater than 25, which is considered “at risk of overweight” (BMI 25–29.9) or “overweight” (BMI > 30). Signs of undernutrition were also seen in 6.8% of men and 12.5% of women (BMI < 18.5). In 1997, another FAO mission (FAO/WFP, 1997) found that 25% of young men and 16% of young women (below 26 years) had a BMI less than 18.5, defined as thin and chronically energy deficient. These results are in line with the expectation that nutrition was good up to 1990 and then deteriorated after 1991, but they add little to the child nutritional data.

Overweight has several interpretations. In high- and middle-income countries, it is more prevalent among the poor and is ascribed to high-energy but poor-quality diets coupled with low physical activity. Some reports of a continued high rate of overweight adults in Iraq in the 1990s are therefore not necessarily to be interpreted as showing either inequitable distribution (although this happened) or an adequate (or surplus) food supply; they could reflect the poor-quality diet that was all most people had.

### ***Low Birth Weight***

The proportion of babies born with a birth weight of less than 2.5 kg defines the incidence of low birth weight. In industrialised countries, most low-birth-weight babies are born prematurely but are normally grown in utero (and usually catch up to their expected size), whereas in poor countries the main cause is intrauterine growth retardation, which in turn often results from ill health and malnutrition in the mother during pregnancy. The drawbacks of using low birth weight as an indicator are that it is not readily recalled on survey, and data from health facility records are incomplete and likely to omit the poorest, resulting in underestimation of the rate.

The rate of low birth weight in Iraq in the 1980s was probably around 10%. UNICEF (1990) gives a rate of 9% for 1982–1988, similar to that of Iraq's neighbours. According to Government reports, the rate of low birth weight in Iraqi hospitals around 1990 was about 5%; FAO gave a figure of 4% in 1993 (FAO/WFP, 1993b) reported from Basrah. By the mid-1990s, fewer births occurred in health care facilities; we would therefore normally expect the reported rates to be an underestimate, since usually poorer mothers are less likely to deliver in facilities. The reported rate of low birth weight of 20% for 1995 may therefore indeed indicate a significant increase, but because the selection bias is unknown, this increase must be considered of unknown validity. The 2000 UNICEF MICS (UNICEF/CSOI, 2000) survey report gives an incidence of 12%, but examination of the data indicates that these results are based on reports from only one-third of the sample, with 12% of the respondents reporting *exactly* 2.5 kg; an estimate of 16% seems the most plausible. The World Food Programme stated that “the incidence of Low Birth Weight increased from 4.5% in 1990 to 23.96 (*sic*) in 2002”(FAO/WFP, 2003). Overall, an increase in the rate of low birth weight is very likely, and there are indications that this occurred; but again the data do not really add much to those on child nutritional status.

### **Micronutrient Deficiencies**

The major part of the diet from the PDS was cereals and other staples (such as legumes), with decreasing amounts of fruits, vegetables, and animal products available through the market. The poor quality of the diet can be expected to have led progressively to deficiencies in a number of essential micronutrients. Those of most concern in the diets of people in poor countries, particularly in urban areas, are deficiencies of vitamin A and iron. Iodine deficiency is common, depending on the ecology and on whether the salt is iodised. However, the dependence on a ration of restricted diversity suggests that refugee populations are a parallel to the Iraqi population, and in refugee populations deficiencies that had almost disappeared have returned – notably deficiencies of vitamin C (causing scurvy), niacin (causing pellagra), thiamine (causing beri-beri), and B vitamins in general, particularly riboflavin; among these diseases, the risk of scurvy is the most likely.

*Vitamin A deficiency* was not common in Iraq in the 1980s. Some anecdotal reports of eye signs were recorded in the early 1990s, and a survey suggested a significant prevalence of night-blindness. In the 2000 MICS survey (UNICEF/CSOI, 2001), only

0.6% of children were reported to have difficulty seeing at night. UNICEF and the Ministry of Health ran a vitamin A supplementation programme, with coverages of 45% reported in the 1996 MICS survey (CSOI, 1996, 1997) and 36% in the 2000 MICS survey (UNICEF/CSOI, 2001). Vegetable oil supplied by the World Food Programme was intended to be fortified with vitamin A, which presumably contributed to preventing vitamin A deficiency.

*Iron deficiency* is very likely to have been widespread, but there are virtually no data. The prevalence of anaemia among women in countries of the region tends to be around 30%, and in Iraq the prevalence must have been higher. A diet low in animal products, fruits, and vegetables is exactly that which would be predicted to lead to iron deficiency, of which anaemia is one consequence. Other consequences include behavioural changes and impaired cognitive development in children. WFP reported rates of anaemia among pregnant women of 51% in 1995 and 60% in 1999, and such high prevalences are credible under the circumstances. Anaemia is often neglected, in part because it is not obvious. But anaemia was very possibly the worst nutritional deficiency—certainly the most extensive and maybe the most debilitating—resulting from the food restrictions during the entire period, and one which the OFFP is unlikely to have had any impact in preventing or reversing.

*Iodine deficiency* is endemic in Iraq, and the extent of iodine deficiency depends largely on access to iodised salt, especially when fish becomes scarce, as it did after 1990. Iodised salt should have been available from imports up to 1990, but its availability would have been expected to decline from 1990 to 1995/6; availability should have increased again with OFFP supplies. Salt iodisation levels are readily tested in household surveys and are routinely included in UNICEF MICS. The 1996 MICS survey (CSOI, 1996, 1997) reported that only 10% of households had adequately iodised salt; the percentage increased to 36% in the 2000 MICS survey. Even 36% is a quite inadequate level—for example, 75% of households in the region were covered by 1995 (UNICEF, 1997)—and the risk of iodine-deficiency disorders is therefore extensive, with potentially severe consequences. Specifically, iodine deficiency is the most common cause of preventable mental retardation; the retardation develops when the unborn child is exposed to iodine deficiency, and it is irreversible. Lack of intellectual vigour and productivity, which is more reversible with increasing age, is another feature of iodine-deficiency disorders. The data suggest that the OFFP contributed to reducing the risk of iodine-deficiency disorders, but the risk was still far higher than that in neighbouring countries.

Given how technically straightforward it is to prevent iodine-deficiency disorders (which has been achieved for nearly one billion people in the developing world), this story must also be seen as a partial failure of the international effort, with some potentially irreversible results.

*Scurvy and other re-emerging vitamin deficiencies.* Aside from reports of scurvy among displaced populations in the North in the early 1990s, there are few suggestions that the levels of vitamin deficiencies in Iraq approached those seen in underserved refugee and

displaced populations. Pellagra and beriberi would probably not be expected, and deficiencies of B vitamins in general were not so likely. However, further enquiry might be expected to turn up evidence of scurvy, especially in highly urbanised areas, and scurvy may not have been looked for specifically or recognised if seen.

*Mineral deficiencies.* The mineral deficiency (aside from iron) most likely to have been extensive is zinc deficiency resulting from the low availability of animal products. Zinc deficiency would be especially problematic with the increase in diarrhoeal disease, as zinc deficiency worsens the disease and the outcome. However, it is unlikely that retrospective studies of the effect of zinc deficiency on diarrhoeal disease will be possible in Iraq.

### **Breastfeeding and Infant Formula**

The impact of war and sanctions was especially hard on infants, who are always the most vulnerable members of the population. After the 1991 war, the destruction of water treatment and sewage plants, even more than the restriction of food imports, put infants at high risk of diarrhoeal disease, so that the natural protection provided by breastfeeding up to six months was more important than usual. This was therefore a particularly bad time for the Government of Iraq to promote bottle-feeding with infant formula, but that is what happened. Formula became an entitlement in the PDS. Surprisingly, the use of formula was actually strengthened during the OFFP, because at this time the option of families to substitute other foods for their ration of infant formula was withdrawn, so that they automatically received formula as part of their food ration. Despite major efforts by UNICEF to change this policy, it never changed during the OFFP. The result was an increase in child diarrhoea and very likely an increase in death from diarrhoea.

The effect of promoting bottle-feeding was not only to displace breastfeeding, but actually to spread diarrhoeal disease as a result of the decline in the availability of clean water and worsening hygienic conditions. The extent of the change brought about cannot be directly estimated because of lack of survey data. However, the 2000 MICS survey records whether children are bottle-fed, and this information can be compared with that from neighbouring countries. Egypt has a comparable survey (the Demographic and Health Survey), and the equivalent results are shown in Fig. 2.7. The proportion of infants 0 to 6 months old who were bottle-fed was more than one-third in Iraq, compared with 20% in Egypt; the rate of bottle-feeding in Iraq rose to over 40% for the 6- to 12-month age group, double the rate in Egypt, and these differences between the countries in the rate of bottle-feeding were also seen for older children (results computed from Egypt 2000 DHS survey, (Macro International, 2000)).

According to a October 1997 study<sup>6</sup>, 21% of all infants in the Centre/South of Iraq were exclusively bottle-fed, only 13% were exclusively breastfed during the first four months

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<sup>6</sup> Nutritional Survey Of Children Under Two Attending Routine Immunisation Sessions at Primary Health Care Centres in Iraq. [www.who.int/disasters/repo/5734.doc](http://www.who.int/disasters/repo/5734.doc)

of life (compared with an average of 37% for all Arab countries), and 34% of infants six to nine months old received milk without any supplementary weaning foods.

These studies show that a substantial proportion of infants in Iraq were bottle-fed. Common sense suggests that this proportion was higher than it would have been if infant formula had not been part of the food ration.

Why was formula-feeding promoted? One suggestion is that formula manufacturers competed for sales to Iraq through the OFFP mechanisms and that their promotion of the product was successful. In other infant support programmes, such as the Women, Infants, and Children (WIC) Program in the United States, formula companies facilitate sales of their product by helping to finance programme costs; some analogous arrangements might have been made in Iraq.

The otherwise positive impact of the OFFP on child survival and nutrition was almost certainly undercut by the promotion of bottle-feeding.

### **Conclusions**

Multiple data sources point to greatly worsening child nutrition in the Centre and South of Iraq from 1991 to 1996, followed by apparently rapid recovery until 2000, after which the recovery may well have slowed. In the North, a bad nutritional situation in 1991, in part carried over from earlier years, improved substantially between 1991 and 1996 – in contrast to conditions in the Centre/South – and continued to do so until 2000 and possibly until 2002. In the Centre/South, improvement may have slowed or largely ceased by 2002.

## **ENVIRONMENTAL INFRASTRUCTURE AND HEALTH CONDITIONS**

### **Environmental Infrastructure**

Bombing in the Gulf War of 1991 damaged or destroyed most of Iraq's electric power stations, sewage treatment plants, and water purification capacity. This infrastructure was essential to keeping environmental risks to health under control. During the sanctions after 1991, spare parts and equipment were imported only in small amounts, and most of these did not go to public benefit but were used more for special strategic or luxury projects than for routine public infrastructure. When spare parts were used up, the country's infrastructure deteriorated. The result was a disastrous deterioration in the sanitary environment, which worsened until the OFFP started; even during the OFFP, the dysfunctional infrastructure was not rapidly or adequately repaired and maintained, let alone updated.

The role of OFFP in relation to the unfolding health crisis was clear from the outset, for example, in the wording of Security Council Resolution 986 ( see Box 2.1) expressing



concern at the “serious nutritional and health situation of the Iraqi population.” In view of the importance of the OFFP in addressing this, we have focussed here on infrastructure most relevant to health, that is. on sanitation (waste disposal and sewage treatment), water supply, and electricity.

*Sanitation.* The percentage of the population with connections for waste water disposal increased slowly through the 1990s, but little of this waste was actually treated. Most was pumped, without treatment, into major rivers. The three plants in Baghdad comprise about half of the nation's sewage treatment capacity. Supplies, including chlorine and spare parts for waste water handling and treatment, were ordered only beginning in Phase 4 (mid-1998) of the OFFP, and few inputs were actually placed on-line even by the end of the Programme. Only one of the Baghdad plants functioned at all in the early 2000s.

Availability of supplies was not the only problem under the OFFP. For example, the Baghdad Water and Sewerage Authority (BWSA) received 400 pumps and 384 km of sewer pipes in 2000. However, without local funds to hire workers to install them, only about a fifth of these pipes went into use by the following year. In rural areas, 1800 Northern villages were still without adequate means of excreta disposal in 2003.

*Water.* In 1989, 95% of Iraqis had access to piped water, and because few houses were subsequently built, the percentage of houses with connections to the water supply remained high. The problem was the quality and quantity of the water supplied through these connections. Many water pumping facilities were destroyed by the bombing in 1991, resulting in a 27% decline in water production. The system was partially restored by cannibalising spare parts and making good as best as could be done. But lack of spare parts, regular maintenance, and skilled staff subsequently led to further deterioration, which accelerated from 1993 onward. Both the amount and the quantity of water declined substantially through the 1990s. The number of litres per capita declined by a third, and water quality plummeted. In the Centre/South from 1989 to 1996, the amount of pumped water decreased from 330 to 220 litres/capita/day in Baghdad City, from 270 to 170 litres/capita/day in other urban areas, and from 180 to less than 90 litres/capita/day in rural areas. These levels remained stable in the Centre/South during the OFFP and increased only in the North, from 110 litres/capita/day in 1996 to 140 litres/capita/day in 2002. To give context, WHO (2000) estimates the personal need for water in emergencies as 15 to 20 litres/capita/day. Breaks in water pipes were frequent and frequently went unrepaired in the 1990s, causing further deterioration in both the amount and the quality of water that reached households.

Both the coverage and the quality of water were poorer in the North than in the Centre/South in the 1980s. In the North, new water supply systems were built starting in 1993. In the Centre/South, the deterioration of water systems slowed during the OFFP, which nonetheless only repaired pre-existing systems without building new ones (in line with the general OFFP policy of supporting short-term relief rather than development). The Iraqi Ministry of Water Resources estimated that 55% of residents in the Centre/South had access to clean water in 2003. Only 45% of the water purification systems in the Centre/South were functioning at that time, compared with 85% in the

North. (According to a 1997 UNICEF/CARE survey<sup>7</sup>, approximately 79 % of residents in the Centre/South had access to piped water.)

*Electricity.* Prior to the 1991 Gulf War, the electrical generating capacity of Iraq was 9500 megawatts (MW) and the average use was 7800 MW (Amorim, 1999; International Study Team, 1991). The bombing in 1991 damaged the majority of generating plants. Generating capacity declined by 75% to 2325 MW in 1991, rising to 4000 MW prior to the OFFP through repairs and the use of available spares. The North was cut off from the national grid in the early 1990s and depended on local dams to produce 200 to 250 MW. Local generators were used increasingly both in the North and in the Centre/South to make up for lack of access to the grid. Damage to distribution lines and transformers cut off about 20% of all households, and the central Government distributed much of the limited power to Baghdad, leaving many outlying governorates in the dark.

After 1997, OFFP supplies provided needed inputs to prevent the further decline of capacity from worn-out parts, but they succeeded in maintaining capacity at only around 4000 MW (less than half that of 1990). In the 15 Central and Southern Governorates, the available power increased by 900 MW between 2001 and 2002. The number and duration of power cuts declined, and during the 2002 summer peak, for the first time since 1990, there were no planned power cuts in Baghdad and there was a decrease in the number and duration of scheduled power cuts in the 15 Central and Southern Governorates. Thus, by this time a substantial restoration of electric power had been achieved (ironically, in time to be destroyed again in the next round of attacks in March 2003 and in the subsequent looting). The available generating capacity by early 2003 was 5200 MW countrywide. Lack of funds for 99 approved OFFP contracts, valued at US\$360 million, held back the addition of an extra 1090 MW of generating capacity.

In the three Northern Governorates, the United Nations Development Programme (UNDP) implemented the Electricity Network Rehabilitation Programme (ENRP) to rehabilitate electricity generation, transmission, substations, and distribution. Portable generators were also provided. During the OFFP, substations were built in northern Iraq for the first time in 15 years. However, maintenance continued to be a problem: for example, much of Erbil had power cuts in 2002 due to failure of the distribution system.

*Other risk factors.* The increase in exposure to pathogens due to breakdowns in the environmental infrastructure was likely to be a major cause of ill health, leading to increased frequencies of common diseases such as diarrhoea and respiratory infections, as well as the re-emergence of diseases whose transmission had been controlled so that they were no longer common, such as cholera.

Potential new hazards resulted from the 1991 war. First, the widespread oil fires and “black rain” that resulted (presumably from volatilised and aerosol oil from the fires) caused contamination with sulphur dioxide, soot, and hydrocarbons (including

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<sup>7</sup> UNICEF/CARE 1997. Water and Sanitation Coverage Survey in South/Center Iraq. 1997. <http://www.casi.org.uk/info/unicef/irqpt2a.pdf>.

carcinogens). According to a US Central Intelligence Agency report at the time referring to Kuwait and Iraq:

On the basis of these pollution levels, morbidity and mortality will increase in the hardest hit region. Reliable US epidemiological studies that have established a relationship between sulfur dioxide and particulate levels and sickness and death form the basis of the findings that health problems will be most pronounced in the areas closest to the oilfields. (CIA, 1991)

People were exposed to these toxic compounds in the water supply, in the air, and from particles settling on surfaces, ingesting them through the lungs and gut. Many tons of depleted uranium were scattered as a result of the extensive use of this metal in ammunition during the 1991 and 2003 Gulf Wars. The effects of depleted uranium are similar to those of other heavy metals; the toxicity depends on a number of factors influencing dispersal and the routes by which people are exposed. The results to be expected from depleted uranium toxicity include malignancies at unusual sites (e.g., the kidney) and possible effects on the central nervous system. Both depleted uranium and black rain are risk factors for cancers and for developmental abnormalities in utero. Reliable data about the extent and severity of such new exposures have not been found. Moreover, agreement has not been reached on the possible resulting changes in patterns of disease, especially of cancers and birth defects, although both anecdotal reports and certain Government statistics indicate increased incidences. Linkages that can be made to health problems, such as cancers and birth defects, are therefore speculative. This question is discussed further under Noncommunicable Diseases below.

This lack of reliable information is one of the failures of the OFFP. During the OFFP, the cooperation between the Government of Iraq and UN agencies necessary to establish independent scientific monitoring could not be achieved. These health and environmental issues remained inadequately addressed, and there was a failure to bring them into the mainstream of public health concerns, despite clear statements in official reports (e.g., Alwan et al, 2001). Lack of trust between the Government of Iraq and the Security Council and politicisation of humanitarian issues undoubtedly contributed to this. This issue of information and evaluation is addressed further in Chapter 6.

### **Access to Health Services and Medical Supplies**

Investments in hospitals and medical training had raised Iraq's health care system to a relatively high level of quality in the 1980s. The Ministry of Health had functioning health surveillance and reporting systems and fixed or mobile primary care services that provided care to most people without any user fees. The health care system was managed by the Ministry of Health, which had responsibility for all construction, staffing, and equipping of public facilities. The Directorate of Preventative Medicine included the Primary Health Services, Tuberculosis Control Institute, Nutrition Research Institute, Communicable Disease Control Centre (CDCC), etc. It functioned in each of the country's 17 governorates, directing a total of 86 local Ministry of Health offices.

In 1988, a reported 97% of the urban and 71% of the rural population had access to free health care through the public sector, which was fully subsidised by the Iraqi

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Government. This health care system was highly specialised, with an emphasis on hospital-based curative care, with one-third of all hospital beds and physicians located in Baghdad.

*Health services.* Measures of the quality of health service provision are not available for the early 1990s. Improvement in access to health care delivery services after the OFFP started is implied by the increased use of health services and of biomedical equipment for diagnosis and treatment of diseases in the later 1990s. However, data on the number of hospitalisations are flawed, since many visits were overnight stays without treatment during the worst years of the 1990s.

The numbers of operations and laboratory tests are an indicator of the productivity of the health system. These numbers fell rapidly after 1990 and stabilised at low levels in the mid-1990s. In the Central and Southern Governorates, major surgeries increased by 40% and laboratory investigations by 25% between 1997 and 2003 with the use of equipment and materials provided by the OFFP. Nonetheless, the trend toward recovery was slow and never reached pre-1990 levels during the OFFP. A similar trend existed in ambulatory care services, where visits by patients rose by 23% in the first 12 months after OFFP goods became available.

The health care system was run almost exclusively by the Government before the first Gulf War, but in an effort to retain doctors, the Iraqi Government made changes, allowing for some privatisation of services in 1994. This did, in fact, reduce the flow of doctors out of the country, and in 2002 Iraq was estimated to have 53 doctors per 100,000 inhabitants. However, specialists were over-represented and mainly based in larger cities. Moreover, the fee-for-service private system made health care too expensive for the average Iraqi to afford. The estimated number of nurses in 2002 was one per physician, and few of these had graduated from university-level programs. This represents a major decline in the number of trained nurses. Many are reported to have left the country or to have taken up employment in other sectors as a response to low salaries.

*Condition of facilities.* OFFP orders from the Ministry of Health gave priority to consumable supplies and provided little for maintenance and repair of facilities. The 2004 survey “Health in Iraq” (MOH/GOI, 2004) details the extent of dilapidation of facilities, which severely reduced the effectiveness of OFFP supplies:

Because of lack of funding for maintenance over the last two decades, the infrastructure has deteriorated. Broken windows, worn-out floors, deteriorated walls, dysfunctional air-conditioning systems, and damaged drainage systems are features of most health institutions in Iraq today ... Most hospitals had chronic problems with sewage and garbage disposal, water supply was inconsistent, and there was a lack of emergency supplies and equipment.

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For primary health care centres, the survey revealed:

that more than 60% of centres required rehabilitation or demolishing and rebuilding. ... Basic equipment like stethoscopes ... thermometers were missing in more than 50% of centres ... chlorine content of water supplies was inadequate in 45% of centres.

*Administrative procedures.* Poor administration and top-down bureaucratisation limited the efficiency of the health system. According to the report quoted above (MOH/GOI, 2004), “allocation of funds is based [in 2004] on past practice. The finance system is too bureaucratic and impedes proper and fast implementation of tasks.” Corruption was well known in the 1990s in Iraq in general, but the effects on health services administration were complex, as middle management could be at great risk if rules were violated.

*Medical supplies.* In 1989, the Ministry of Health reported spending more than US\$500 million for drugs and supplies. Following the 1990 war, this figure is estimated to have dropped by as much as 90%. Health care spending fell from US\$86 per person in 1989, to US\$17 per person in 1996, and back up to US\$65 per person in 2000 with support from the OFFP. Overall, health sector imports fell from around US\$500 million in 1989 to US\$50 million in 1991 and US\$22 million in 1995. These imports included about US\$1 billion from the United Nations and NGOs during the period from 1991 to 1996. Almost all imports of medications during the period from 1996 to 2003 came from the OFFP, with between \$200 million and \$400 million per year of imports from 1999—2001 (see Chapter 3).

Shortly after the start of the 1991 war, the Iraqi Government imposed a strict rationing system on medications. This system led some practitioners to underprescribe some medications. Medications for chronic diseases, diabetes, cancer, cardiovascular disease, and severe pain nearly disappeared in the early 1990s. By 1996, most registered patients in chronic disease groups were unable to acquire medications for diabetes, hypertension, and asthma. Access increased with goods supplied by the OFFP. Most registered patients received monthly supplies of these medications by 1998, but the supply never reached presanction levels.

Access to pediatric cancer medications was perceived to be chronically short throughout the Programme. By 2002, all contracts for these drugs that had been ordered since the beginning of the Programme had been approved. Use of these medications often requires simultaneous access to all of them, and substitutions are not possible, in contrast to most infectious conditions. The shortage of pediatric cancer drugs was ascribed to sanctions; however, inappropriate ordering by the Government and the complexities of procurement and delivery through the OFFP also contributed.

Under the OFFP, erratic ordering by the Government of Iraq delayed the processing and approval of contracts. For medical supplies, as for other sectors, this was followed by untimely deliveries, shipment of inferior or damaged goods, missing needed complementary items, delayed installation, and a lack of expertise in the correct usage of Programme medications and equipment. OFFP observers monitored medicine stocks as of 1999. The efficiency with which the central medical warehouse processed medications

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slowly increased through the OFFP period. The perception of improved access to medications was associated with a rapid increase in observed visits to health centres.

Facilities in the North received more funding and were rehabilitated far more than in the Centre/South. The rehabilitation of 27 health facilities, valued at US\$2.35 million, was completed by 2002. Thirty-two similar, but larger, projects, valued at US\$16 million, were ongoing when the invasion of Iraq occurred in 2003.

The North, with multiple independent sources of imports for medications that did not go through the Baghdad Ministry of Health, and fewer specialised medical facilities, generally had far fewer shortages than the Centre/South. Between 2000 and 2001, deliveries of medications and medical supplies to the northern governorates doubled. Among the supplies delivered were high-demand items, including antibiotics, intravenous solutions, and oral suspensions. As a result, the rationing of medications such as antibiotics was substantially reduced. Since medications in the OFFP were imported preferentially from countries considered politically friendly to Iraq, the quality of the medications was often inferior to that of medications that had been purchased predominantly from U.S., Swiss, and German pharmaceutical firms prior to 1991. Specialised medications for neurological disorders, cardiovascular diseases, respiratory disorders, and cancer were not often available from friendly countries or high on the priority list of Ministry of Health orders. Overprescribing and misuse of advanced antibiotics reportedly contributed to shortages, leading to inadequate availability of these antibiotics in hospitals. In the absence of education on prescribing practices to accompany OFFP imports, many medications were used inappropriately.

As a result of a decrease in the amount of medications imported by the Ministry of Health to no more half that during the presanction period, and a continued rapid increase in the population, medications continued to be in short supply. Bulk purchases of many items in amounts that were typical in the presanction period left few funds for other needed items. Thus, it was not uncommon to have an adequate supply of one medication and a shortage of complementary medications because contracts for the latter medications were held up for lack of clearance or funds for importation. Medical ordering officers, like other health staff, lacked training to deal flexibly and effectively with the system.

The Samara Drugs Industries (SDI) produced up to a third of all tablets and injectable medications used in Iraq prior to 1990. Domestic production of medications by the SDI virtually stopped in the early 1990s. Equipment and supplies to reactivate production started to filter into the country after 1998. These goods were put on hold more often than other goods in the health sector because they were production rather than consumer goods. Production then increased slowly, reaching a reported 50% of capacity by 2002. The OFFP mainly provided chemicals for the pharmaceutical finishing industry. Filters, machinery, and other equipment for the manufacture of drugs were ordered starting in 2000, and most had not yet arrived by 2002. This shortage of equipment resulted in poor quality products and wastage.

## Infectious Diseases

Iraq in the 1980s was well into the epidemiological transition, in which communicable diseases are controlled by improved hygiene and living conditions (including nutrition as well as modern medicine), and the disease burden shifts to noncommunicable chronic diseases. The war and sanctions changed this. Although the data are derived mainly from health system reports and are not representative of the population, account can be taken of likely biases in the data, and the situation in the country can be plausibly described. Nonetheless, it should be stressed that disease reporting was poor throughout the period, and the data cannot be checked for accuracy or completeness. For selected conditions the data probably reflect overall trends but are surely incomplete and subject to diagnostic biases.

*Diarrhoeal diseases.* The prevalence of diarrhoea from all causes reportedly rose rapidly due to the loss of electric, sanitation, and water infrastructure in the 1991 war. The effects of the loss of infrastructure were compounded by a lack of health education for mothers promoting breastfeeding and water purification and by poor prescribing practices by Iraqi clinicians.

The prevalence of diarrhoea among children aged 12 to 23 months rose a great deal in the early 1990s in the Centre/South. In the North, diarrhoea became epidemic when people were displaced to inhabitable mountain areas during the 1991 uprising. Historically, the prevalence of diarrhoea had been higher in the North because the area was less developed, with less sanitary engineering and a more dispersed rural population. At the national level, the prevalence of diarrhoea in children (during the previous two weeks) was estimated as 13% in 1989 and 21% in 2000, and was almost certainly higher between those years. The 2000 figure of 21% is high compared with that in nearby countries such as Egypt (7%) and Iran (11%).

By far the most commonly reported diarrhoeal diseases were giardiasis and amoebic dysentery; the apparent trends are shown in Fig. 2.8. Health facility reports for some diseases are given in detail in Chapter 4. The incidence is high: up to 700,000 cases per year, or about 4% of the population. The rapid increase in amoebic dysentery in 1995 was probably a result of both contamination of the water supply and an increase in the reporting of cases without laboratory confirmation. Giardiasis is more chronic than amoebic dysentery and is transmitted by poor hygienic habits (unhygienic food preparation and absence of hand-washing), and this pattern is in line with a deterioration in access to water for washing. As far as can be seen, the diarrhoeal disease figures are what one would expect as a result of the damage to the water treatment and sewage systems. Somewhat similar patterns are seen for cholera and typhoid, with reported incidences orders of magnitude less than those of diarrhoeal diseases.

Cholera had been a rarely diagnosed condition in the 1980s; it became endemic in the Centre/South throughout the 1990s. Expanded treatment of cholera cases and improvement of laboratory diagnostic methods with OFFP goods were associated with better cholera control, beginning in 1999. In the three northern governorates, cholera,

which had been epidemic in 1991, declined so much that cases were rarely reported by the late 1990s.

*Acute respiratory infection (ARI).* The reported incidence of ARI increased in the early 1990s and has remained high. Household surveys showed an increase from 3.8 episodes per child per year in 1990 to 14.4 in 1999. The Ministry of Health reported 32,000 cases of ARI in 1990, 106,000 in 1994, and 153,000 in 1998. The UNICEF MICS survey in 2000 (UNICEF/CSOI, 2001) found that 6.9% of children under five years of age in the Centre/South and 11.7% in the North had had an ARI in the two weeks prior to the survey. Males were more affected than females, and children aged 6 through 23 months had a higher incidence. The rates did not differ much between rural and urban areas. The figures are probably underestimates, since many cases are probably treated at home or go undiagnosed.

Comparison with nearby countries, however, suggests that the rate of ARI in Iraq was not especially high. The Iraqi figures of 6.9% (Centre/South) and 11.7% (North) for the prevalence of ARI among children under five in the previous two weeks can be compared with estimates of 10% in Egypt, 12% in Turkey, and 18% in Saudi Arabia.

Malnutrition and a general decline in living conditions undoubtedly increased the incidence of ARI, but the effect was probably less than that on the incidence of diarrhoeal diseases because of specific damage to sewage treatment and water supply. However, lack of resources for management of severe ARI must have led to increased case fatality rates, due to the absence of antibiotics and of access to health facilities with staff skilled in the early diagnosis of pneumonia in children (a critical intervention in reducing ARI mortality). Case fatality rates among those treated in hospitals were reported to increase.

*Immunisation coverage and diseases preventable by immunisation.* UNICEF provided most vaccines used in Iraq both prior to and during the OFFP. The levels of diseases preventable by immunisation thus had more to do with the commitment of the Ministry of Health to implement immunisation than with the supply of vaccines. To give an important example, the coverage of measles immunisation in the Centre/South according to available surveys (Gulf Health Survey, 1990; UNICEF MICS Surveys 1996 and 2000) is shown in Fig. 2.9, together with reports of measles incidence from the Ministry of Health. Although the national average coverage rose to 80% by 1996 despite the problems, some governorates lagged: for example, Ninevah and Qadissiyah had coverage below 70% in 1996 and 2000, and others (e.g., Missan and Salahuddin) were at or below 70% in 2000 (see Chapter 4). These coverages are low enough to allow epidemics of measles to occur locally, especially with a cohort of non-immunised children that grew over several years. The outbreaks peaking in 1992 and 1998 presumably resulted from the slipping immunisation coverage in some areas. However, by 2000 no further large outbreaks had occurred. During 2000–2002 in the Centre/South, more than two-thirds of measles cases occurred in children five years old or more. This indicates both relatively high coverage among current under-fives and low coverage in previous years.



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In contrast, the extended coverage of tetanus immunisation resulted in a decline in neonatal tetanus by 1996. Neonatal tetanus is prevented by immunising the mother and is not transmitted to her from other people, and therefore it is not subject to outbreaks in the same way as measles; thus, high coverage rates are not essential to prevent outbreaks. By 1994 few cases were reported, and the number of cases did not subsequently increase.

Improved immunisation coverage between 1993 and 1996 thus had a significant effect on the number of cases of most immunisation-preventable diseases, including diphtheria, meningitis, neonatal tetanus, and (probably) pertussis. The incidence of these diseases dropped during this time and increased again around 1999–2000 (see Chapter 4). Problems with the cold chain and field supervision of the immunisation system continued throughout the 1990s.

Despite a shortage of vehicles and other equipment, the Ministry of Health mobilised the health system in 1999 to engage in a wide immunisation effort, with a focus on polio eradication. This expanded immunisation effort led to a second decline in most other vaccine-preventable conditions after 2000. An outbreak of polio occurred in 1998, but since January 2000 Iraq has been polio-free.

The increase in malaria in the 1990s was due almost entirely to the opening of new lands for cultivation without also instituting routine malaria control activities.

### **Noncommunicable Diseases**

Noncommunicable diseases were the most common causes of death in Iraq in 1990, with cardiovascular disease ranked first. Most data come from Ministry of Health records, which include the cause of death, and only about half of all deaths are registered at health institutions. Relative rates may reflect changing patterns, but the data are obviously subject to biases depending on attendance at facilities. The deterioration in the health system caused increased morbidity and mortality from noncommunicable diseases, for several reasons.

First, diagnostic facilities were degraded because of lack of functioning equipment, supplies, and skilled personnel. As a result, many chronic illnesses were diagnosed late or not at all.

Second, several common noncommunicable diseases require regular medication for management (diabetes and hypertension are examples) and the medical supplies for these became scarce. The extent of diabetes is not known; WHO (2001) noted that 10% of adults in nearby countries have diabetes, documented the difficulties of management in Iraq, and cited evidence for increased pathologies due to inadequate treatment (e.g., eye and kidney damage).

Third, early treatment, especially of cancers, requires stable access to equipment and medications and skilled personnel. All these were unstable or in short supply following the 1991 war and sanctions and were only partly reversed by the OFFP.

WHO (2001) and a number of anecdotal reports led to the perception that childhood cancers in Iraq had increased after 1990 and became 10 times more common than in the West; given that children after infancy have a good chance of survival from communicable diseases (this was true even in Iraq in the 1990s), cancer must have become a significant cause of death in children in Iraq. Unusual birth defects were also widely believed to have increased. No additional statistics on childhood cancers or birth defects were available to confirm the popular perceptions of epidemics of these conditions.

WHO (2001) noted that “if early and adequate therapy could be offered to the exceptionally large number of children with tumours, up to two thirds may be cured.” (Alwan, Jervell, Stjernswärd, Roglic. WHO, 2001). Although we do not have numbers, adequate response in this area was not provided by the OFFP, which contributed to preventable childhood cancer deaths. Moreover, palliative medications were also in short supply, and as WHO noted in 2001, “Most of today's cancer patients die with much avoidable pain and suffering.”

Given the known burden of noncommunicable diseases in 1996, insufficient priority may have been given to establishing a supply of medicine and equipment to alleviate the existing burden – inherited from before 1990 – let alone to stem the likely increase in morbidity and mortality from noncommunicable diseases. The changing pattern of diagnosed cancers is shown in Fig. 2.10.

In sum, increased exposure to pathogens due to breakdowns in the environmental infrastructure was a major cause of ill health, leading to increased frequencies of common diseases such as diarrhoea and respiratory infections, as well as the re-emergence of diseases whose transmission had previously been controlled so that they were no longer common, such as cholera.

War and sanctions had a devastating effect on the health care system of Iraq. The destruction of health facilities, loss of qualified personnel (from emigration or from changing to more profitable work), shortages of blood, medicine, and other supplies, and general breakdown in the organisational capacity of the Ministry of Health forced Iraqi citizens to turn to the private health sector or to go without health care altogether. Diseases that were well under control before the war re-emerged and became significant public health problems. Coordinated efforts between the Ministry of Health and UN organisations (UNICEF, WHO, and FAO), which included the re-establishment of immunisation and surveillance activities, mitigated some of the consequences of the sanctions.

## **CHILD MORTALITY**

Available data on child mortality in Iraq are simply inadequate to determine with any accuracy the mortality consequences of the 1991 War, of postwar sanctions, or of the OFFP. The best way to monitor mortality by cause is from a vital registration system that

covers almost all births and deaths and has few errors in the recorded cause of death. Such systems are largely limited to developed countries. Vital registration in Iraq covers about a third of all births and thus is too poor to do such monitoring. Best guesses have to be based on other types of data, which in the case of Iraq are sometimes mutually inconsistent and frequently have imprecise time references. Estimates of impact require not only time-specific estimates, but also counterfactuals, guesses about what would have happened in the absence of actual circumstances; construction of plausible counterfactuals requires some form of extrapolation of trends prior to 1991, and again from 1991 to 1996.

The best substitute for estimating infant and child mortality when adequate vital registration systems do not exist is census or survey data on reports by women concerning the survival or otherwise of their children. However, such data are not immune from sampling error and bias. Such reports can be summary birth histories – asking each woman how many children she has given birth to in total, and how many of them have died (or, equivalently, survived) – or full histories, with the date of birth and, if relevant, the age at death, of each and every individual child. Summary histories require less data-collection time and are often included in population censuses, whereas full birth histories require careful training and are time-consuming, thus being included only in household surveys with samples of 5,000 to 20,000 households. Full birth histories allow the estimation of detailed time trends and age patterns of child mortality, often called “direct” estimates, whereas summary histories require assumptions about age patterns of mortality and about the regularity of time trends in order to arrive at estimates; such estimates are often referred to as “indirect,” to reflect the additional assumptions required. Data from hospitals are generally not useful for either levels or trends in child mortality because of the selectivity factors leading to death in a facility.

Censuses conducted in Iraq in 1987 and 1997<sup>8</sup> included summary birth histories, and the data for making indirect estimates are available. However, because the 1997 census did not cover the three northern governorates, the populations covered by the two censuses are not identical (the northern governorates represented about 15 percent of the population of Iraq in 1987). The analysis of the census data is also complicated by a substantial level of non-response, not to the question about the number of children ever born, but to the question about the number of children surviving. The treatment of this non-response has a considerable effect on the estimates of child mortality derived from the data. Nationally representative sample surveys held in 1974 and 1990 also collected summary birth histories. Full birth histories were obtained in at least three nationally representative household surveys in 1989, 1999, and 2004. However, the 1989 and 2004 surveys produced unrealistically low estimates and will not be discussed further. The apparent inadequacy of the 2004 survey is particularly unfortunate, because it means we

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<sup>8</sup> It was recently brought to our attention that the 1997 census was not widely known in Iraq in 1998, and its existence and tabulations were first announced only in August 2003 by the United Nations (UN Press Release 4 August 2003, Mary Chamie, Statistics Division, DESA/UN: Iraq, 1997 Population and Housing Census). The results nonetheless appear real, and while treated with additional caution remain apparently useful for the estimates described here.

have no data on child mortality after 1998. Finally, a survey conducted in 1991 collected data on births and deaths in the preceding two years. Only the 1999 survey provides estimates disaggregated by the North and the Centre/South.

The estimates of child mortality from these various sources are not consistent. The 1987 census gives a picture of declining under-five mortality (U5MR) through the 1970s, continuing somewhat more slowly into the 1980s. The 1997 census broadly agrees with the 1987 census for the 1980s, and suggests a slight upturn in U5MR in the 1990s. The 1999 survey suggests (for the Centre/South) somewhat lower U5MR in the 1980s than do the censuses, with a sharp jump in 1991, doubling U5MR to a level maintained until 1998; however, the age pattern of U5MR raises doubts about the data. The 1991 survey indicates a tripling of mortality from 1989–1990 to 1990–1991, from levels below other sources to levels higher than other sources.

For the period 1991–1996, the figures used for U5MR are 95 per 1,000 live births, based on the 1997 census data, which appear to be internally consistent themselves and agree with the 1987 census data. As noted, we have no reliable data at all to allow estimates after 1998, which precludes concluding anything about the mortality impact of the OFFP.

What would the mortality levels have been in Iraq *without* the OFFP? How many excess deaths occurred among children, and how many more would have occurred during the OFFP period? We cannot compare reality with counterfactuals (what would have been), since we cannot be precise even in measuring actual mortality rates. We have made as thorough an evaluation of the data as possible to arrive at a plausible and likely scenario. Here is what we think actually occurred. Details of how this scenario was arrived at are given in Chapter 4.

In the late 1970s, the U5MR in Iraq was around 90 deaths per 1000 live births: a baby had a 9% chance of dying before the age of five. Iraq was thus about average for the Middle East region. However, perhaps at least in part as a result of the hardships from the Iran–Iraq war (lasting from September 1980 to August 1988, with up to 500,000 Iraqis killed and as many wounded), the U5MR did not fall in the 1980s in line with other countries in the region. If it had, it would have been around 50 to 60 deaths per 1000 live births by 1990, judging by its neighbours, but in fact it is estimated to have fallen to only about 85 per 1000 live births. Before the invasion of Kuwait, the sanctions of 1990, and the 1991 war, Iraq's child mortality was already high relative to its neighbours.

All data sources indicate some increase in child mortality after 1990, but estimates of the magnitude of the increase vary widely by source. It is clear, however, that widely quoted claims made in early 1995 of 500,000 deaths of children under five as a result of sanctions were far too high: even accepting the results of the 1999 survey as correct and assuming a fairly rapid counterfactual decline in mortality produces excess under-five deaths of around 480,000 in nearly double the period, from 1991 to 1998 (compared to 1991 to 1995).

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To arrive at estimates of “excess” under-five mortality in the 1990s we have to decide on a most likely scenario of both reality and counterfactual. Starting with the counterfactual, U5MR seems to have been pretty much flat through the 1980s, but all countries unaffected by civil unrest or HIV epidemics experienced some decline in U5MR during the 1990s, so we have adopted two counterfactuals: an extremely conservative one, to assume that in the absence of sanctions the U5MR would have continued at about 85 per 1,000 live births through the 1990s; and a somewhat less conservative one, assuming a slow decline in the early 1990s to an U5MR of about 80.

As noted above, our preferred estimate of reality is that U5MR increased to about 95 per 1,000 from 1991. This level is based on a mortality increase of about 10% suggested by the 1997 census. As explained in Chapter 4, we discount the results of the 1999 survey, which we believe may have over-estimated infant mortality for the period 1991 to 1998. We similarly discount the results of the 2004 UNDP survey as it appears to have seriously under-estimated mortality rates. On the basis of our conservative counterfactual, excess under-five deaths averaged about 600 per month from 1991 to 1996; from the less conservative estimate, the number of excess under-five deaths per month is about 900.

This gives an upper limit, based on our less-conservative counterfactual and the estimate of actual U5MR of 95 per 1,000 live births, of about 68,000 excess deaths from 1991 through 1996. Table 2.3 summarises our preferred child mortality scenarios in Iraq from 1975 to the late 1990s.

We have no data to guide us in deciding whether child mortality fell, in line with malnutrition and other indicators, after the OFFP started to deliver in 1996. It is plausible that the U5MR fell—its relations with child malnutrition are well known—but the 1999 survey shows no sign of a decline in 1997 and 1998, and there are no even remotely credible estimates of U5MR post-1998. The FAFO survey of 2004 gives very low U5MR results for the period from 1999 to 2003, but FAFO estimates for the 1990s are far lower than other estimates in 1990s, so we do not consider them acceptable (FAFO/UNDP, 2004). Surprisingly, perhaps, we have to conclude on the basis of existing data that it is not known whether child mortality fell as a result of, or even coincidentally with, the OFFP.

The Government of Iraq first reported a decline in the high rates of young child mortality in February 2001 in an Iraqi newspaper. Ministry of Health monthly records show such a decline only in early 2002. However, these data are drawn from hospital records, and since only about a third of all deaths occur in hospitals, these data may not be an accurate representation of trend (see Table 2.3). In the context of an increase in the number of total visits to hospitals and a rapid decline in malnutrition since 2000, it is reasonable to assume that there has indeed been a decline from the high levels of child mortality in the early and mid 1990s, but we cannot quantify the decline.

**Table 2.1. Amounts of food in rations distributed in Iraq in 1989, 1996, and 1999.**

Food	Subsidised supplies available, 1989	Under PDS operated by GOI, 1996	Under Phase VII of OFFP, Dec 1999
Wheat flour	15.0	7.0	9.0
Rice	3.28	1.2	3.0
Sugar	3.4	0.5	2.0
Tea	0.25	0.10	0.15
Cooking oil	1.28	0.75	1.5
Milk powder	3.06	1.7	3.6

Amounts are in kilograms per person per month. PDS, Public Distribution System; GOI, Government of Iraq; OFFP, Oil-for-Food Programme. Source: Republic of Iraq, *Athar al-Hisar al Iqtisadi al-Shamil ala al-Iraq* (The Effects of Comprehensive Economic Sanctions on Iraq). Baghdad: Ministry of Foreign Affairs, 2000.

**Table 2.2. Prevalence of stunting, underweight, and wasting in the North and the Centre/South of Iraq, 1991–2002.**

Variable	Prevalence (%)				Change (ppts/yr)	
	1991	1996	2000	2002	1991–1996	1996–2000
Stunting						
North	29.5	26.3	15.8	11.0	-0.64	-2.10
Centre/South	18.1	32.0	22.3	23.1	+2.78	-1.94
Underweight						
North	19.1	19.0	7.1	8.6	-0.02	-2.38
Centre/South	9.0	23.4	17.7	9.4	+2.88	-1.14
						(-2.33 from 1996 to 2002)
Wasting						
North	4.5	3.8	1.9	2.1	-0.14	-0.38
Centre/South	3.0	11.0	6.6	4.0	+1.60	-0.88

Sources: IST (1991); UNICEF (1996, 2000, 2002).

**Table 2.3. Estimates of infant and under-five mortality in Iraq, 1975–1996, and estimated “excess deaths” under two counterfactuals.**

Period	Estimate of actual U5MR and total U5 deaths				Counterfactual scenario 1990–96			
	Births (thousands)*	IMR/ 1,000 live births	U5MR/ 1,000 live births	U5 deaths/ mo	No change		Moderate decline	
					U5MR	Excess deaths/mo	U5MR	Excess deaths/mo
1976–80	2,553	67	90	3,886	90	N/A	90	N/A
1981–85	2,950	63	85	4,242	85	N/A	85	N/A
1986–90	3,398	63	85	4,886	85	N/A	85	N/A
1991–96	4,462	70	95	5,976	85	629	80	944

IMR, Infant mortality rate; UF, children under five years of age; U5MR, mortality rate among children under five years of age; N/A, not available.

\*UN Population Division estimates.

**Box 2.1. Excerpts from Security Council Resolution 986 (April 1985) and the associated Memorandum of Understanding on its implementation.** Sources: UN, 1995 (S/RES/986 (1995) and UN, 1996 (S/1996/356)

UNITED  
NATIONS

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Security Council

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GENERAL

S/RES/986 (1995)  
14 April 1995

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RESOLUTION 986 (1995)

Adopted by the Security Council at its 3519th meeting,  
on 14 April 1995

The Security Council,

Recalling its previous relevant resolutions,

Concerned by the serious nutritional and health situation of the Iraqi population, and by the risk of a further deterioration in this situation,

Convinced of the need as a temporary measure to provide for the humanitarian needs of the Iraqi people until the fulfilment by Iraq of the relevant Security Council resolutions, including notably resolution 687 (1991) of 3 April 1991, allows the Council to take further action with regard to the prohibitions referred to in resolution 661 (1990) of 6 August 1990, in accordance with the provisions of those resolutions,

Convinced also of the need for equitable distribution of humanitarian relief to all segments of the Iraqi population throughout the country,

Reaffirming the commitment of all Member States to the sovereignty and territorial integrity of Iraq,

Acting under Chapter VII of the Charter of the United Nations,

1. Authorizes States, notwithstanding the provisions of paragraphs 3 (a), 3 (b) and 4 of resolution 661 (1990) and subsequent relevant resolutions, to permit the import of petroleum and petroleum products originating in Iraq, including financial and other essential transactions directly relating thereto, sufficient to produce a sum not exceeding a total of one billion United States dollars every 90 days for the purposes set out in this resolution and subject to the following conditions:



## Chapter 2

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Memorandum of understanding between the Secretariat of  
the United Nations and the Government of Iraq on the  
implementation of Security Council resolution 986 (1995)

Section I

General provisions

1. The purpose of this Memorandum of Understanding is to ensure the effective implementation of Security Council resolution 986 (1995) (hereinafter the Resolution).
2. The Distribution Plan referred to in paragraph 8 (a) (ii) of the Resolution, which has to be approved by the Secretary-General of the United Nations, constitutes an important element in the implementation of the Resolution.
3. Nothing in the present Memorandum should be construed as infringing upon the sovereignty or territorial integrity of Iraq.
4. The provisions of the present Memorandum pertain strictly and exclusively to the implementation of the Resolution and, as such, in no way create a precedent. It is also understood that the arrangement provided for in the Memorandum is an exceptional and temporary measure.

Section II

Distribution Plan

5. The Government of Iraq undertakes to effectively guarantee equitable distribution to the Iraqi population throughout the country of medicine, health supplies, foodstuffs and materials and supplies for essential civilian needs (hereinafter humanitarian supplies) purchased with the proceeds of the sale of Iraqi petroleum and petroleum products.
6. To this end, the Government of Iraq shall prepare a Distribution Plan describing in detail the procedures to be followed by the competent Iraqi authorities with a view to ensuring such distribution. The present distribution system of such supplies, the prevailing needs and humanitarian conditions in the various Governorates of Iraq shall be taken into consideration with due regard to the sovereignty of Iraq and the national unity of its population. The plan shall include a categorized list of the supplies and goods that Iraq intends to purchase and import for this purpose on a six-month basis.

**Box 2.2. Timing of key events relating to sanctions and OFFP.** Sources: various

Date	Event
2 August 1990	Iraqi forces invade Kuwait. On the same day, the Security Council adopts Resolution 660 and condemns the invasion.
6 August 1990	<u>Resolution 661</u> is adopted by the Security Council, which imposes sanctions on both Iraq and occupied Kuwait and establishes the 661 Committee to implement the Resolution.
20 March 1991	Ahtisaari report to Security Council (UN, 1991) on the humanitarian situation in Iraq.
3 April 1991	The Security Council, in <u>Resolution 687</u> , sets terms for a cease-fire—disarmament and removal of Iraq's capacity to develop weapons of mass destruction.
15 August 1991	The Security Council adopts <u>Resolution 706</u> offering an opportunity for Iraqi oil to be sold and the revenue used to purchase essential humanitarian supplies. This resolution is not accepted by the Government of Iraq.
14 April 1995	<u>Resolution 986</u> (see Box 2.1) is adopted by the Security Council. Iraq does not accept its terms.
20 May 1996	Following extensive negotiations, a <u>Memorandum of Understanding</u> is signed between the Government of Iraq and the United Nations Secretariat regarding the implementation of Resolution 986 (see Box 2.1).
10 December 1996	Following the <u>Secretary-General's report to the Council</u> that all measures are in place for the implementation of Resolution 986 (1995), Phase I officially begins with the pumping of Iraqi oil for export. The first proceeds from the sale of oil are deposited in the United Nations Iraq Account (Escrow Account) at the Banque Nationale de Paris in New York on 15 January 1997.
3 September 1997	Denis Halliday takes over from Steffan de Mistura as the United Nations Humanitarian Coordinator in Iraq.
13 October 1997	The Secretary-General establishes the Office of the Iraq Programme (OIP), effective 15 October 1997, to consolidate and manage the activities of the Secretariat in implementing the Oil-for-Food Programme. <u>Benon V. Sevan</u> is appointed as Executive Director of the Office of the Iraq Programme.
1 February, 1998	The Secretary-General's <u>Supplementary Report (S/1998/90)</u> offers proposals to improve the process of contract approval and delivery. The report proposes to raise the ceiling of oil sales every six months (per phase) from US\$2 billion to US\$5.2 billion gross (US\$3.4 billion net for the humanitarian allocation).
20 February, 1998	The Security Council adopts <u>Resolution 1153</u> authorising the increase in the Programme and requests that the Secretary-General appoint a group of oil experts to look into Iraq's oil-producing capacity and the need for spare parts and equipment.

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15 April 1998	The Secretary-General transmits the <u>report of the group of oil industry experts</u> who note the lamentable state of Iraq's oil industry and recommend the provision of equipment and spare parts to increase Iraq's ability to export oil.
4 September 1998	The <u>Secretary-General's 90-day report</u> is presented to the Security Council. The report estimates a total oil revenue of US\$2.86 billion. This is later revised to US\$3.3 billion, providing a humanitarian allocation of US\$2.1 billion— one billion less than what was needed to fund the enhanced distribution plan.
28 September 1998	Secretary-General Kofi Annan appoints <u>Hans von Sponeck</u> to the post of United Nations Humanitarian Coordinator in Iraq.
16 December 1998	Military action by the United States and United Kingdom begins against Iraq.
20 December 1998	Military operations cease.
18 March 1999	OIP Executive Director Benon V. Sevan in a <u>letter to the Security Council's 661 Committee</u> details the consequences of revenue shortfalls for the Oil-for-Food Programme.
17 December 1999	The Security Council adopts <u>Resolution 1284</u> . It establishes, as a subsidiary body of the Council, the United Nations Monitoring, Verification and Inspection Commission (UNMOVIC), which replaces the Special Commission. Removes oil sales cap.
12 February 2000	The UN Humanitarian Coordinator for Iraq, Hans von Sponeck, resigns effective 31 March 2000.
8 June 2000	The Security Council adopts <u>Resolution 1302</u> , which extends the Programme for another 180 days as of 9 June 2000. It invites the Secretary-General to appoint independent experts to prepare a comprehensive report and analysis of the humanitarian situation in Iraq. Other measures include application of accelerated procedures for the approval of water and sanitation equipment; allocation of US\$600 million for oil spare parts under Phase VIII; and a request to the Secretary-General to appoint additional oil overseers.
5 December 2000	The Security Council adopts <u>Resolution 1330</u> extending the Programme for an additional 180 days (Phase IX). It directs the Sanctions Committee to approve lists of supplies and equipment in the electricity and housing sectors for "fast-track" approval procedures, as well as expand the existing lists in other sectors; reduces the allocation for the UN Compensation Fund from 30% to 25%, transferring the additional funds to the "53 per cent" account for humanitarian supplies in the Centre/South of Iraq to address the needs of the most vulnerable groups; and requests the Secretary-General to make arrangements to allow funds up to 600 million euros to be used for the cost of installation and maintenance for the oil industry.

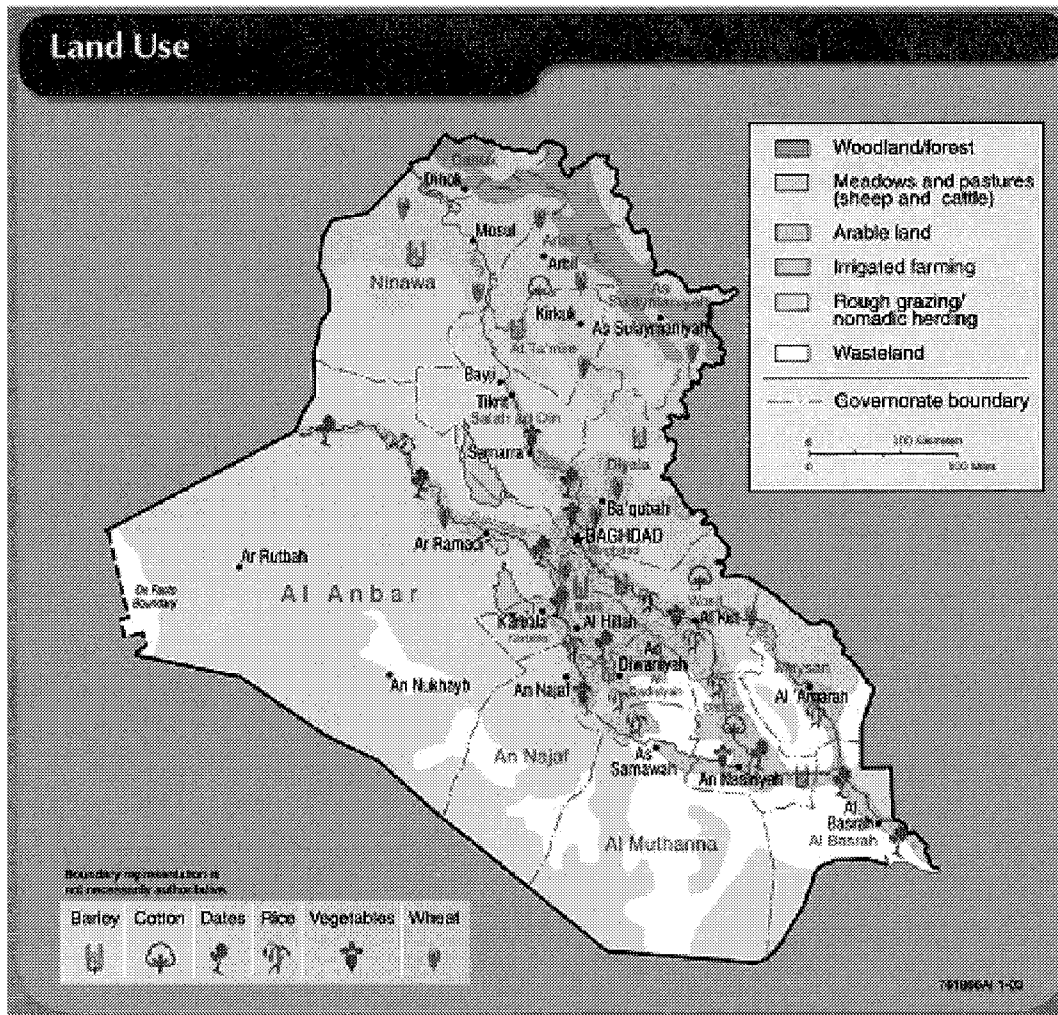
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24 May 2001	A list of 97 items is approved by the Security Council's 661 Sanctions Committee in the <u>electricity sector</u> for "fast-track" processing, in compliance with <u>Resolution 1330 (2000)</u> .
29 November 2001	December 2001 to 29 May 2002. Paragraph 2 of the Resolution states the Council's decision to adopt the Goods Review List (GRL) and relevant procedures, subject to any refinements to them agreed by the Council, for implementation beginning on 30 May 2002. Paragraph 6 of the Resolution reaffirms the Council's commitment to a comprehensive settlement on the issue of Iraq on the basis of relevant Security Council resolutions.
14 May 2002	The Security Council adopts <u>Resolution 1409 (2002)</u> , introducing the GRL and a new set of procedures for the processing and approval of contracts for humanitarian supplies and equipment.
22 November 2002	The Secretary-General's report under paragraphs 7 and 8 of <u>Resolution 1409 (2002)</u> is issued (S/2002/1239). It focuses on three main areas: (1) achievements made through the Programme in improving the humanitarian situation in Iraq, as well as referring to some of the shortcomings and difficulties faced; (2) the persisting revenue shortfall in the Programme; and (3) an assessment of the implementation of the new set of procedures for the processing and review of contracts for humanitarian supplies, introduced under Resolution 1409 (2002) in May 2002, based on the GRL. It is the first such assessment since the adoption of that Resolution. Concurrently, OIP releases its latest <u>Note</u> on the implementation of the humanitarian programme under Resolution 986 (1995)—prepared in lieu of the 180-day report on Phase XII.
19 March 2003	War in Iraq begins.
28 March 2003:	A <u>resolution</u> was adopted unanimously by the Security Council to adjust the Oil-for-Food Programme and give the Secretary-General authority to facilitate the delivery and receipt of goods contracted by the Government of Iraq for the humanitarian needs of its people.
22 May 2003	The Security Council adopted Resolution 1483 (2003) lifting civilian sanctions and providing for termination of the Oil-for-Food Programme within six months and transferring responsibility for the administration of any remaining activity to the Authority representing the occupying powers. <u>The Executive Director of the Oil-for-Food Programme (Mr. Benon Sevan) welcomed the adoption of Resolution 1483 (2003) lifting civilian sanctions on Iraq and phasing out the Programme over the next six months. "The lifting of sanctions represents long-awaited relief for the Iraqi people," he said.</u>
21 November 2003	Effective termination and handover of the Oil-for-Food Programme to the Coalition Provisional Authority.
31 May 2004	UN Office for Iraq Programme is closed

**Box 2.3. Phases, timing, and authority from Security Council Resolutions (SCR) of OFFP.** Sources: UN documents with Security Council Resolutions as shown.

Phase	From	To	Authorized by Security Council Resolution
I	10 December 1996	7 June 1997	<u>SCR 986 (1995)</u> 14 April 1995
II	8 June 1997	4 December 1997	<u>SCR 1111 (1997)</u> 4 June 1997
III	5 December 1997	29 May 1998	<u>SCR 1143 (1997)</u> 4 December 1997
IV	30 May 1998	25 November 1998	<u>SCR 1153 (1998)</u> 20 February 1998
V	26 November 1998	24 May 1999	<u>SCR 1210 (1998)</u> 24 November 1998
VI	25 May 1999	20 November 1999	<u>SCR 1242 (1999)</u> 21 May 1999
		Extends Phase VI until 4 December 1999	<u>SCR 1275 (1999)</u> 19 November 1999
		Extends Phase VI until 11 December 1999	<u>SCR 1280 (1999)</u> 3 December 1999
VII	12 December 1999	8 June 2000	<u>SCR 1281 (1999)</u> 10 December 1999
VIII	9 June 2000	5 December 2000	<u>SCR 1302 (2000)</u> 8 June 2000
IX	6 December 2000	3 June 2001	<u>SCR 1330 (2000)</u> 5 December 2000
		Extends Phase IX until 3 July 2001	<u>SCR 1352 (2001)</u> 1 June 2001
X	4 July 2001	30 November 2001	<u>SCR 1360 (2001)</u> 3 July 2001
XI	1 December 2001	29 May 2002	<u>SCR 1382 (2001)</u> 29 November 2001
XII	30 May 2002	25 November 2002	<u>SCR 1409 (2002)</u> 14 May 2002
		Extends Phase XII until 4 December 2002	<u>SCR 1443 (2002)</u> 25 November 2002
XIII	5 December 2002	3 June 2003	<u>SCR 1447 (2002)</u> 4 December 2002

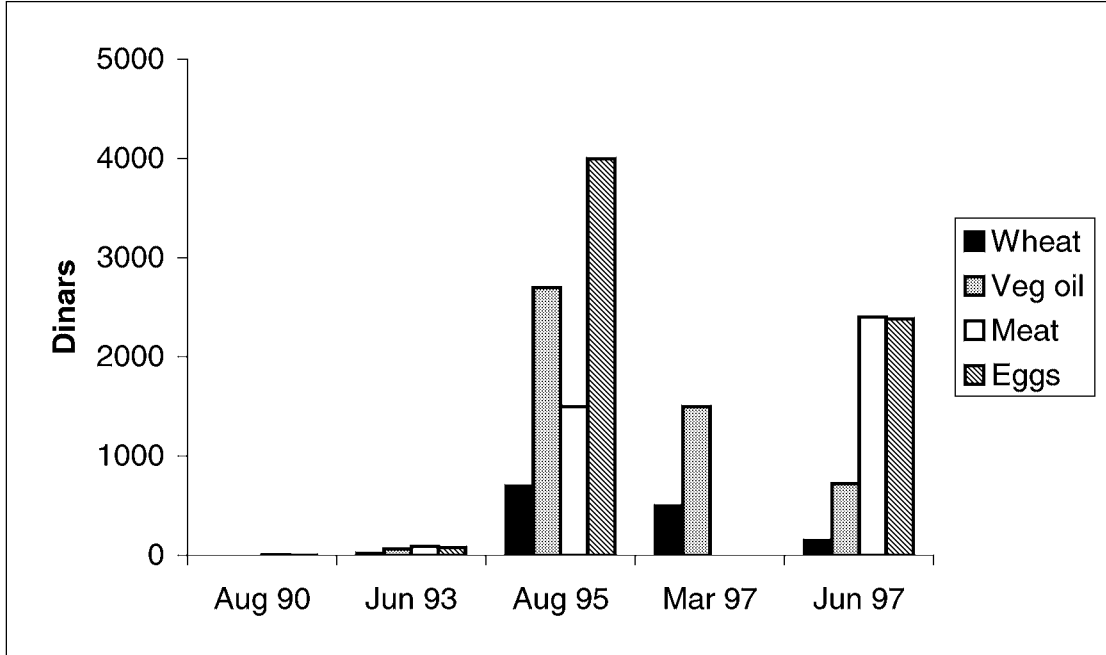
## Box 2.4. Land use in Iraq.



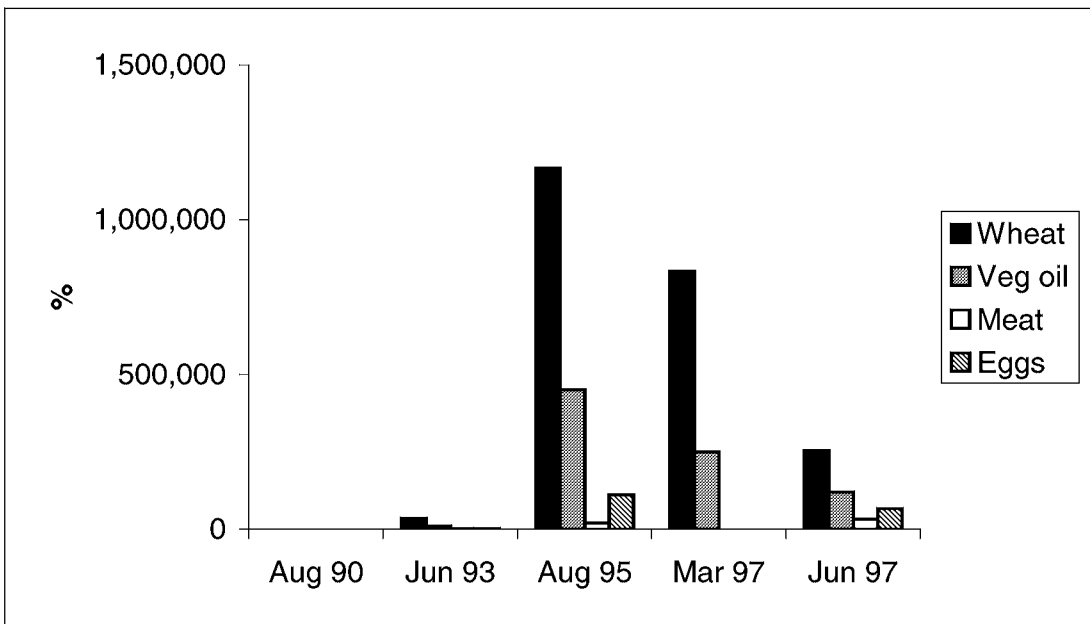
Iraq is generally distinguished into four ecological regions: the mountainous areas of the Kurdish northeast, the lower Tigris-Euphrates valley, the upper Tigris-Euphrates valley, and desert land of the south and southwest. The majority of the arable land in northern Iraq extends from the city of Dihok east through Kirkuk and into the Governorate of Sulaymaniyah. These arable lands are primarily used to grow a combination of wheat and barley, as well as some cotton. The northeast corner along the borders of Turkey and Iran is occupied mainly by woodlands and forests or meadows used for grazing sheep and cattle. Along the Tigris and Euphrates rivers, irrigated farming dominates. The upper river valley tends to be used for growing primarily vegetables and dates and some wheat, while the lower river valley tends to grow rice, barley, dates, and vegetables. The desert land has a low population density and is used for rough grazing and nomadic herding.

**Figure 2.1. Food prices: changes in prices of wheat, vegetable oil, meat, and eggs, 1990–1997.**

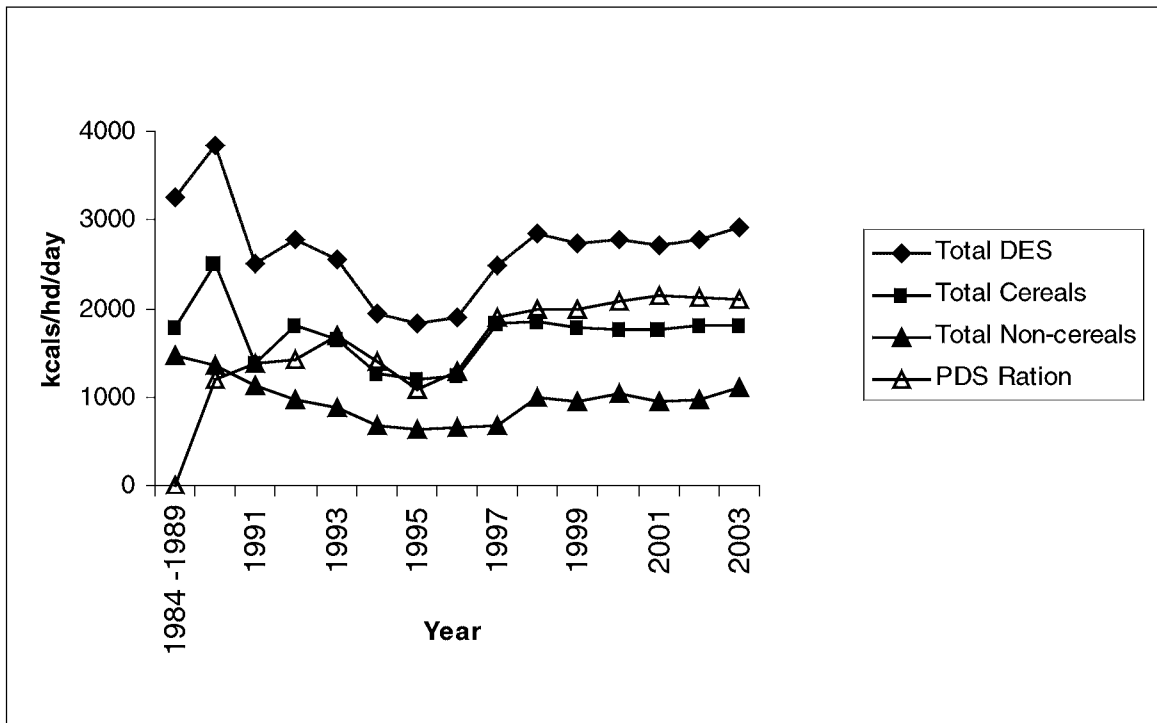
**A. Prices in Iraqi dinars per kilogram**



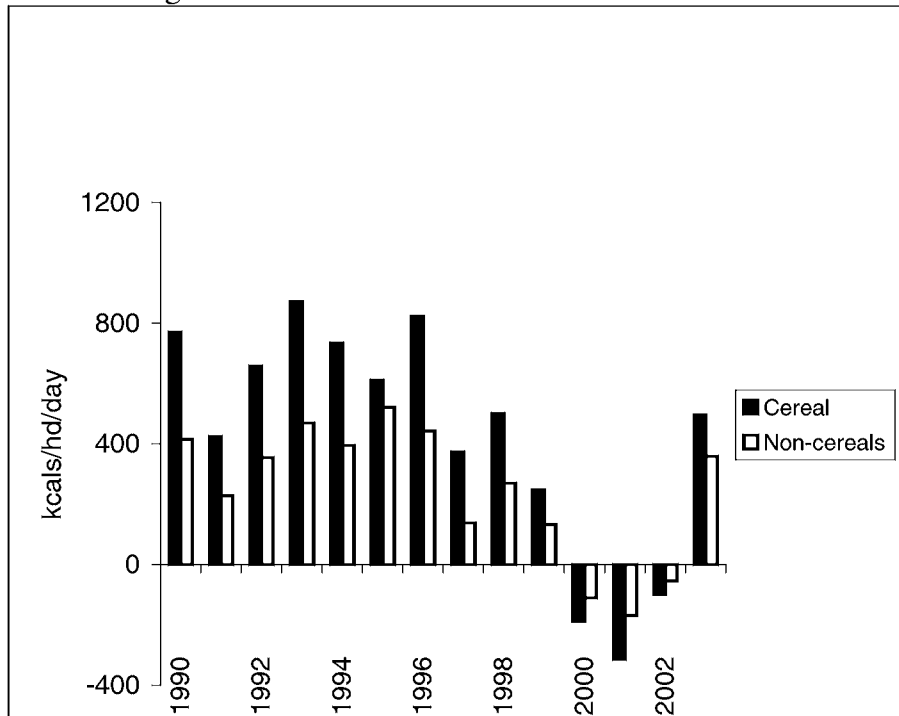
**B. Food Price Index. 1990 values = 100**



**Figure 2.2. Dietary energy supply (DES) from cereals and noncereals, 1984/89–2003.**  
Data are given in Table 4.1.

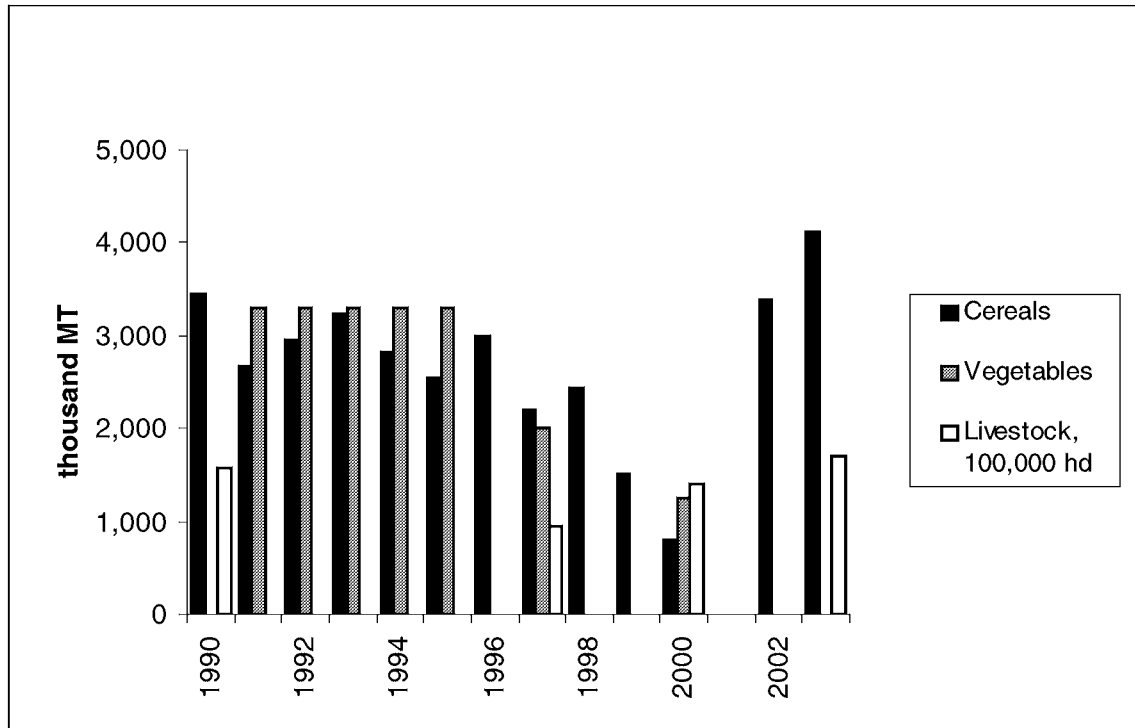


**Figure 2.3. Dietary energy supply (DES) from domestic agricultural production, 1990–2003.** Data are given in Table 4.1.

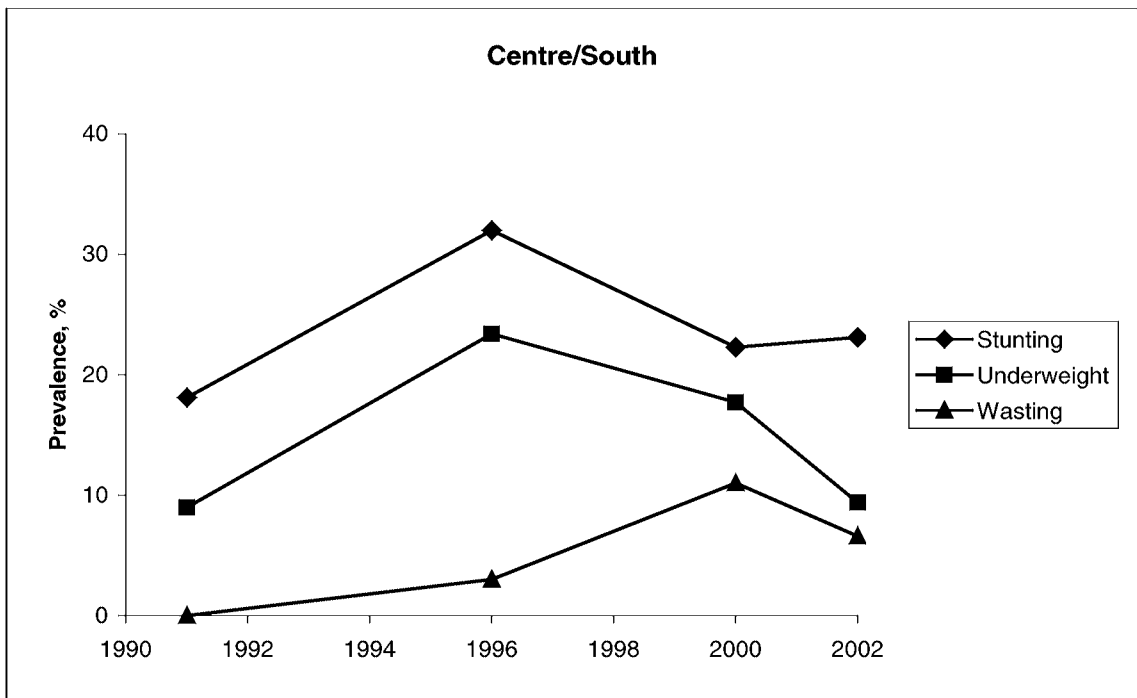
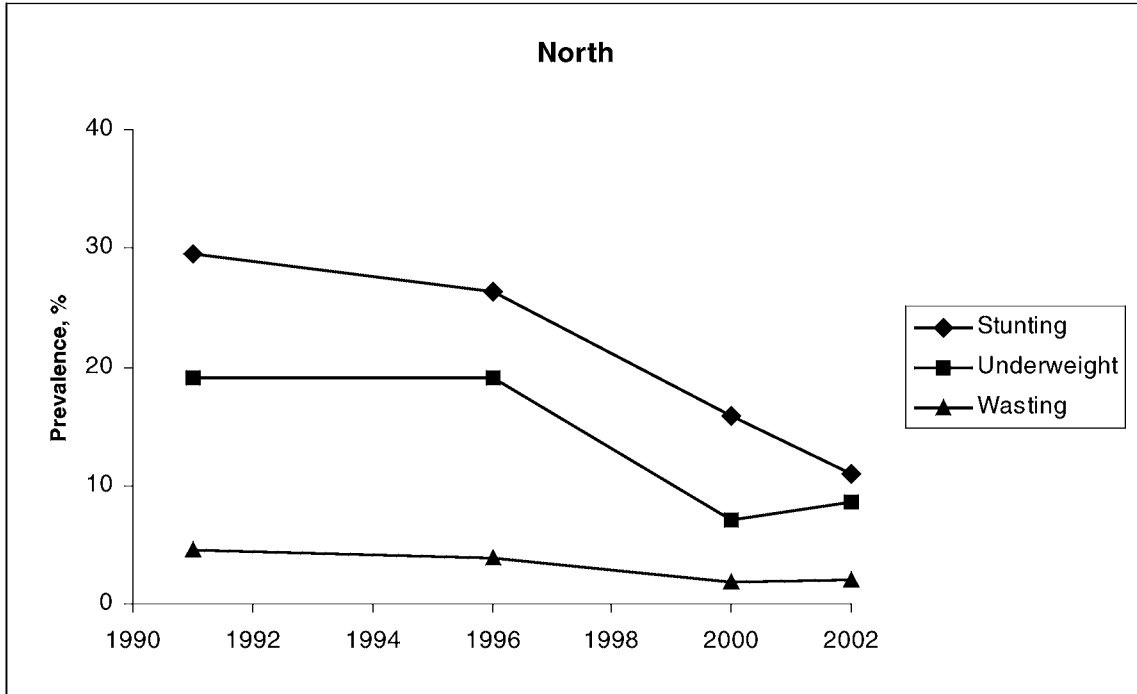




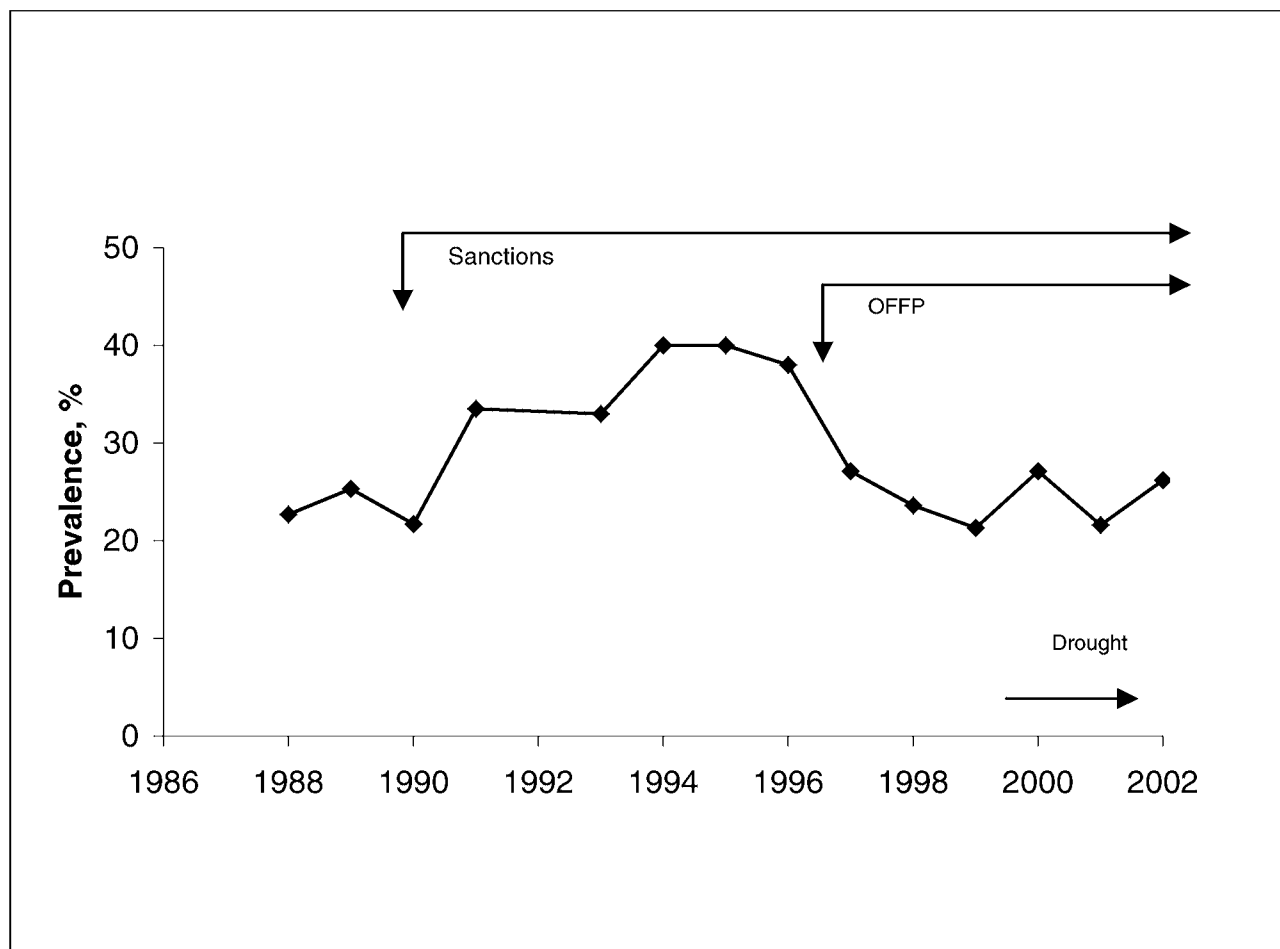
**Figure 2.4. Agricultural production of cereals, vegetables, and livestock, 1990–2003.**  
Source: FAO data.



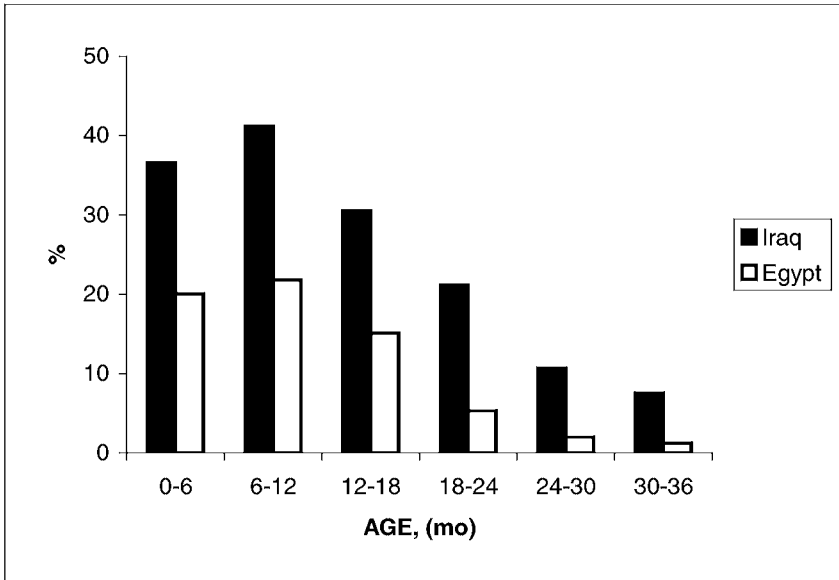
**Figure 2.5. Trends in indicators of malnutrition among children under five years of age in the North and Centre/South, 1991–2002.** Indicators are prevalences of stunting (< -2SD height-for-age by NCHS/WHO reference standards), underweight (< -2SD weight-for-age), and wasting (< -2SD weight-for-height).



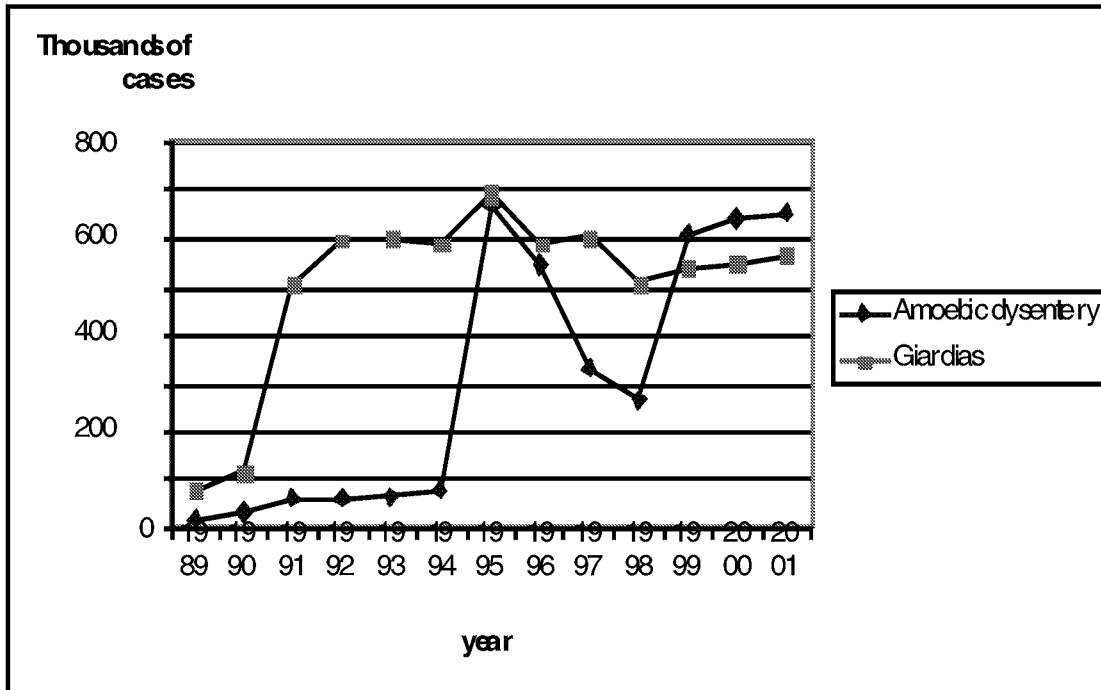
**Figure 2.6. Estimated prevalence of stunting in the cohort that was one to two years old in the year shown, Centre/South, 1988–2002.** Sources: 1991 IST (data for 1988–1991); 1996 MICS (data for 1993–1996); 2000 MICS (data for 1997–2000); 2002 HH Nutrition Status survey (data for 2001–2002).



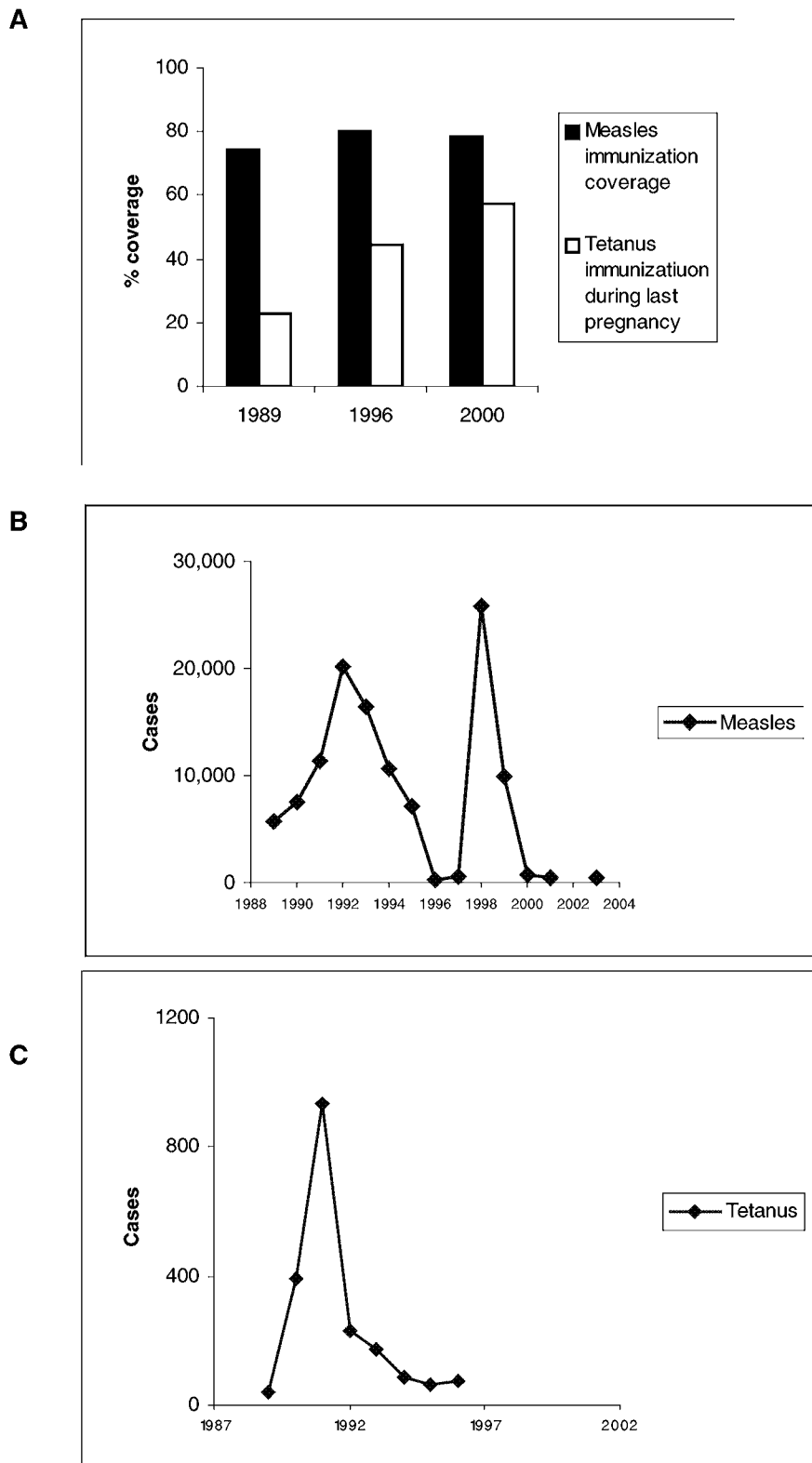
**Figure 2.7. Percentage of children bottle-fed, by age group, Iraq and Egypt, 2000..**



**Figure 2.8. Numbers of cases (thousand ) per year of dysentery and giardiasis reported by the health system, 1989–2001**

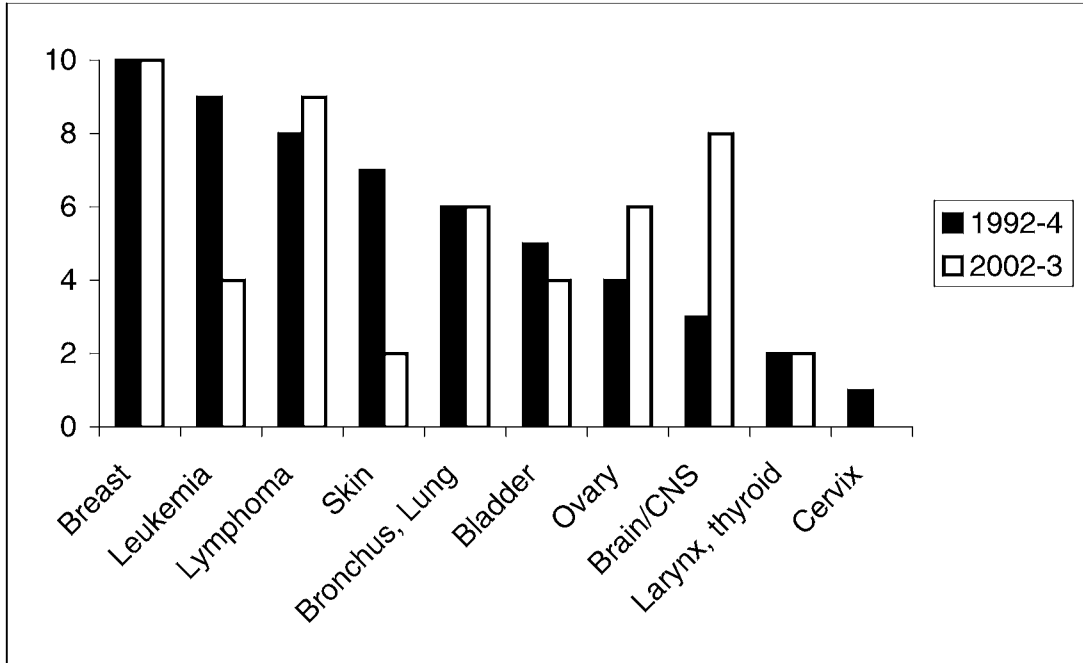


**Figure 2.9. Measles and neonatal tetanus: immunisation coverage and incidence. A. Immunisation coverage. B. Measles incidence. C. Tetanus incidence.** Data from Ministry of Health, quoted by Diaz and Garfield, 2003.



**Figure 2.10. Ten most frequent cancer sites in women, 1992–1994 and 2002–2003.**

Note: the y-scale is the relative ranking of each cancer, with 10 the most common (i.e., calculated as 11 minus rank). Thus, for example, breast cancer was reported as the most common and cervical cancer as the tenth most common. Source: Ministry of Health data.



## **CHAPTER 3. RESOURCES PROVIDED BY THE OFFP AND THEIR HUMANITARIAN EFFECTS**

### **RESOURCES PROVIDED BY THE OFFP**

The OFFP allowed Iraq to sell oil while constraining the potential uses of the resources generated. There are limited data on the amount of oil revenue previously used to support the health and welfare of the population of Iraq, when the Government of Iraq was fully in charge. Thus, comparing OFFP resources with needs estimated from previous experience is problematic. However, data from the OFFP can be used to demonstrate the portion of the resources potentially available for humanitarian relief that were actually used for this purpose.

#### **Revenues**

Figure 3.1 shows the total oil revenue in each year from 1997 to 2002 (the main time period for the OFFP). The maximum revenue in any one year was nearly US\$18 billion. The total revenue over 6.5 years was more than US\$64 billion. After hitting a maximum in 2000, the revenue decreased, not because of further restrictions, but because of the combination of failure to produce and a drop in oil prices. Table 3.1 shows the volume of oil and the value of oil in each time period (the phases generally correspond to easily recognizable half-year periods). The realized average dollar value per barrel is calculated and shown in the last column. It is notable that in the earliest portion of the OFFP the dollar amount of oil nearly tripled, while the realized value per barrel decreased substantially, so that the total revenue less than doubled. After 2000, the volume went down somewhat and the value per barrel decreased. At the very end of the OFFP, the volume decreased significantly, but the realized dollar per barrel returned to higher levels, keeping the total revenue at a high level.

#### **Amounts Requested**

Figures 3.2 and 3.3 show the evolution over time of spending requests and the proportion of requests in each sector. These figures combine the total requests for the North and the Centre/South. The total amount requested was at a maximum in 2000 at over US\$14.5 billion. The second highest year was 2001, at over US\$13 billion. The total requested appeared responsive to the total revenue available. The food basket accounted for the highest proportion (over half) early in the OFFP and the highest proportion at the end of the OFFP. It remained among the highest requests throughout. Often more was requested for agriculture than for medicine and health.

## **Revenues Used for Purposes Not Immediately Humanitarian**

A substantial part of the total resources that may have been available was dissipated for purposes other than humanitarian relief in Iraq (Fig. 3.4), although most of this use was dictated by the OFFP. The total amount of resources that could have been available was US\$69.5 billion. This included all the oil revenue plus interest earned and gains from favourable foreign currency exchange. These figures were presented in an earlier IIC document. The process controlling oil sales limited the amount of revenue that became available. Continued smuggling that occurred during the OFFP may also have reduced the resources available to the OFFP. The magnitudes of these two losses are uncertain.

The IIC document that demonstrated the US\$69.5 billion figure showed that US\$6.1 billion was allocated to the Northern region of the country and US\$32.9 billion was allocated to the Centre/South region for humanitarian uses. The amount allocated for other purposes (“other” in Fig 3.4: United Nations Monitoring, Verification, and Inspection [UNMOVIC], payments to Kuwait, general administration, etc.) was US\$20.8 billion, or over 25% of the total resources. The other two sums that were unrealized for humanitarian purposes during the OFFP were as follows. US\$8.6 billion was placed in the Iraq development fund in 2003, and there was US\$1.1 billion in unspent balances at the end of the OFFP. These had the potential to be used for humanitarian purposes later, although given the number of requests that were not approved, the reason for such large amounts of excess is not clear.

The boxes labeled “Requested” (enclosed in their own borders) in Fig 3.4 show how requests for money in the Northern and Centre/South regions went from amounts requested to amounts approved. It is important to note that “approved” does not necessarily imply paid, although data are available to document the difference between approved and paid only in the Centre/South region.

Items requested might not be approved because they were judged GRL (Goods Review List) noncompliant or for other reasons (e.g., chlorine for water purification or fertiliser for agriculture might be deemed to have alternative uses), and some items were delayed and had no final status when the OFFP ended.

In the North, nothing fell into the category of GRL-noncompliant, whereas 3% to 4% of the money requested in the Centre/South fell into this category. Nearly 4% was not approved in the North. Nearly 6% was not approved (in addition to the amount noncompliant) in the Centre/South. Less than 1% of the money requested in contracts in the North was left with no final status. Nearly 13% of the funds in requested contracts in the South were left with no final status. Even though over 20% of requests did not reach the approved status, the amount approved in the Centre/South was still greater than the amount allocated according to the earlier IIC document. Although not everything that was approved was paid, the amount approved is less than the sum of the amount requested plus the amounts left in balances and the amount put into the Iraq development fund.



Of the more than US\$40 billion approved, US\$31.2 billion was paid, which was less than the US\$32.9 billion that was budgeted. The unpaid amount is not necessarily lost in the sense that the funds went elsewhere. It is worth reiterating that the amount allocated (according to the earlier IIC document) plus the unspent amounts would have covered these expenses.

There are reports of a 10% surcharge on contracts in the Centre/South starting in Phase VIII. Although it is not clear exactly how much was taken, if the surcharge applied to all contracts in the Centre/South from Phase VIII onward, it would have resulted in the loss of another US\$1.7 billion. The final figure for humanitarian funding in the Centre/South would then have been US\$29.5 billion, as shown on the far right of Fig. 3.4.

In the North there was no surcharge, but the implementing agencies spent over US\$78 million in administration costs. This left US\$4.4 billion for humanitarian purposes. The total for humanitarian purposes nationwide was therefore US\$33.9 billion, also as shown on the far right of Fig. 3.4.

### **Amounts of Requests Not Approved**

The total amount not approved in the North and the Centre/South is of interest, but amounts approved for specific sectors in the North and the Centre/South are even more illuminating. Figure 3.5 details central and southern contracts over the course of the entire program. The height of each section is proportional to the amount of the sector that was in a given final status category. The width of each section is proportional to the proportion of the total funds requested that was accounted for by the sector over the entire duration of the OFFP (although some sectors had to be made slightly wider than is truly representative of the proportion requested in order to be visible). The letters at the bottom of the chart correspond to sectors that are indicated on the right-hand side of the chart. As an example of how to interpret a column, all of the requests for higher education were approved. All other categories had some amount of funds that either were not approved, had no final status, or were GRL-noncompliant. Not surprisingly, the sector with the largest proportion of all funds requested was the food basket (24%). This was also the sector with the highest proportion approved (93%) other than higher education. The other major sectors of interest include medicine and health (6% of requested, 84% of requested approved), agriculture (11% of requested, 75% of requested approved), electricity (11% of requested, 67% of requested approved, and 26% of contracts with no final status), food handling (9% of requested, 83% of requested approved), and water and sanitation (6% of requested, 77% of requested approved, and 14% of contracts with no final status).

Figure 3.6 shows a similar breakdown of the requested contracts in the North. The key findings for the North are that almost everything was approved, nothing was GRL-noncompliant, and a very small proportion of the monetary value of contracts was left with no final status.

Given that the amount requested in the Centre/South was over 10 times larger than that in the North, a graph combining the two regions of the country looks very much like the graph for the Centre/South.

### **Funds Approved and Spent**

Before discussing the proportion of funds approved in the North and spent in the Centre/South, it is important to describe why these are the most relevant endpoints. The files available to the auditors provide information on contracts that were paid in the Centre/South area of the country and provide only information on contracts that were approved (rather than paid) in the North. Given that the contracts in the North were generally approved, that a much larger portion of the funds in the North went directly to international agencies to allocate, and that the total requested in the North did not exceed what was budgeted, an assumption was made that the funds approved in the North were a close proxy for the funds paid. The data available to auditors demonstrate that this clearly was not the case in the Centre/South. A second important issue for the interpretation of the data in Figs. 3.7–3.10 is the term “notified.” Although there is no exact record of why this second term was needed or used, the contracts that ended up in the “notified” category appeared to be as likely to be paid as the contracts that ended up in the “approved” category. Therefore, we have grouped all approved and notified contracts together.

Finally, the amount per year approved in the North and spent in the Centre/South for the six main sectors of interest is informative. The patterns of these approvals and expenditures are similar to the pattern of revenues (Fig. 3.1), as shown by Figs. 3.7–3.10. The charts show two points for each year, basically representing the first half and the second half of a year. These correspond closely but not exactly to the timing of the phases of the OFFP. Food basket expenditures continued at a higher level, while other expenditures decreased after early 2000.

### **RELATION OF OFFP INPUTS TO HUMANITARIAN OUTCOMES**

The primary outcomes to which expenditures might be linked are child malnutrition (stunting) and possibly hunger. One difficulty in interpreting a cost-effectiveness result is that avoiding negative outcomes such as stunting and hunger can actually be a process that takes longer than one year. Here we examine the results for the single year 2000, the year of maximum outlays in the OFFP. In that year, combining what was paid in the Centre/South region and approved or notified in the North yields a total of US\$2.538 billion for the food basket.

The numbers of cases of stunting avoided can be estimated as follows. We might assume that the prevalence of stunting in 2000 would have remained the same as in 1996, averaging 31%, combining the North and Centre/South data. The actual estimate is 21% (see Table 2.2). The under-five child population in 2000 is estimated as 3.6 million. At a stunting rate of 31%, there would have been 1.116 million stunted children, and at a rate

of 21%, there would have been 0.756 million stunted children. The difference is 360,000, which gives a reasonable estimate of the numbers of cases of stunting that, it could be argued, were prevented in 2000 by OFFP.

An equivalent calculation for hunger is not considered feasible, after looking into this closely. The average food availability (DES) is estimated as around 1,800 kcal/capita/day in 1995 and 2,800 kcal/capita/day in 2000. This is indeed a major increase in supply, mainly due to OFFP. However, it cannot be converted into a hunger-prevented estimate, as the variation in availability (or consumption) around this average was not assessed (which would require survey data). Equally crucial, the relation of individual food access to nutritional requirement is entirely unknown, and this correlation can become a major determinant of adequacy (hence hunger) when food availabilities are near requirements (FAO, 2002; Naiken, 2002).

Cases of stunting averted can give some broad estimates of costs in relation to outcome. However, it is impossible to determine the proportion of the funding contributing to this outcome, and it is likely that the food dedicated to children helped with other outcomes as well. For example, if 5% of the food basket funds were dedicated to stunting prevention, this gives approximately US\$300/case of stunting averted. Increasing the proportion dedicated to avoiding stunting increases the apparent cost: for instance, if 95% of the funds for the food basket were dedicated to stunting prevention, the expenditures on stunting prevention would be over US\$7,000 per case averted. Obviously these are very broad ranges, and moreover they do not take into account the time issue—over how long is the expenditure applied to preventing a case of child malnutrition? The calculations are included here (with strong cautions against over-interpretation) to provide some order-of-magnitude guidance in assessing the resource flows.

### **Cost-effectiveness of the OFFP**

Various comparisons suggest that the food and health expenditures allotted under the OFFP humanitarian program were very modest. The cost of supplying a monotonous ration of 1,800 kcal/capita/day (a starvation ration if not supplemented by domestically produced food) was estimated as 32 US cents/capita/day (about US\$9/capita/month) over the period 1997–2003 if food-handling is excluded, and 44 cents/capita/day (US\$13/capita/month) if food-handling is included. This compared with an estimated US\$11/capita/month for food imports in Iraq in 1989, excluding food-handling.

In comparison, a study of 52 feeding programs conducted mainly in the 1980s found that the average per capita cost was US\$13.3 (in 1988 dollars) per month, including handling, to supply the same number of calories per day (Horton, 1992). There is no comparable international study of feeding programs in the late 1990s. However, since U.S. domestic inflation was on the order of 40% over the decade 1988 to 1998, we can conclude that the cost of the Iraq program was below, and possibly well below, that of other feeding programs in the late 1990s.

Similarly, the health expenditures permitted under the OFFP were modest. These are estimated as US\$33/capita/year for imported inputs (primarily medicines and vaccines) during the OFFP period (including health and water or sanitation), as shown in Table 3.2. This may be compared with estimated health expenditures of US\$83/capita/year in 1989 and US\$56/capita/year under the Coalition Provisional Authority in 2003. The World Bank in 2003 estimated a required health expenditure of about US\$61/capita/year for 2004–2007. Thus the health resources under OFFP were less than half those used before the crisis and about half the estimated recurrent needs after 2003. If inflation adjustments were made, the proportion of the 1989 level represented by the OFFP spending would have been even lower.

This assessment of the adequacy of imported health inputs does not include the needs for rehabilitation of the health sector, which were estimated as US\$2 billion by the Aga Khan mission in 1991 (Aga Khan, 1991) and US\$2.5 billion by the World Bank in 2003. These requirements were not met under the OFFP.

### **Equity Issues**

The equity of the OFFP needs to be considered, although there was nothing inherent in the goals of the OFFP to promote equity. Using ration systems tends to allocate food more equitably than private markets would do. This would seem to have been a logical result in Iraq, as the cost of the ration was nominal. However, the cost seemed to be above the means of the poorest of the poor. Even if the price of the ration had not been an issue, the ration did not supply all daily caloric needs and would have to be supplemented (at some cost) by privately purchased foods.

The military occupation in 2003 may have helped to make the distribution of rations more equitable. The logic supporting this conclusion is that the number of people receiving rations increased after the occupation—suggesting that some people had been excluded before. Those excluded would have been very disadvantaged. They may have been enemies of the regime. There is anecdotal evidence to support this thought, but it is not clearly documented.

Although the number of individuals who would have been at an advantage under the OFFP is small, people with access to foreign exchange would have been at an advantage in their ability to purchase food. These would have included farmers living near the border and cattle owners who could ship animals to neighbouring countries.

Another equity issue is a comparison of the Centre/South and North regions of the country. Data suggest that the North was significantly disadvantaged relative to the Centre/South prior to sanctions (e.g., in nutritional status). However, under the OFFP, the North was able to spend about US\$214/capita/year versus about US\$200/capita/year in the Centre/South (because of the lower proportion of requests approved for the Centre/South). In the Centre/South a higher proportion of the funds that were approved was spent on telecommunications, oil, and infrastructure—which probably benefited both

regions—hence implying that “humanitarian” supplies to the North were higher per capita.

Although there would be interest in identifying inequities at even more specific geographic levels (i.e., governorates), the data do not exist to allow any comment on this point. All that exists is anecdotal evidence (e.g., stories about food not being shipped out of Tikrit, which would benefit local consumption).

### **Possible Alternative Uses of OFFP Resources**

The Working Group was not explicitly asked to consider alternatives to the way that the revenues from oil sales might have been used for greater humanitarian impact, but suggestions naturally arose in the course of discussing the several sectors and noting the problems in using available revenue to produce the desired effects. One problem in particular that came to the Group’s attention repeatedly was that of infrastructure repair and maintenance. Shortages of electricity and contamination of the water supply because of damage to water treatment and pumping plants and sewage treatment facilities made it difficult to provide adequate health care (even when drugs and other inputs were available), and meant that the provision of food had less favourable effects on nutritional status, and probably on mortality, than might otherwise have been the case. The suggested alternatives for spending OFFP resources can be grouped into four categories, one of which includes several specific proposals dealing with the balance between immediate consumption and investment in infrastructure. These categories are increasing the total amount of resources; devoting more revenues to infrastructure development or recovery; buying from local (Iraqi) suppliers; and buying smarter at lower prices and better quality. Each of these will be discussed here.

#### ***Increasing the Total Amount of Resources***

So long as imports under the OFFP were to be financed by oil revenues, there are really only three ways in which an increase in the total amount of resources could have been accomplished.

One way would have been to begin the OFFP earlier, allowing Iraq to export significant quantities of petroleum before 1996 (Table 3.1 shows exports during the OFFP). That would have required the Government of Iraq to acquiesce in the control of what it could do with the revenues, before the country reached such a desperate state that there was no choice but to negotiate the OFFP’s terms. It may be unrealistic to think that could have occurred. If it *had* been possible to start the program before 1996, it would not only have meant larger total flows under the OFFP. It would also have meant that in the earliest years, when Iraq still held sizeable stocks of food and of foreign exchange with which to buy food, there would have been less need to import food with the use of OFFP revenues. In consequence, the share of whatever revenue was generated that went into infrastructure maintenance and repair could have been larger than was possible once the need for food imports became urgent and began to absorb the largest share.

A second possibility for increasing total revenues would have been to allow the country to export as much oil as it could produce, minus domestic consumption—that is, not to impose a cap on exports. This cap was later lifted (December 1999), but by then production capacity had declined so much that output increased less than it might have otherwise (see Table 3.1). Never imposing a cap on oil exports might have accelerated the decline in capacity, but it would have allowed larger revenues in the first years of the OFFP.

The third possibility would have combined either not capping exports or starting the OFFP earlier with devoting a larger share of revenues to the oil industry itself in order to maintain or (preferably) to increase capacity. More investment in the industry, in the absence of a limitation on exports, would have meant more capacity, more exports, and more revenue, starting from whenever the investments would have begun to pay off in terms of more oil lifted. This would presumably have occurred quickly, within a year or two, for investments in maintenance and spare parts. (Investing in the development of new fields would have required much larger revenues and taken much longer, and is not a realistic option in the context of the OFFP.) Two unknowns attach to this suggestion. First, what would have been the impact on oil prices? This would probably have been modest if Iraqi production had been simply maintained or increased only slightly. Second, would the Security Council have agreed to any modification of the OFFP that allowed Iraq's economy to grow significantly?

### ***Devoting More Revenues to Infrastructure Development or Recovery***

More investment in electricity capacity and in water and sanitation would almost surely have yielded better health outcomes, particularly by providing safer drinking water and maintaining health system capacity. Once the OFFP got under way in late 1996, however, the need for food imports so dominated other considerations that little could be done to shift resources from immediate consumption to investment. In the long run, such investment might even have reduced the need for food imports by raising domestic food production. The difficulty is that while waiting for domestic capacity to increase, people still needed to be fed, thus the need for a large proportion of the resources to be dedicated to food basket and health and medicine. In the short run, it was probably cheaper to import food than to try to raise domestic production by investing in agriculture. If it would not have been easy to spend more revenues on infrastructure without increasing total revenues or limiting food imports to a dangerously low level, it should still have been possible to make the same resources more productive. The ration was simply not large enough (and not of good enough quality, nutritionally) to allow any significant diversion from consumption to investment without some concurrent changes in the amount or timing of total available revenues. Squeezing the food basket further does not appear to have been an acceptable option.

In addition to the urgency of the need for food, the urgent need for investments in electricity and in water and sanitation also did not leave much scope for increased spending on agricultural inputs. There are no quantitative assessments of what an optimal investment strategy would have looked like, but in any event, the best strategy would

have depended on the time horizon, with agricultural investments probably looking more valuable as the horizon was longer, if they involved anything other than rapid repairs of farm machinery and transport.

It was also noted earlier that even the limited resources that were available could have been allocated more efficiently. Food imports are the simplest component of the OFFP: food, once available, can be immediately consumed and does not require complementary inputs. Importation of spare parts, essential chemicals, or other inputs for electricity, water and sanitation, and agriculture is quite different in this regard: any individual component may be useless unless other components are simultaneously available. The problem of having all the needed inputs available together, and the waste and loss of output that result when they are not, was recognized even during the period of sanctions, before the OFFP began (Aga Khan, 1991). Failure to bring all the components together without delay seems to have been due to two factors.

One is the process of drawing up contracts, which were item- and supplier-specific, so that it was difficult to specify in a single contract all the goods that would be needed so that none of them would be wasted or sit idle while others were obtained. It is not clear how the administration of the OFFP could have been modified to make multi-item, multi-supplier contracts easier to draw up and simpler to process.

The second factor creating imbalances among inputs, and therefore inefficiencies in infrastructure development, was the pattern of “holds,” i.e., delays and rejections to requests for imports. Failure to approve one component of a set of complementary inputs, or delaying approval while other components were approved, could make all the inputs at least temporarily useless. This problem appears again and again in the comments on the OFFP. Combining contracts and requests for approval, and requiring that a technically efficient or necessary package be approved or rejected as a whole, could have partially solved this problem. Rejection would at least release all the resources for one or more other contracts. The net effect would have been to increase effective investment without requiring any more resources in total.

### ***Buying from Local (Iraqi) Suppliers***

Foreign exchange in the hands of the Government of Iraq could in principle have been used for whatever the government chose, including purchases or development of weapons. The logic first of sanctions (to prevent the country from acquiring dollars) and later of the OFFP (to allow dollars to be used only for approved imports) follows from what appears to be a wish not to allow Iraq to acquire or develop any further military capacity. This led in turn to requiring that oil revenues be used only for imports, because if they were paid to domestic producers, the dollars would ultimately revert to the government when local producers converted the dollars into dinars. This restriction to imports rather than domestic supply imposed an efficiency cost on the OFFP any time that domestic production would have been cheaper, at the prevailing dollar/dinar exchange rate, than imports.

## Chapter 3

The information available to the Working Group does not establish whether, how often, or for what products domestic supply would have been cheaper. Many of the imported goods, especially capital equipment, presumably were not produced domestically, and so the issue would not arise for them. Food, in contrast, was produced locally, and although before 1991 Iraq produced only about one-third of the food it consumed, that was food that could in principle have been bought through the OFFP and used in the ration. The result would have been to free foreign exchange for other purchases, in particular for investment, as discussed above. If one-third of the value of the ration basket could have been obtained from local production, for example, over the six and one-half years of the OFFP, around US\$ 4.5 billion (one-third of the total spent on the food basket over the life of the OFFP) could have been released for other uses.

There are three problems in trying to make any suggestion about whether and how such a saving could have been realized. First, there do not seem to be systematic data on domestic prices from which to conclude that local supply would actually have been cheaper than imports—and if it was not, then there would have to be a different argument in favour of local purchasing, such as employment generation. Market food prices rose to very high levels in Iraq compared with prewar prices, as people bought food outside the ration, but that says little about the price at which food might have been centrally bought from farmers and used to replace or supplement imported foodstuffs in the ration. Under rapid inflation, much would depend on what happened to the exchange rate, and that would be unlikely to move smoothly so as to keep dollar prices roughly constant.

Second, buying food locally would probably have required larger resources to go to agriculture in order to restore and maintain capacity. This would be no problem if those resources could be financed out of savings on imported food, but it could have been impossible or ineffective if they had to come out of allocations to water or electricity. The Working Group has not seen estimates of how much food it would be realistic to suppose could have been obtained in 1996–1998; over the next three years, the drought might have made domestic purchasing largely unviable in any case.

Third, supposing inputs to be available as needed, and food to have been produced in sufficient quantity and quality to affect the ration, there is the question of how to handle payments for it. Paying dollars to farmers and letting the Government of Iraq capture those dollars would presumably not have been allowed. Therefore local purchases would have required that producers be paid in dinars; but these would have had to be additional dinars in order to make any difference, since the government was already free to use any of its own currency derived from internal tax revenues as it wished—as it had to do during the sanctions. To assure that dollars were saved on imported food, but that no dollars went to the government, would seem to require that the OFFP itself operate like a parallel central bank. It would need to set aside dollars and issue dinars, pay local producers in those dinars, and then add the reserved dollars to the funds available for non-food imports. As an accounting operation, dollars would still be buying food; the complication would arise from keeping those dollars under the control of the OFFP.



There is a further question of what effect there would have been on domestic prices and economic activity from issuing additional dinars. This might fuel inflation generally and at the same time help to hold down food prices if production rose enough. At a minimum, local purchasing beyond what the Government of Iraq could manage from its own resources in dinars would seem to require even more intrusive economic management by the OFFP.

This discussion has concentrated on food because it is the OFFP input that it seems most likely domestic production might have supplied in quantity. The difficulties of paying in dinars while controlling dollars, would, of course, be identical for any other local input. The issue is apparently most important in cases that the Working Group discussed, in which local labour is needed to put imported capital goods to proper use. One example is the importation of sewer pipes that were not installed because funds were reportedly not available to hire people to install them; the other refers to instances in which Iraqis would need training to install or operate capital equipment, and funds for such training were not forthcoming. Of course, the Government of Iraq continued to pay the salaries of military personnel and civil servants, so there remained the possibility of diverting some of that labour to more productive uses in collaboration with the OFFP in order to increase the humanitarian impact. There do not seem to be estimates of how much flexibility the government had in this respect, or why it did not redirect labour as suggested here.

### ***Buying Smarter: Lower Prices, Better Quality***

At the level of anecdotal reports and unquantified criticisms of how the OFFP operated, there is much emphasis on funds being used either to buy goods of inferior quality (grains fit only for animal feed, pharmaceuticals of doubtful efficacy or of expired date, and so on) or to pay excessively high prices (because certain suppliers, especially those owned by or tied to the government, were favoured with contracts). These abuses represent inefficiencies or reduced humanitarian impact, quite apart from whether there were any outright thefts of supplies, under-the-table payments or kickbacks from suppliers, or similar unethical practices.

Any change in the *modus operandi* of the OFFP that would have required it to be significantly more intrusive (to reduce abuses) would have raised its administrative costs somewhat and would probably have led to more friction with the Government of Iraq—which in turn might have led to increased delays in letting contracts and receiving goods. Either of these effects would have reduced the savings that could in principle have been realized through tighter administration.

Correcting these problems would have depended on action at three stages: (1) closer review of contracts for both quality and price—but without introducing still more delays or the kind of rejections that had a multiplicative effect, as discussed above; (2) tighter inspection of goods arriving in Iraq in order to trace low-quality or high-priced shipments to the supplier; and (3) punitive sanctions against suppliers that overcharged or delivered goods of unacceptable quality, for example, by refusing all future contracts with the same firm. To the extent that suppliers tried to exploit Iraq and there was no collusion with the

government, it would clearly have been in the interest of the Government of Iraq to act, or have the OFFP act, forcefully at all three stages. It would have been much harder for the OFFP to control these abuses any time that there was collusion between the government and suppliers, since the government chose the suppliers. Again, it seems that only a more intrusive operation of the OFFP would have been able to improve its performance and extract the savings that were lost to overcharging and underperforming by the providers of imported goods. To the extent that there was collusion or favouritism by the governments of the countries from which goods came, improving the way the OFFP operated would have been still more difficult

## **CONCLUSIONS**

It would have been difficult, but not impossible, to improve the balance of expenditures in the OFFP. The discussion in this Chapter indicates just how difficult this might have been. All of the suggestions that the Working Group considered seem, when looked at together, to require either notably looser or notably tighter control over what the Government of Iraq would be allowed to do. None of them would be simple adjustments at the same level of resources and degree and kind of control.

**Table 3.1. Volume and value of oil.**

<b>Phases I–VIII</b>	<b>Volume of oil (millions of barrels)</b>	<b>Value of oil exported (US\$million)</b>	<b>US\$/bar rel</b>
Early 1997	120	2,150	17.92
Late 1997	127	2,125	16.73
Early 1998	182	2,085	11.46
Late 1998	308	3,027	9.83
Early 1999	360.8	3,947	10.94
Late 1999	389.6	7,402	19.00
Early 2000	343.4	8,302	24.18
Late 2000	375.7	9,564	25.46
<b>Total</b>	<b>2,206.5</b>	<b>\$38,602</b>	(17.5)
<b>Phases IX–XIII</b>	<b>Volume of oil (millions of barrels)</b>	<b>Value of oil exported (millions of euros or dollars)</b>	
Early 2001	293	€6,668 (or \$5,638)	19.24
Late 2001	300.2	€6,004 (or \$5,350)	17.82
Early 2002	225.9	€4,886 (or \$4,589)	20.31
Late 2002	232.7	€5,517 (or \$5,639)	24.23
Early 2003	169.6	€4,175 (or \$4,413)	26.02
<b>Total</b>	<b>1,221.4</b>	<b>€27,250 (or \$25,629)</b>	(21.0)
<b>Overall Total</b>	<b>3,427.9</b>	<b>\$64,231</b>	(18.7)

**Table 3.2. Health expenditures and expenditure needs for various years.**

Variable	Estimated expenditures (1989)	OFFP expenditures (1997–2003)	CPA expenditures (2003)	World Bank estimated needs (2004–07)
Total health expenditure excluding salaries (\$US billions/yr)	1.5	0.78	1.4	1.6
Estimated population (millions)	18.0	23.2	24.9	26.1
Expenditures/capita/yr (\$US)	83	33	56	61

**Figure 3.1. Annual oil revenue in US\$ millions, 1997–2002.**

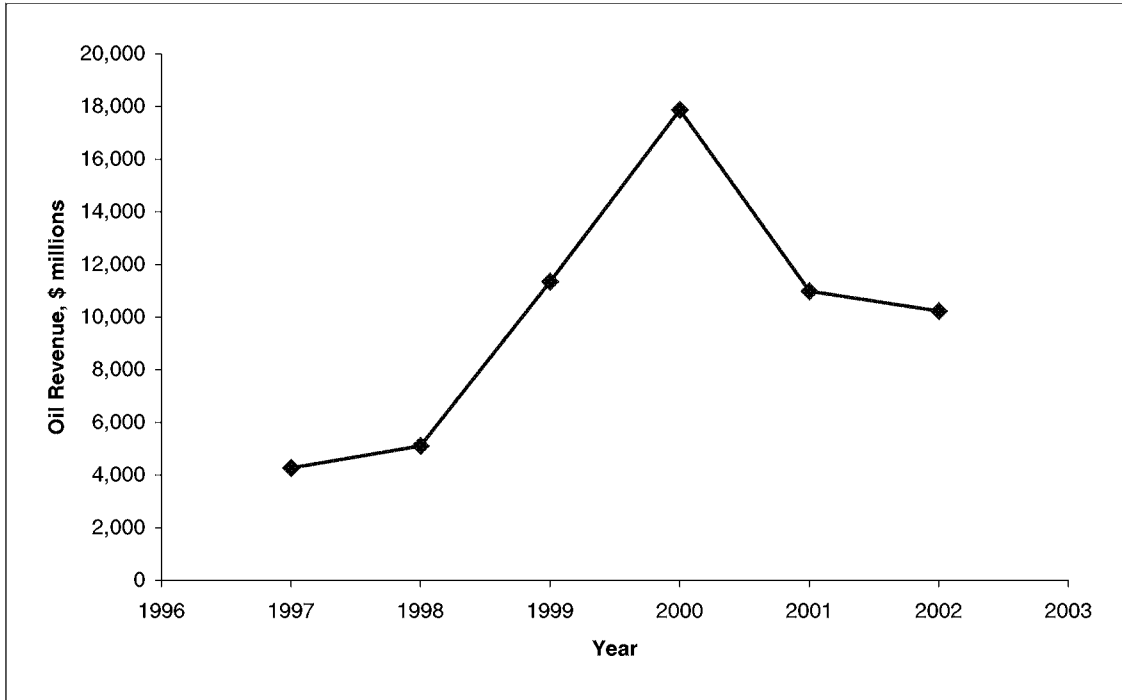


Figure 3.2. Value (US\$) of resources requested for imports according to sector and phase of OFFP.

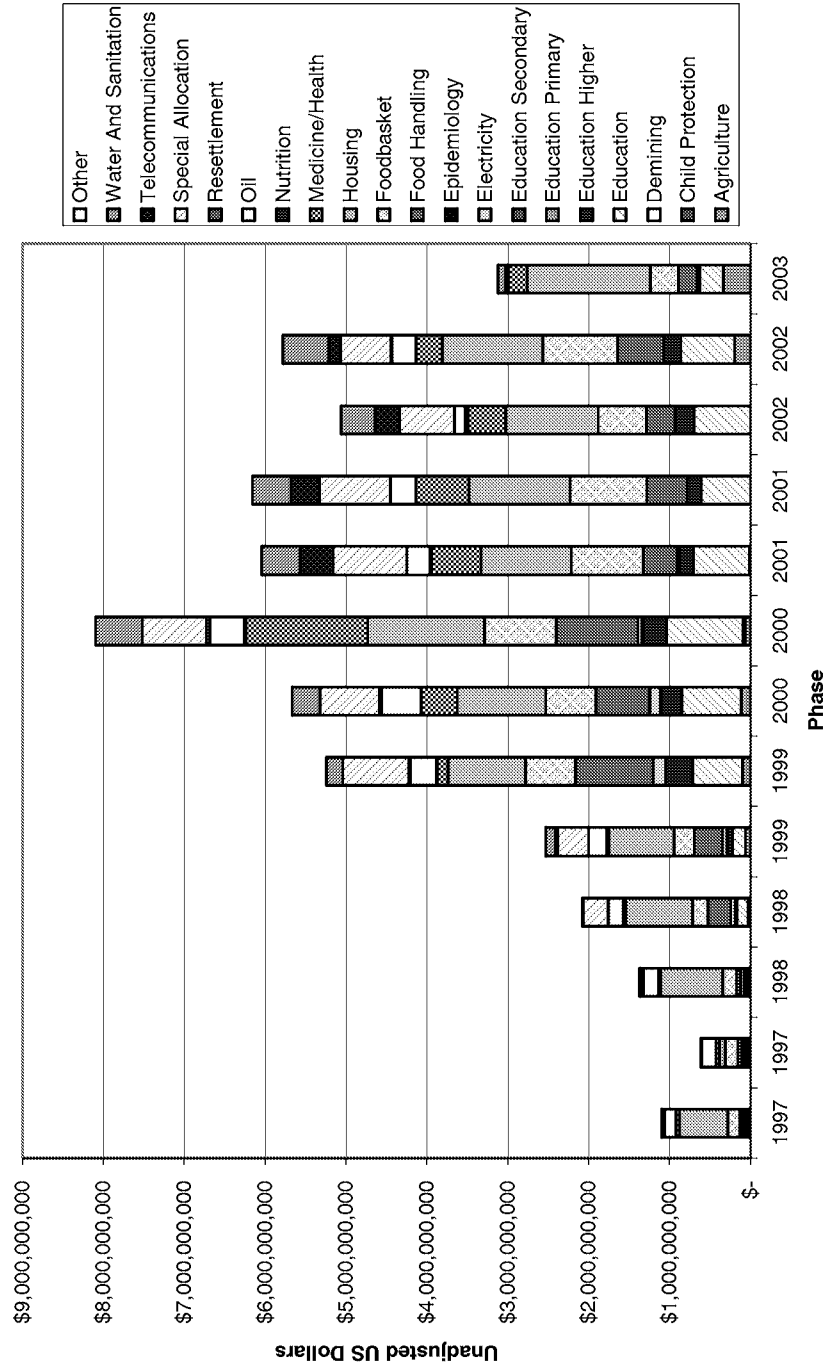


Figure 3.3. Percentage distribution of resources requested for imports according to sector and phase of OFFP.

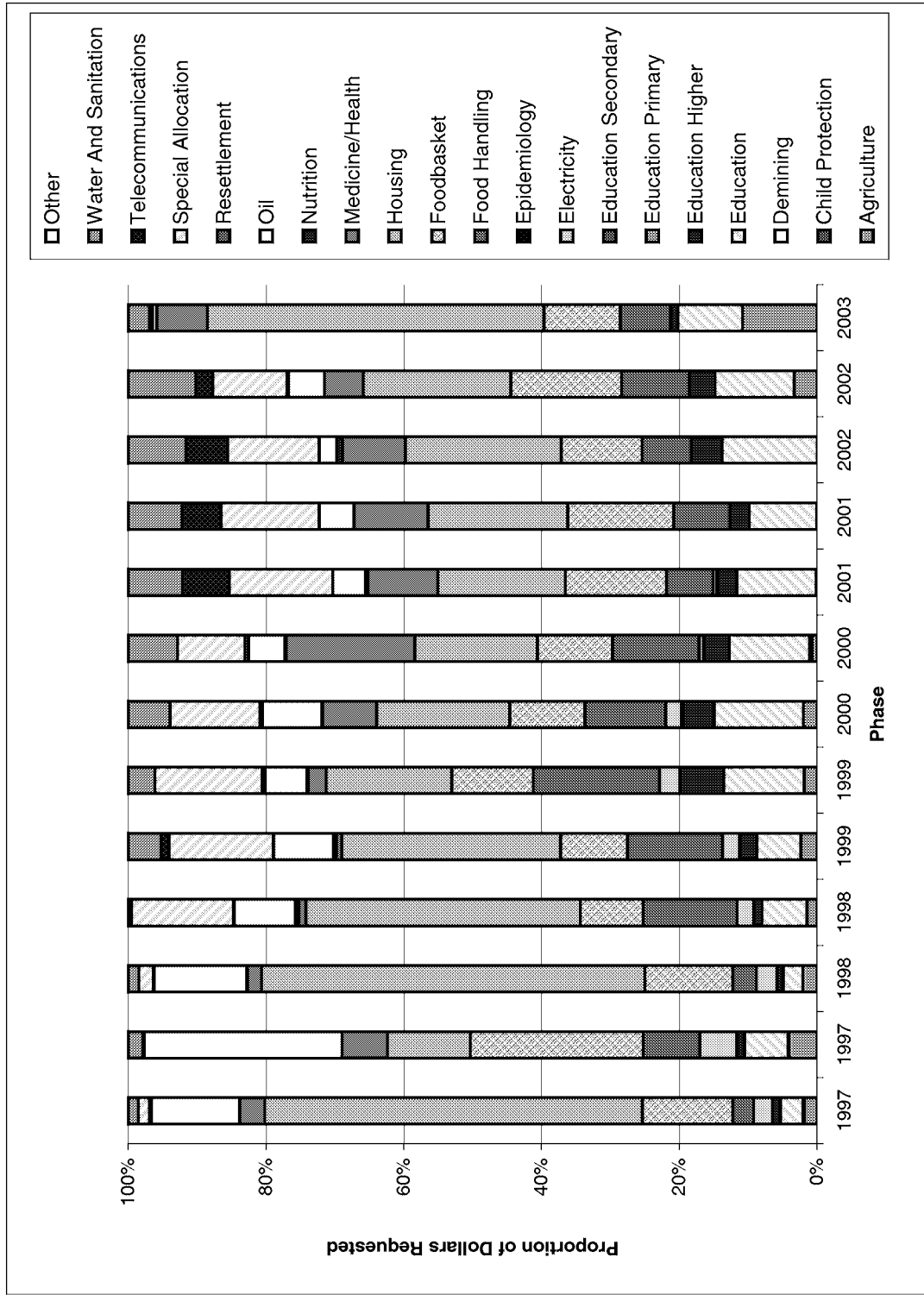


Figure 3.4. Flow chart showing allocation of overall OFFP resources (in US\$) for humanitarian and other uses. GRL, Goods Review List.

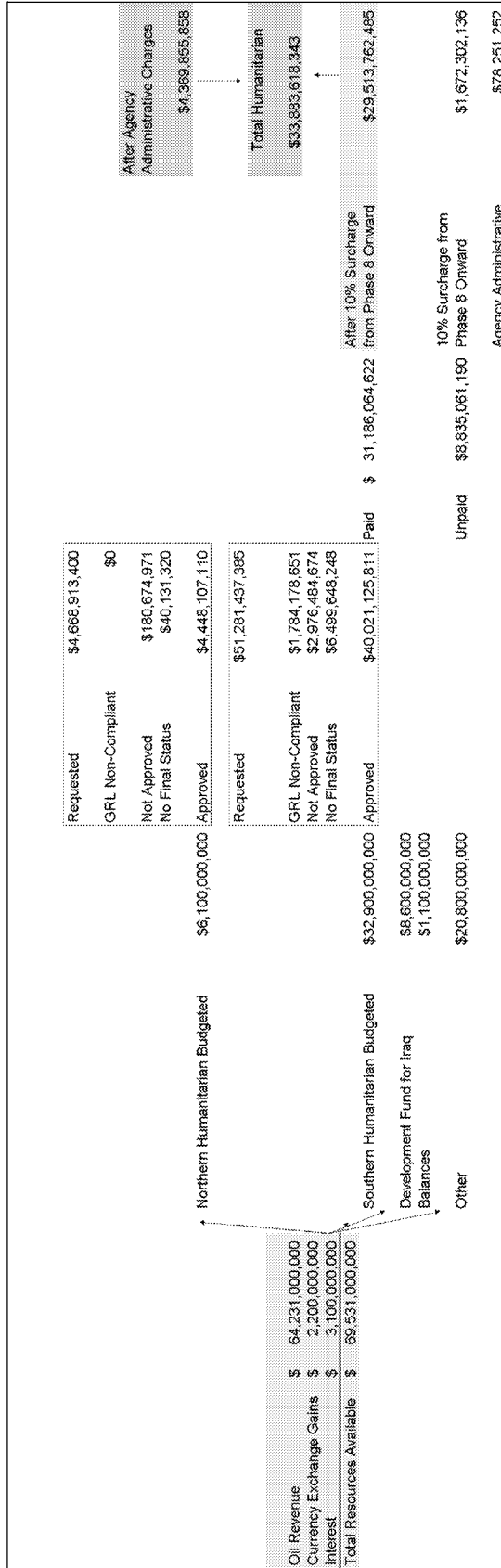


Figure 3.5. Distribution of OFFP resources (in US\$) in the central and southern governorates according to sector and status (approved, not approved, not compliant, no final status).

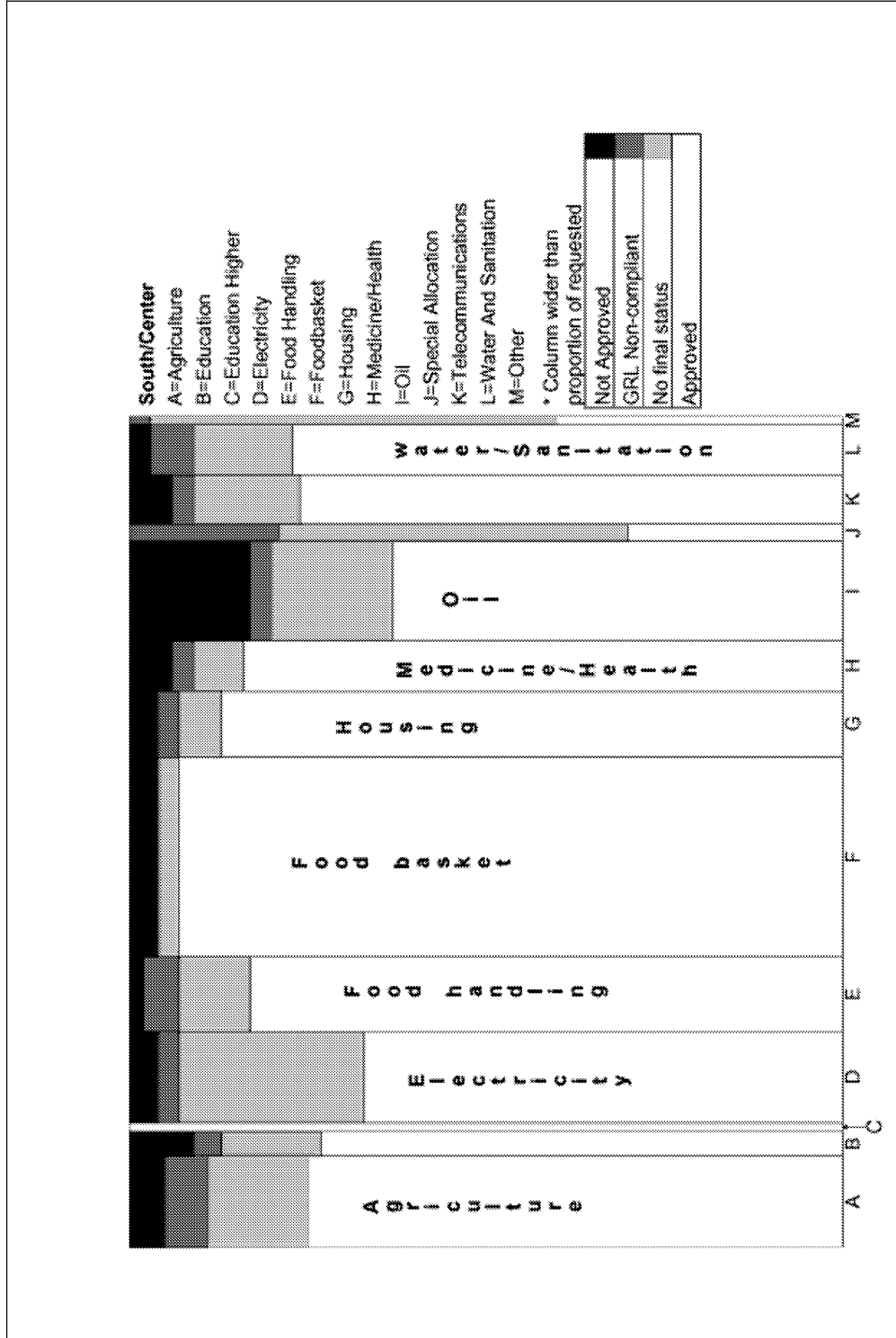
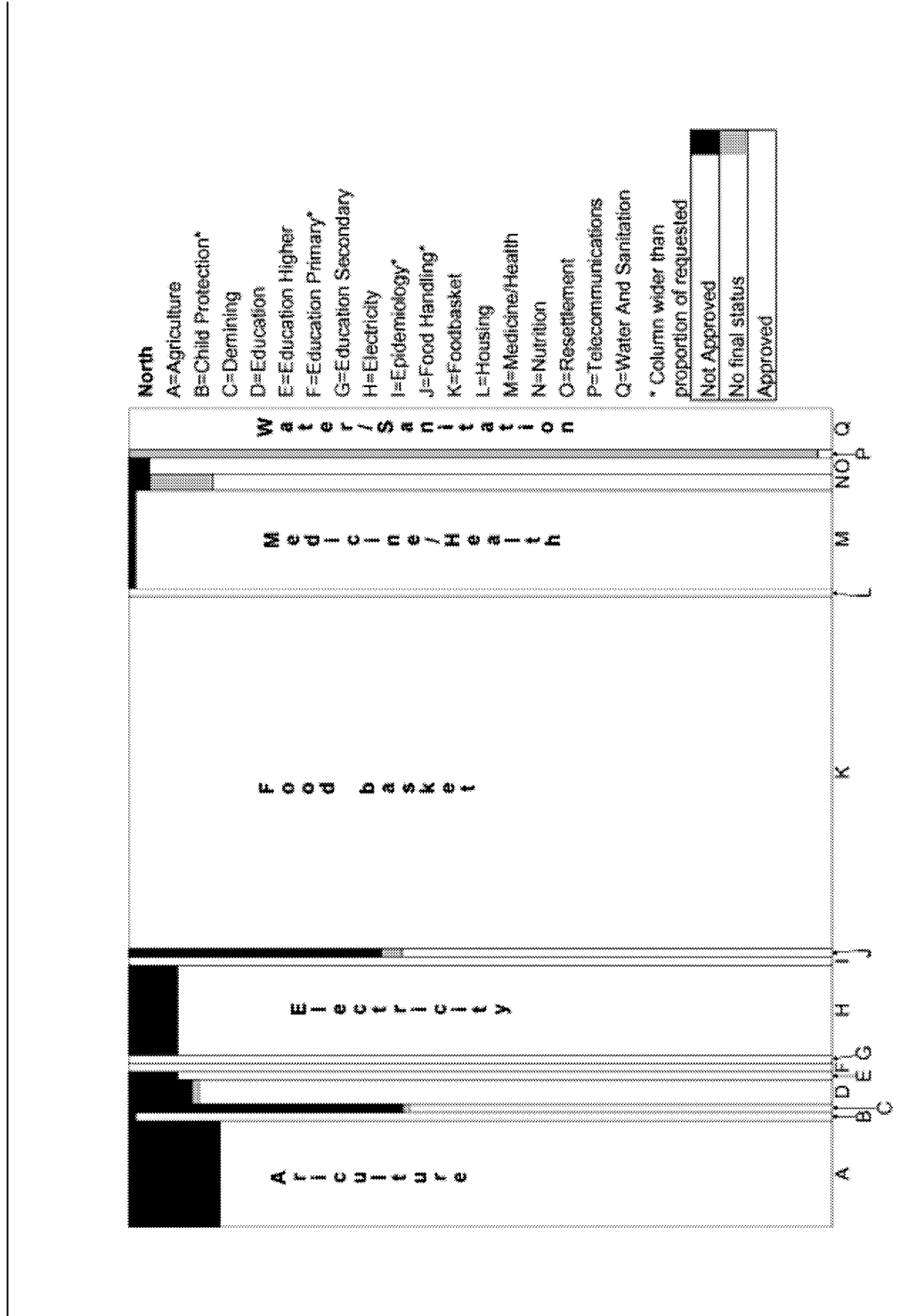
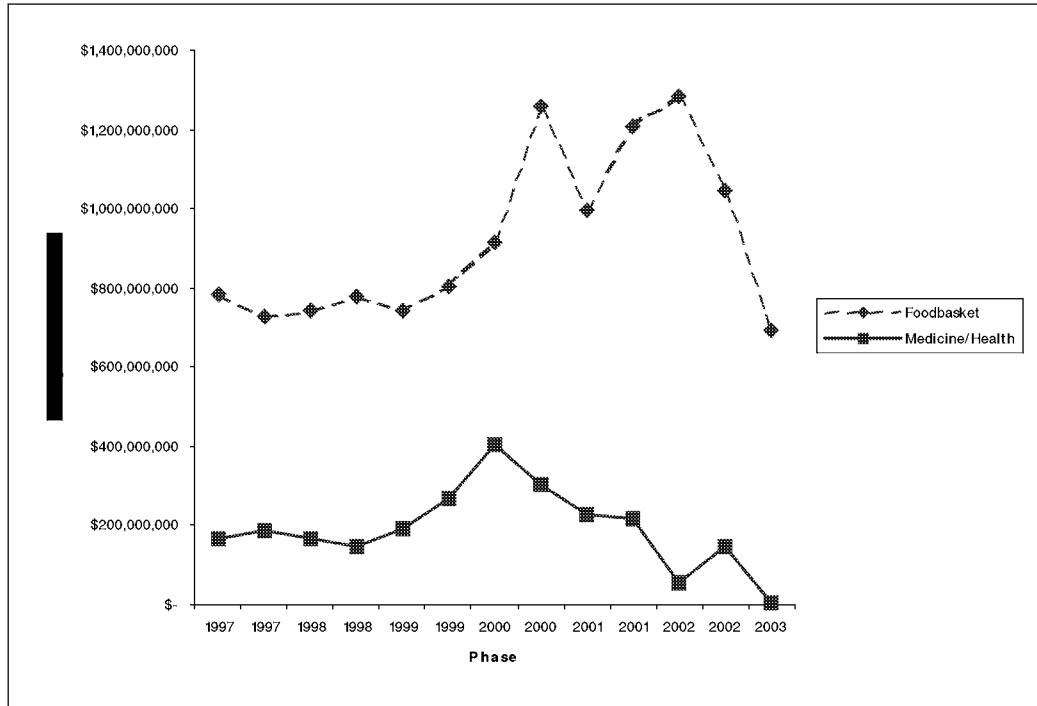




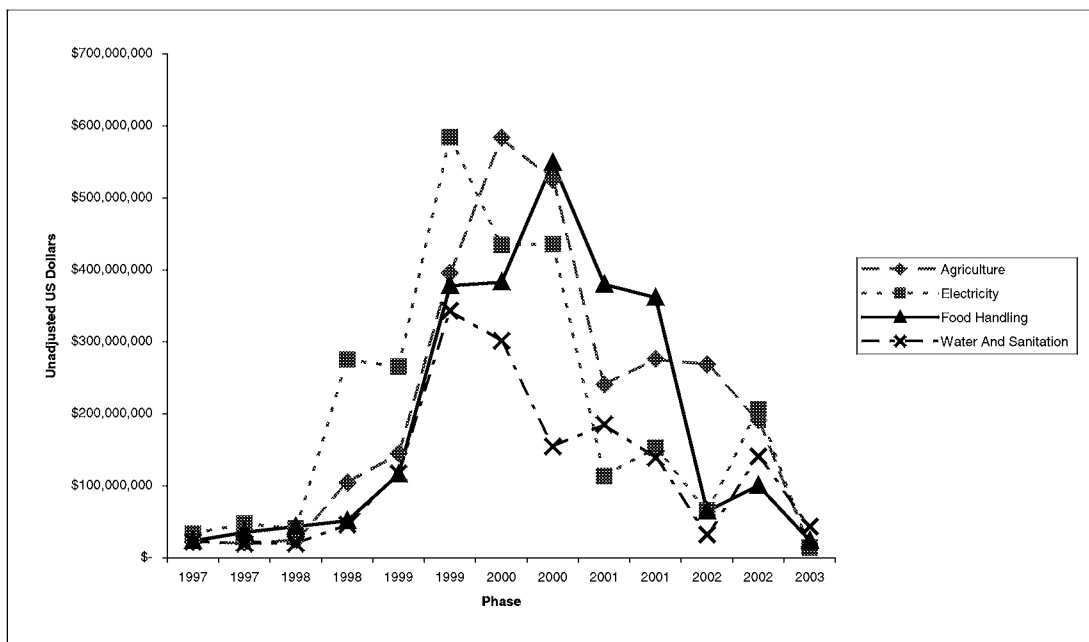
Figure 3.6. Distribution of OFFP resources (in US\$) in the northern governorates according to sector and status (approved, not approved, not compliant, no final status).



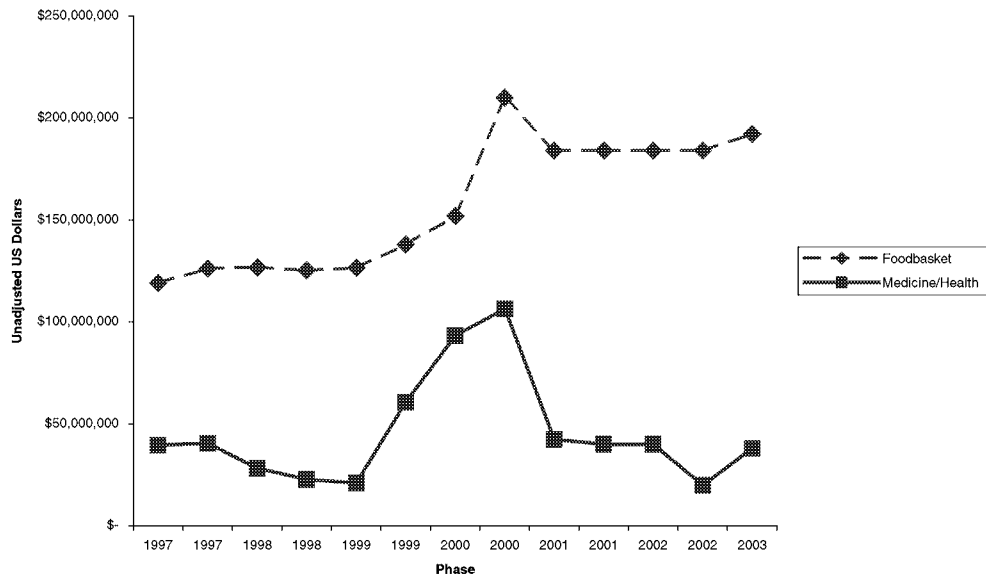
**Figure 3.7. Dollars paid (of approved and notified requests) for food and medicines in the central and southern governorates according to phase of OFFP.**



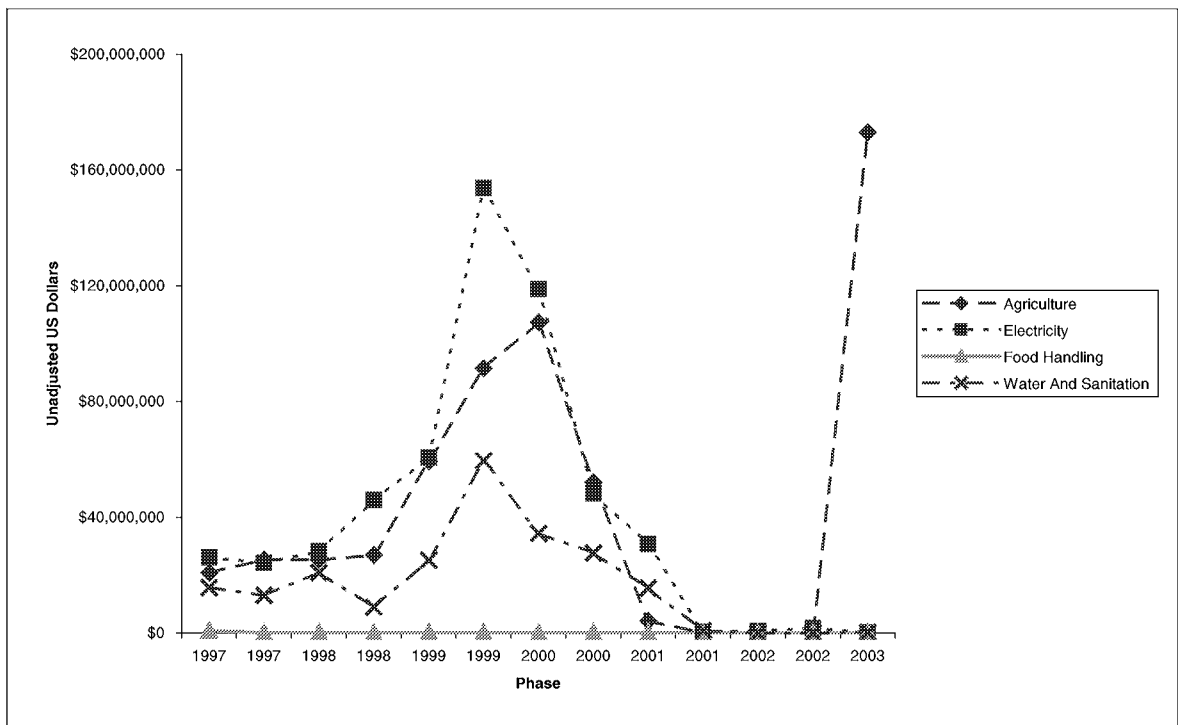
**Figure 3.8. Dollars paid (of approved and notified requests) for agriculture, electricity, food-handling, and water and sanitation in the central and southern governorates according to phase of OFFP. .**



**Figure 3.9. Dollars paid (of approved and notified requests) for food and medicines in the northern governorates according to phase of OFFP.**



**Figure 3.10. Dollars paid (of approved and notified requests) for agriculture, electricity, food-handling, and water and sanitation in the northern governorates according to phase of OFFP.**



## ***SECTION II. DETAILS OF METHODS AND DATA***

# **CHAPTER 4. HUMANITARIAN OUTCOMES**

## **FOOD AND AGRICULTURE**

### **Introduction**

This section covers the estimation of trends in Iraq's food supply and distribution from 1984/89 to 2003, with implications for consumption. The aim is to provide more detail on sources, calculations, and background to supplement the narrative in Chapter 2. Since only the balance of supplies is available, the data are not disaggregated according to North versus Centre/South. (WFP data were available by governorate, especially for 2000 on, but do not appear to give actual distributions.) The first part (Food Availability) traces the trend in kilocalories by source and route (including ration/nonration and total) according to FAO Food Balance Sheet data and related sources from the WFP. The second part (Distribution Systems) presents information on the PDS. The third section is about the agricultural sector, including description of food production trends.

### **Food Availability**

The primary calculations made to estimate changes in food availability used food energy as the unit (kilocalories/capita/day) and brought together supply data from various sources, combined through FAO Food Balance Sheet calculations to give dietary energy supply (DES). The results are shown in Table 4.1, with assumptions for the calculations. The data taken directly from available sources are indicated by highlighting; the other (non-highlighted) numbers are calculated from these. It seemed useful to distinguish, first, with regard to the sources of food, between domestic production and imports (and within these, between OFFP and non-OFFP resources), and second, with regard to the route of provision of access to these commodities for the population, through the PDS or the market. Thus the data are given in two-way tables in Table 4.1.

These calculations are based on food supply data for cereals, which are the most widely available, so use is made of the observation that cereals provide a fairly stable proportion of the dietary energy supply; the ratio is estimated as 65/35 or 55/45 at different times, drawn from FAO and WFP reports, as shown in the footnotes to Table 4.1; the results from using either ratio are shown, with the value considered more reliable put in bold typeface. Cereals and non-cereals are distinguished in this table.

Figure 4.1 brings out the contribution of the OFFP imports to covering the deficit caused by the 1999–2001 drought. It can be seen that as domestic production fell drastically with drought and production problems in 1997, and continued low until 2003, OFFP-

supported imports expanded to fill the gap. (Note that some imports under OFFP are assigned to 1996, presumably because the cropping years do not match calendar years.)

With the OFFP resources, food availability started to increase in 1997, reaching about 2,800 kcal/capita/day by 1998, and staying near that level through 2003; this level would be expected to cover much of the deficit, but this depends entirely on the distribution, which is not known (in a statistical sense). However, a combination of drought and infrastructural problems reduced production and presumably demand in 1999–2001, so although the overall supply appears stable, it is expected that at least distributional equity worsened, so more people would have faced difficulty in access to adequate food.

The results are described in more detail by time period in the sections below for the period 1984/85 through 2003, based on FAO Food Balance Sheet data (FAO, 2005); FAO/WFP reports for the years 1993 (FAO/WFP, 1993a), 1995 (FAO, 1995), 1997 (FAO/WFP, 1997), 2000 (FAO/WFP, 2000), and 2003 (FAO/WFP, 2003); and WFP data on the Iraqi PDS ration from 1997 to 2003 (WFP, 2005). Cereal/non-cereal ratios for 1984/85–1989, 1995, 1997, 2000, and 2003 are taken from Table 11.4 in the FAO/WFP 2003 report “Crop, Food Supply and Nutrition Assessment Mission to Iraq” (FAO/WFP, 2003); the ratios for these years serve as references from which values for other years in the period of interest were extrapolated. Ratios for the PDS ration from 1997 to 2003 were provided by the WFP. Table 4.1 shows kcal/capita/day by source, route, and total, and gives a range for the total depending on the cereal/non-cereal ratio used. Fig 2.2 earlier illustrates the trend in total DES by cereals and non-cereals. Unless otherwise cited, see Table 4.1 for data references, where all the numbers cited below are given.

*1984/89–1990.* From the average 1984/89 DES to 1990, there was a substantial increase in total estimated food energy supply from 3,260 kcal to 3,850 (Table 3 in “Food Supply and Nutrition Assessment Mission to Iraq,” FAO/WFP, 1997). Both data points were calculated at a cereal/non-cereal ratio of 55/45 (as per Table 11.4 in “Crop, Food Supply and Nutrition Assessment Mission to Iraq,” FAO/WFP, 2003). The contribution from cereals rose from 1,794 to 2,504 kcal while that from non-cereals changed only slightly, falling from 1,469 to 1,349 kcal (Table 4.1). The increase in total DES was largely due to a rise in market availability (market route) from domestic production (domestic source). (The contribution from cereals on the market rose from -126 to 770 kcal and that from non-cereals from -102 to 415 kcal. The negative sign denotes that domestic cereals were depleted after balancing losses to feed, seed, and other; this was also true for non-cereals in some years.) Deficits were made up by imports in this period and later also by OFFP (Table 4.1). The Public Distribution System ration (PDS route), which started in 1990, was a contributing factor, as the value of imported cereals and non-cereals (import source) increased from 0 to 779 kcal and from 0 to 420 kcal, respectively.

*1990–1995.* From 1990 to 1995 the trend in total DES according to FAO Food Balance Sheets reversed as the number of kilocalories fell from 3,850 in 1990 to 2,115 in 1991, and then to 1,829 in 1995 (Table 4.1). A cereal/non-cereal ratio of 55/45 was used for 1990 and a ratio of 65/35 for 1995, as per Table 11.4 in the 2003 FAO/WFP report cited above. The contribution of cereals from all routes and sources fell from 1,794 kcal

(1984–1989) to 1,189 kcal, and that of non-cereals fell from 1,469 kcal (1984–1989) to 640 kcal (1995). This was due to the effects of the UN sanctions on domestic production and on Iraq's ability to import food; prior to 1990, Iraq imported up to two-thirds of its food (FAO, 1997). During this period, the kilocalorie value of cereals from domestic production available on the market declined from 770 kcal (1990) to -99 kcal, despite some recovery of domestic cereal production in 1992–1993; this was still below pre-1990 levels, while the value of non-cereals declined from 415 to 138 kcal. The contributions of cereals and non-cereals from domestic production in the PDS ration rose from nothing (no PDS) to 710 and 383 kcal, respectively, in 1995.

This indicates that as the effects of the sanctions worsened, the Government of Iraq shifted cereals and non-cereals from the market route to the PDS ration. The Food Balance Sheet data also show that despite the government's efforts to maintain the PDS ration, the actual value of the ration fell from a period high of 1,705 kcal in 1993 to 1,093 kcal in 1995. This was due to decreased grain production, lower foreign exchange, and the difficulties in continuing to finance the PDS ration at 1993–1994 levels (FAO, 1995). It is important to note that although the PDS coverage was reportedly equitable in the areas under Government of Iraq control, it remained very low in the North (FAO/WFP, 1993a). The kilocalorie value of imports on the market was also seriously affected, as cereals declined from 955 kcal (1990) to 578 kcal (1995) and non-cereals from 514 to 119 kcal over the same period. The energy value of the PDS ration obtained by import declined between 1990 and 1995 from 779 to 0 kcal for cereals and from 420 to 0 kcal for non-cereals; this was a greater reduction than could be made up by the government's effort to shift resources from the market route to the PDS ration, which resulted in the overall lower ration level, as discussed above.

*1996–1998.* By 1996, the downward trend stabilised, as the total DES was 1,829 kcal in 1995 and 1,897 kcal in 1996, with the start of OFFP resources (370 + 199 kcal, cereals + non-cereals, in 1996) (FAO/WFP, 2000). An upward trend started in 1997 with OFFP resources now providing the major portion of the kilocalories, and this continued through 1998 when total DES reached a level of 2,839 kcal. A cereal/non-cereal ratio of 65/35 is used as a best estimate for both 1996 and 1998. In this scenario, the kilocalorie value of cereals from all routes and sources rose from 1,233 kcal (1996) to 1,845 kcal (1998) and that of non-cereals from 664 to 994 kcal. This was partly due to increased domestic production which contributed to availability on the market, where the values of cereals and non-cereals increased from 363 to 501 kcal and from 175 to 269 kcal, respectively. However, the majority of the climb was due to OFFP imports. The OFFP's contribution to the value of the PDS increased from 370 to 1,245 kcal in terms of cereals and from 199 to 461 kcal in terms of non-cereals. The OFFP also contributed to availability on the market, where there was a small increase in cereals and non-cereals from 0 to 52 kcal and from 0 to 30 kcal, respectively. Despite declines in the contributions of domestic production to the PDS and non-OFFP imports to both the market and the PDS, total DES increased due to massive inputs from the OFFP.

*1998–2002.* From 1998 to 2002, total DES remained level at around 2,800 kcal and ranged from 2,839 kcal in 1998 to 2,716 in 2001. The total DES in 2002 was 2,769 kcal.

The cereal/non-cereal ratio in 1998 was 65/35 (estimated), whereas in 2000 it was 63/37, as shown in Table 11.4 in the FAO 2003 report. The kilocalorie value of cereals from all routes and sources remained fairly level, going from 1,845 kcal in 1998 to 1,800 kcal in 2002, whereas that of non-cereals behaved similarly, going from 994 to 969 kcal. The contributions of domestic production through both market and PDS routes were severely hampered by three years of drought (1999–2001). The role of OFFP in meeting the shortfall has been clearly seen in Fig.4.1.

In terms of contributions by the market route, the value of cereals from domestic production fell from 501 kcal in 1998 to -99 kcal in 2002 (the deficit was even more severe in 2001 at -314 kcal); similarly, the value of non-cereals fell from 269 kcal in 1998 to -54 kcal in 2002 (-169 kcal in 2001) (FAO/WFP, 1993a). The contribution of domestic production to the PDS was 0 for both cereals and non-cereals during the period. The contribution of imports to the market increased only marginally from 15 kcal in 1998 to 65 kcal in 2002 for cereals and from 8 to 35 kcal for non-cereals. The contribution of imports to the PDS during the period was 0 kcal for both cereals and non-cereals. Thus, the OFFP was charged with filling a large gap during this period. The Programme responded well, becoming the bulwark of the Iraqi food supply by increasing contributions to both the market and PDS. In terms of the market, the OFFP increased the value of cereals from 52 kcal in 1998 to 452 kcal in 2002 and increased that of non-cereals from 30 to 58 kcal. In terms of the PDS ration, OFFP contributions remained high: the value of cereals was close to 1,250 kcal during the period, while the value of non-cereals increased from 687 kcal in 1998 to 930 kcal in 2002.

*2002–2003.* During the period from 2002 to 2003, total DES began another upward swing, going from 2,769 to 3,473 kcal. The cereal/non-cereal ratio for 2002 was estimated at 65/55, and in 2003 it was 52/48 (FAO, 2003). The kilocalorie value of cereals from all routes and sources remained fairly level, going from 1,800 kcal in 2001 to 1,806 kcal in 2003, while that of non-cereals nearly doubled, going from 969 to 1,667 kcal. Domestic production rebounded at the cessation of the drought and in response to inputs from the OFFP. During the period, the value of cereals and non-cereals on the market from domestic production increased from -99 to 453 kcal and from -54 to 0 kcal, respectively. In terms of cereals, the contribution of imports to the market increased from 65 to 93 kcal; that of non-cereals increased from 35 to 67 kcal. The contribution of non-OFFP imports to the PDS ration remained at 0 kcal for both cereals and non-cereals. OFFP contributions to both the market and the PDS remained high. In terms of the market, the value of the OFFP's cereal contribution fell from 452 kcal in 2002 to 0 kcal in 2003; however its non-cereal contribution rose sharply from 58 to 859 kcal. With regard to the PDS ration, the value of cereals decreased only marginally from 1,381 to 1,218 kcal, while that of non-cereals declined from 930 to 382 kcal (this was balanced by the OFFP's effects in the market and by increased domestic production).

## Distribution Systems

### *WFP Public Distribution System Ration Data*

WFP data available concerning the PDS ration appear to be planning figures, not estimations or actual quantities distributed. According to these figures, PDS ration allocation was equitable across the country since the inception of the OFFP. The data also suggest that ration quantities did not differ between the North and the Centre/South (WFP, 2005). This trend is in sharp contrast to PDS ration quantities and distribution prior to the OFFP when the ration distribution in the North, according to the FAO, was negligible (FAO/WFP, 1993a; FAO, 1995, 2000). However, the North did receive food aid prior to the OFFP through WFP Emergency Operations (EMOPS) and Protracted Relief and Recovery Operation (PRRO).

A priority for the Working Group was to obtain these food aid quantities broken down by North and Centre/South; however, these were not found. At present, what is known is that these food distribution programmes operated throughout the country since 1991. The United Nations mandated that the WFP continue to provide emergency food assistance targeting the most vulnerable groups identified through the Ministry of Labour and Social Affairs, even after the OFFP came on line; these included, among others, “malnourished children, needy pregnant and nursing mothers, female-headed households, families of war-widows, destitute families, hospital in-patients, orphans, elderly, disabled people and refugees” (FAO, 2000; FAO/WFP, 2000). Though EMOPS activities continued after the implementation of the OFFP, the programme gradually withdrew as the OFFP became operational. This may have been detrimental to the well-being of some vulnerable groups in light of the indiscriminant nature of the OFFP PDS and the “wait and see” unofficial policy of donors with regard to the OFFP.

### *Public Distribution System*

Prior to 1990, Iraq imported two-thirds of its food requirement. In response to the embargo and the country’s diminished ability to continue to maintain such high food import levels, the Government of Iraq instituted a public rationing system that took effect on 1 September 1990 (less than one month after the start of the embargo). The public rationing system provided the population of the Centre/South with food at highly subsidised prices. The 1993 FAO Mission to Iraq stated that “Based on spot investigations, the Mission confirms that [the] public rationing system is basically equitable in its coverage and generally efficient in its operations. However, in the areas outside of government control, food distributions remain extremely low.” This did not bode well for health and nutrition indicators in the northern governorates during this period (FAO/WFP, 1993a), but as far as is known child nutrition nonetheless improved over this period (Fig. 2.5).

*1990/91–1995/96.* The composition of the Government food ration changed over time, with kilocalorie and micronutrient values fluctuating from one distribution to the next depending on the availability of ration items. In 1991, the energy value of the ration was



estimated at 1,372 kcal/capita/day. This increased to an estimated 1,705 kcal/capita/day because the government diverted seed, land area, and resources such as grain typically reserved for feed (i.e., barley) toward the food ration. By 1995, the value of the ration had declined to an estimated low of 1093 kcal/capita/day. This was due the effect of the sanctions regime on imports, and falls in domestic food production (FAO, 1995).

*1996/1997–2000/01.* A significant change in the energy value of the food ration occurred with the implementation of the OFFP. In the portion of 1996 before the Memorandum of Understanding, the value of the ration was estimated at 1,295 kcal/capita/day. With the delivery of the first full OFFP food basket in August 1997, the value climbed to 1,565 kcal/capita/day (77% of the planned value) in both the Centre/South and the North. This upward trend continued throughout the duration of the OFFP. By 2000, the value was 2,011 kcal/capita/day (91% of the planned value) for the Centre/South and the North, and by 2003 the value held near that level at about 1,999 kcal/capita/day throughout the country, despite the problems that the 2003 war presented (note that it is uncertain whether the 2003 value reflects actual rations delivered or the planned value; FAO, 1997, 2000; FAO/WFP, 2003). Table 4.2 shows the average energy value of the monthly rations, broken down by the full Memorandum of Understanding food basket ration and the actual Government of Iraq food basket ration. Table 4.3 gives the average protein value of the monthly rations, broken down by the same factors.

According to the FAO 1997 Mission to Iraq, the

energy value of the ration (2030 kcal/cap/day) was inadequate as it does not meet the minimum average requirements of the population of Iraq, estimated at about 2100 kcal/cap/day, and only supplied 67% of the energy and 55% of the protein compared with the pre-1990 average availability. The ration is also unbalanced and deficient in a number of nutrients. Vitamins A and C are almost absent and the levels of calcium, zinc, folate, riboflavin, and vitamin B<sub>6</sub> are all very low (FAO, 1997).

Continuing in this vein, the Mission stated that

Young children need a higher protein concentration than adults. Protein, mainly originating from cereals is low in lysine and hence utilisable protein is low. Although the prewar diet, also heavily based on cereals as is typical for much of the Near East, was low in lysine, this was considerably higher than the present ration and would have needed less supplementation with higher lysine food proteins to meet daily utilisable protein needs (FAO/WFP, 2000).

This shortfall was mainly due to the “non-submission of applications for the purchase of pulses [and reduced dairy product availability] in the monthly food basket” (FAO/WFP, 2000).

The 2000 FAO Mission to Iraq noted again that the protein content of the supplied ration did not meet the planned Security Council Resolution levels or the levels recommended by the Secretary-General. The 2000 Mission went on to say that

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with the additional protein obtained from foods purchased outside the 986 ration estimated [in 2000] at 17 g protein/capita/day, this brings the total availability to around 60g/capita/day, a level just below those recommended by the Secretary-General (FAO/WFP, 2000).

With regard to the energy content of the ration, the 2000 FAO Mission found that

the energy content of the Government of Iraq ration in the pre-OFFP period of 1996 was calculated at 1,295 kcal/capita/day...[and]...Since the implementation of the OFFP, the intake of energy and protein increased steadily, reaching an average of 2,000 kcal/capita/day and 43.3g protein/capita/day in phases IV through VI. The most recent data [as of 2000] are for phase VII under which 2,199 kcal and 48.2 g protein per capita/day were distributed. While these figures and the above-mentioned shortfalls may suggest a lower-than-projected nutritional intake (considering also the WHO recommended level of 2,210 kcal/capita/day for emergency requirements), the Mission findings suggest that some segments of the population supplement their diet with market purchases. Indeed, the combination of the average daily per capita energy availability provided by the OFFP food ration with that obtained through complementary food purchases, results in a total per capita energy availability per day of around 2,500 kcal. This is confirmed by the high prevalence of overweight in adults as more than half the adult population of Iraq is considered to have some degree of overweight. Nonetheless, for those who are too poor to supplement the ration from other sources, nutritional problems continue even though only a nominal fee of ID 250 (US 12 cents) per capita is paid to the Government of Iraq for the ration (FAO/WFP, 2000).

### *Implementation of the OFFP Public Distribution System*

The implementation of activities under the OFFP was coordinated by the United Nations Office of the Humanitarian Coordinator with the WFP managing the distribution of commodities in the North and the Government of Iraq managing distribution in the South. Under the OFFP, the WFP was to “observe the equitable distribution of the food; to assess the effectiveness of the operation and to determine the adequacy of the available resources to meet humanitarian needs” in the three northern governorates (FAO, 1997). In addition, the WFP, in coordination with UNICEF, was to implement a “nutrition project targeting malnourished children under five years of age” (FAO, 1997).

The 1997 FAO Mission to Iraq stated: “A WFP Mission described the methods and procedures of the country-wide WFP Observation System that will provide statistical data on the movement of each individual commodity from arrival in country to distribution to beneficiaries. A total of 151 international observers and monitors are in Iraq to observe the food distribution and information collected by them is reported by the WFP and other UN agencies in the SCR weekly progress reports from the United Nations Humanitarian Coordinator for Iraq. According to their reports, the distribution is being carried out equitably and effectively throughout the country.”

## **Agriculture Sector**

The distribution of agricultural land in Iraq is described in Chapter 2 (Agriculture: Background; see also map in Box 2.4).

Rain-fed agricultural systems are located mostly in the three Northern governorates of Dohuk, Erbil, and Suleimaniya. These areas grow “continuous wheat with fertiliser applications juxtaposed with a barley/fallow rotation which usually does not include fertiliser use, but may incorporate chickpeas one year in three or four” (FAO/WFP, 2003).

The rain-fed sector has rudimentary mechanisation, with approximately 11,000 tractor units and 600 combine units. These are privately owned and contracted out, which at times causes delays in the production cycle. Seedbed preparation and harvesting are the only mechanised operations. Seeds and fertilisers are broadcast by hand. As of 2003, cereals were being stored for one to two years prior to sale in markets because of lack of consumer purchasing power (FAO/WFP, 2003).

Until the 2003 harvest, farmers had to sell their grain to state-owned silos; “on-farm storage, where it occurred, was only for grain retained for use by the family and their livestock or kept as judicious reserve, by those uncertain of the reliability of the food aid flour supply (and usually not more than 1.5 MTs per household)” (FAO/WFP, 2003).

Production figures have, in the past, been characteristically lower than expected. This is true especially for the irrigated subsector. The FAO 2003 Mission stated that “these low figures resulted in part from the practice of estimating production in the center and south from recorded sales to state silos. Such data do not include grain for home use, home food-security storage, seed stocks and livestock feed” (FAO/WFP, 2003). If this is true, past production estimates were biased, and the impact of the OFFP on domestic production is more uncertain than it would have been without such complications. However, because this was a consistent bias in the past, it may not have a great effect on the assessment of the OFFP’s impact on domestic cereal production.

Matters are complicated further, however, by allegations that farmers in the irrigated subsector tend to “inflate the statistics about wheatproducing areas to obtain compound fertiliser at reduced rates (which the Government of Iraq subsidised prior to and during OFF) for use on other crops; this practice would of course have inflated [land area] lowering yield per ha calculations” (FAO/WFP, 2003).

### ***Food Production (see Table 4.4)***

*Cereals 1989/90–1995/96.* Production of cereals in 1989/90 was estimated at 3.451 million metric tons, including some 1.196 million metric tons of wheat, 1.854 million metric tons of barley, 228,000 metric tons of rice, and 173,000 metric tons of maize. In 1990, as the United Nations imposed sanctions on Iraq, the Government of Iraq instituted a number of emergency measures in order to buoy domestic production in the face of supply-side constraints to maintain a minimum food supply and curb some of the effects on domestic production. These measures included repairs to agricultural infrastructure and increased incentives, including fertilisers, following the rehabilitation of factories damaged in the 1991 Gulf War (Aga Khan, July 1991).

The total domestic production of cereals decreased only slightly in 1991 and 1992 and then rebounded to 3.235 million metric tons in 1993 due to an increase in the planted area. The proximate causes of the decline in production between 1989 and 1991 included a “breakdown of irrigation and drainage systems, acute shortage of essential inputs and disruption of farming activities due to war and civil strife” (Aga Khan, 1991). This situation was exacerbated further by pest infestation, military actions that resulted in the destruction of farm machinery, poor rainfall, and “black rain,” which in March 1991 hindered pollination and decreased crop yields (Aga Khan, 1991).

From 1991 to 1992/93 proximate causal factors for the decline in production included periods of prolonged dry spells, severe winds at pre-harvest, periods of excessive rains, shortages of compound fertilisers, and lack of pesticides resulting in widespread infestations of Sunn pest and other insects. Particularly in the irrigated areas of the Centre/South, shortages of spare parts for water pumps resulted in reduced yields and raised the water table. The latter was part of a trend throughout the central and southern regions that resulted in increased soil salinity and thereby loss of productive lands. Furthermore, the deterioration of farm machinery (tractors and combine harvesters) due to a shortage of spare parts resulted in a partial replacement of mechanised labour with manual labour, which caused delays in planting and harvesting and increased pre-harvest losses. In the northern governorates, crop production was hampered by shortages of fuel and fertilisers (FAO/WFP, 1993a).

It should be noted that the 1993 FAO Mission found “evidence of Iraqi wheat and barley being sold across the border in Jordan at prices which were about 75% higher than those offered by the Iraqi government” (FAO/WFP, 1993a).

The downward trend continued through 1994 and 1995, when cereal production was estimated to be 2.5 million metric tons, which was 10% lower than the 1993/94 estimates and 16% lower than the estimated average for the previous five years. “Moreover, the consumable output of wheat, which accounts for about half of the cereal output, is further reduced by the presence of high levels of non-grain impurities. This was reflected by the fact that the conversion ratio of wheat into flour has been reduced to 80%” (FAO, 1995).

The marked decline was ascribed not to poor rainfall, regional variation, or a lack of effort on the part of the Government of Iraq or international organisations, but rather to “severe constraints relating to agricultural machinery, particularly [non-availability] of essential replacements and spare parts, good seeds, fertilisers, pesticides, and herbicides” under UN sanctions (FAO, 1995).

*Cereals 1996/97–2003/04* Continuing the downward trend, domestic production of the main cereals in 1997 was estimated at 2.2 million metric tons, which included milled rice. Of this, about 1.7 million tons was contributed by the Centre/South and 500,000 metric tons by the North. This production level represented the lowest since 1991 and was a result of both reduced planted areas and reduced yields (FAO, 1997).

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The causes of the reduction in planted area in 1996/97 included “rising soil salinity, lack of irrigation water, farm machinery and inputs (seeds, fertilisers, insecticides, and herbicides)” (FAO, 1997). It is possible, however, that this decline (at least in the North) was due, in part, to a disincentive for farmers, particularly in the Northern regions, to produce crops covered by the food ration after the implementation of the OFFP (FAO, 1997, 2003b).

The causes of the reduced yields in 1997/98 included “poor land preparation as a result of lack of machinery, low use of inputs, deteriorating soil quality and irrigation facilities, increased insect/pest/weed infestation and continuous use of land without proper replenishment of plant nutrients through appropriate fertiliser use or adoption of proper crop rotations” (FAO, 1995).

By the end of 2000, Iraq’s agricultural sector was still experiencing a shortage of essential inputs and was reeling from the effects of two consecutive years of drought. This was reflected in a substantial reduction in domestic production of cereals, which in 2000 was estimated to be 794,000 metric tons (FAO, 2000).

In a reversal of the downward trend, the 2003 FAO/WFP Mission to Iraq estimated an increase in total cereal production to 4.12 million metric tons in 2003/04. Key factors that influenced this change were “favourable rains in northern Iraq, increased levels of water for irrigation, timely distribution of agricultural inputs in the main cereal producing areas and limited occurrence of pests and diseases” (FAO/WFP, 2003). An important anecdotal note by the 2003 FAO Mission stated that “cereals are being stored [in northern governorates] for one to two years before sale or use because of lack of markets” (FAO/WFP, 2003). This suggests some recovery in production in the northern regions perhaps as early as 2000/01. Furthermore, the mission noted that

Direct effects of the war [beginning in 2003] on winter cereal production and perennial crops were far less than might have been expected. Northern agriculture was virtually untouched, and elsewhere, all husbandry practices and field operations except harvesting had already been carried out when hostilities started in mid-March and the war ended by mid-April, before the harvest had begun. The effect on summer crop production, however, may yet prove to be very serious. Industrial crops in the Centre/South had not yet been sown in mid-March and areas of maize and rice crops are likely to be reduced due to water supply problems caused by reduced and uncertain power supply to irrigation schemes and insufficient fertilisers and plant protection chemicals. (FAO/WFP, 2003)

The FAO reported in 2003 that “the two Iraqi fertiliser factories are apparently disabled. Next cropping season’s fertiliser requirement, estimated about 600,000 tonnes, is a concern” (FAO, 2003).

*Vegetables 1989/90–1995/96.* From 1990 to 1992, aggregate production of food crops declined below pre-1990 levels; however, the sector showed some recovery by 1993. Most of this recovery was attributed to increased vegetable production, as vegetables and fruits assumed increased importance during the embargo. In 1989/90, the area planted

with vegetables was about 8% of the total cultivated area. Production estimates for this period are not available (FAO/WFP, 1993a).

The area planted with vegetables increased to 9% in 1994/95; however, the effect of this increase was diminished by a decrease in yield and poor-quality produce. Estimates of vegetable production varied between 3.2 and 3.5 million metric tons from 1991 to 1995 (FAO, 1995). Constraints in the vegetable sector included a considerable shortage of quality vegetable seeds, irrigation water, compound fertilisers, and protection chemicals and equipment; aggravated soil alkalinity from the overuse of urea fertilisers; weed infestations and insect attacks; and insufficient land preparation.

*1996-2003/04.* The downward trend for vegetable production continued through 1997/98, when the estimated production was 2 million metric tons, with the Centre/South contributing 1.5 million metric tons and the North 500,000 metric tons (FAO/WFP, 1997). The constraints mentioned above are the likely factors responsible for the continued decline.

By 2000, the estimated production level had decreased by half to 1 million metric tons, with the Centre/South contributing 700,000 metric tons and the North 300,000 metric tons. The above constraints, combined with drought conditions, which resulted in limited irrigation and generalised water rationing, were proximate causal factors for the continued downward trend (FAO/WFP, 2000).

As for 2003/04, an estimated 180,000 ha was planted to vegetable crops, but this was uncertain as the 2003 FAO/WFP Mission to Iraq preceded the summer crop harvest. There was a shortage of fertilisers and chemical inputs with the destruction of two fertiliser factories, although there was a timely distribution of other agricultural inputs (FAO/WFP, 2003).

*Fruit 1989/90–1995/96.* The estimated number of fruit orchards in Iraq was 219,000 in 1978. The number declined in subsequent years, and by 1989 the estimated number was 84,000 (with a tree-to-orchard ratio of 832 to 1). This number remained stable from 1989 to 1995; however, annual production increased over the period from an estimated 958,000 metric tons in 1989 to 1.1–1.2 million metric tons from 1990 to 1994 and 1.3 million metric tons in 1995.

The marked drop in the number of orchards from 1978 to 1989 is largely attributed to the Iran–Iraq war (1980–1988). The stagnation observed in the sector's growth from 1990 to 1995 was attributed mainly to a shortage of machinery, spare parts, and chemicals under UN sanctions, increased soil salinity, and waterlogging. Higher production levels were largely due to the targeted efforts of the Government of Iraq, farmers, and NGOs (FAO/WFP, 1997).

Export of dates, a fruit with importance both as a commodity to the Iraqi economy and as a component of the food intake of the Iraqi people, averaged 400,000 tons prior to the embargo. By 1995, export of dates was negligible. During the war with Iran, the number

of date palm trees declined considerably because of destruction of orchards. In 1981, the number of date trees was estimated at 21.403 million. The number fell to 15.911 million in 1991. By 1995, the number of trees had increased to 18 million due to the renewed effort of the Government of Iraq in the agriculture sector in light of the embargo (FAO, 1995). Date production in this period followed an upward trend from 566,000 metric tons in 1991 to 612,000 metric tons in 1993 and 700,000 metric tons in 1995 (FAO/WFP, 1997).

Here, the effort on the part of the Government of Iraq and farmers to maintain and improve production proved possible to sustain in the short term, despite depleted stocks of agricultural inputs and the inability to procure them on the market. Nevertheless, yields often proved to be of low quality because of the input shortage, and even with encouraging market prices for fruit and initially high domestic demand, the most vulnerable groups of the population were, due to lack of purchasing power, unable to continue to buy fruits or vegetables to supplement their dietary intake from the Government of Iraq food ration. In some areas, an estimated 20% to 30% of fruit production was lost as waste (FAO/WFP, 1997). This was probably due to a lack of inputs allowing for ease of harvest, storage, and transport to market, as well as depressed consumer demand due to low purchasing power as a result of high procurement prices and low personal and household income under the embargo. Without rehabilitation of both the agricultural and economic sectors, the effort on the part of Iraqi farmers would prove unsustainable in the long term (FAO/WFP, 1997).

*1996–2003/04.* Total fruit production for 1997/98 continued the previous upward trend and was estimated at 1.5 million metric tons. The increase occurred despite pest and weed infestations. In 2001 the trend changed, as total fruit production was estimated at 1.3 million metric tons (1.0 million metric tons contributed by the Centre/South and 0.3 million by the North). This downward change was the result of a combination of drought and difficulties experienced because of the lack of essential inputs (FAO, 2000). In 2003/04, an estimated 47,000 ha were planted with melons and watermelons, with yields expected to be similar to those of 2002. In the Centre/South, it was estimated that 400,000 metric tons of fruit would be produced from citrus and other fruit trees. Together with date production estimated at 900,000 metric tons, total fruit production was estimated at 1.3 million metric tons (FAO/WFP, 2003).

Date production fell to 600,000 metric tons in 1997/98 because of a frost. The 2000 level was estimated at just below that of 1997/98. This level was maintained despite drought conditions due, in part, to aerial spraying of date crops in the no-fly zones with the supervision of the FAO. As mentioned above, the 2003/04 estimate for date production was 900,000 metric tons (FAO/WFP, 2000).

*Livestock, poultry and fish 1985/86–1990 to 1995/96* From 1986 to 1990, the estimated average total livestock population (cows, buffaloes, sheep, and goats) was 15.766 million head (12.176 million head in the Centre/South and 3.590 million head in the North). The head count in 1991 was an estimated 5 million, a sharp decline that illustrated the effect of the 1991 War on the livestock subsector.

Livestock numbers continued to decline through 1992/93, when the head count was an estimated 20% of the 1990 average and less than 50% of the prewar level due to the factors mentioned above in conjunction with low productivity rates of unhealthy stock. The 1993 FAO Mission noted that “The migration of animals, particularly sheep and goats, to the neighboring countries, continues despite close surveillance; attractive prices offered across the border, in the wake of the collapse of the Iraqi Dinar, have been the main factor responsible for uninterrupted migration” (FAO/WFP, 1993a).

By 1995, the livestock population had declined substantially from 1990 levels. The number of cows declined 34%, buffaloes 46%, sheep 42%, and goats 81% as a consequence of the ongoing interplay of factors mentioned above. The estimated livestock population in the Centre/South in 1995/96 was 6.8 million head. The total population was estimated to be below 10 million head. In its 1995 Evaluation of the Food and Nutrition Situation in Iraq, the FAO noted that “Livestock farmers [in light of the feed shortage] have...been advised to try to save the animals using whatever other alternative they can find.” The Mission went on to say that “The central meat supply system has collapsed. The animals are now slaughtered on road sides openly and indiscriminately, creating health hazards” (FAO, 1995).

The 1991 United Nations Mission to Iraq led by the Aga Khan noted that the output of the poultry sector, which, in 1989 “produced 2 billion eggs and 250,000 tons of poultry meat,” was decimated by 1991 (Aga Khan, 1991). By 1992/93 the sector showed signs of slow recovery, and FAO estimates for egg and poultry meat production were 20% of the 1990 levels (FAO/WFP, 1993a).

In 1995, the FAO Mission to Iraq noted that of the 8,353 small and 25 large chicken projects in the country prior to the war, none were functioning, and that what remained of those projects was “now just empty compounds with some remains of equipment and machinery scattered around” (FAO, 1995).

The fish catch in 1990 was 32,000 metric tons. The 1991 United Nations Mission to Iraq observed that the fish sub sector “suffered severe losses mainly due to a lack of feed and refrigeration facilities as a result of the breakdown of power supplies,” putting the 1990/91 fish catch below the 1990 level (Aga Khan, 1991). In 1992/93 the catch recovered to an estimated 22,000 metric tons (half of the fish hatchery’s 50 million seasonal capacity) (FAO, 1995; FAO/WFP, 1997).

*1996/97–2003* The 1997 FAO Mission estimated the total livestock population at 9.4 million (60% of the 1986–1990 level). The Centre/South contributed 6.2 million animals and the North 3.2 million. The estimated livestock population in 2000 was based on data from a countrywide campaign combating foot-and-mouth disease, which estimated the head count at 14 million. The 2000 FAO Mission admitted that in fact “there are no reliable estimates of livestock numbers,” and went on to say that “Differences with earlier estimates may be explained by differences in evaluation methods” (FAO, 2000). Nevertheless, the 2000 figure provides a convenient yardstick for analysis of the general



trend. The same constraints were noted for this period as previously, including feed shortages (due to diversion of grain to food rations and production declines from reduction in planted areas, lack of inputs, and drought), overgrazing, and lack of veterinary services (FAO, 2000).

The downward trend reversed in 2003/04, when the total livestock numbers climbed to 16.9 million head. The increase was attributed to increased feed availability. At the time, the 2003 FAO/WFP Mission noted that “The barley harvest and the bottom (poorer quality) end of the wheat harvest plus stored grains are highly likely to meet the nutrient requirements of the estimated ruminant population, given the levels of production anticipated,” which allowed for 1.7 million tons of feed (FAO/WFP, 2003).

It is of some import to note that “While intervention purchasing support systems are presently being put in place to guarantee incomes for cereal producers, no such plans appear to have been considered as yet for the sheep/goat breeders” (FAO/WFP, 2003). Furthermore, the 2003 Mission found that “Apart from the disruption to pastoralist grazing routes that exacerbated the effects of the poor rains in the south, prompting the sale and grazing off of barley crops in Wassit (and possibly elsewhere in the south) in April/May, it is unlikely that the ruminant systems have been seriously directly affected by the recent war” (FAO/WFP, 2003).

The 1997 FAO Mission noted that the poultry industry had

virtually collapsed due to lack of vaccines and feed. The Mission found only 23 small to medium poultry farms in operation at present compared with levels before the embargo. Now that barley is available on the open market [probably due to the OFFP], this may encourage poultry raising...Further constraints to the increased poultry production are the lack of a stable environment for investment and low purchasing power of the population (FAO/WFP, 1997).

A key development in the poultry sector occurred with the implementation of the OFFP. In 1998, Government of Iraq interventions funded through the OFFP made notable gains toward rehabilitating the poultry industry. By 2000, sector industries were operating in most governorates according to the 2000 United Nations Mission, which also noted that “Production is rapidly increasing for both poultry meat and eggs, as illustrated by a 40% drop in the market prices between 1998 and 2000.” The 2000 Mission went on to note that the sector is “rapidly expanding in the northern governorates with about 430 farms currently in operation compared to 25 farms prior to the embargo. There are also 13 hatcheries and 5 slaughterhouses now functioning compared to only one and 5 respectively, a few years ago” (FAO, 2000).

In 2003 the outlook for the poultry sector after the war was uncertain, as hostilities ceased just prior to the Mission’s visit. However, the Mission did find that although many poultry industry units were nonfunctional, a rapid rehabilitation of the sector could be anticipated (FAO/WFP, 2003). The Mission also noted the achievement of the sector since 1998 as it was rehabilitated through OFFP funding (FAO/WFP, 2003). The Mission stated that in order to sustain 2002 production levels, which included more than 95 million broilers, 2 million breeding hens per year, 4.2 million layer chicks, and a laying

stock of 6.0 million birds, it would be necessary to have an industry supported by a sophisticated infrastructure, high cereal output (for this purpose 780,000 metric tons per year were available), and adequate availability of proteins and mineral/vitamin balancers. The Mission suggested that prior to the war in 2003 Iraq had such an industry and the capacity to maintain it (FAO/WFP, 2003).

In the period from 1990 to 1997, fish production declined substantially to the point that, by 1997/98, per capita availability of fish produced domestically was believed to be insignificant (FAO, 1997). In 1998, a FAO-assisted Government of Iraq survey of the fish sector found that “of 1,016 fish farms listed across the country, only 22% were still fully operational”; here again, the most notable constraint to growth in this sector was the embargo (FAO, 2000). The marine fishing sector was also as affected, “facing a general lack of suitable diesel engines, spare parts, boats and fishing nets” (FAO/WFP, 2000). No data on the fish sector are available from 2003/04.

### *Prices*

*Consumer prices, 1984/85–1990.* Within the context of the economic difficulties experienced as a result of the war with Iran, the Government of Iraq, prior to 1990, implemented a price control policy for both subsidised and unsubsidised food commodities. This resulted in low farm-gate prices, which tended to benefit urban consumers at the expense of rural farmers and were, in part, responsible for the rural migration to urban centres during this period (FAO/WFP, 1997). Between 1984/85 and 1990, the “price index of all goods [relative to 1979 prices] increased by about 182 percent [and] the price index of food increased by 214 percent” (FAO/WFP, 1997). Given that food purchasing power is directly related to income and food prices, this trend adversely affected the economic outlook for Iraqi consumers.

*1991–1995.* Between 1991 and 1995, the open-market price of basic food items continued this increasing trend at a considerably faster rate. As an example, the average open-market price of wheat flour in the Centre/South was 0.060 ID/kg in July 1990. This increased substantially over the next five years to 700 ID/kg in August 1995 (over 11,667 times the 1990 price) (Fig. 4.2). The North experienced a similar trend. In July 1990, the open-market price of wheat flour was 60 Old ID/kg in the three northern governorates, but by June 1995 it had increased to 11,200 Old ID/kg (Fig. 4.2) (FAO/WFP, 1997). This trend was largely the result of severe supply-side constraints under UN sanctions, the collapse of the Iraqi dinar, and diminished consumer purchasing power due to lower personal incomes, liquidated personal savings and asset bases, and high unemployment (FAO/WFP, 1997).

According to the 1993 FAO Mission to Iraq:

The effect of hoarding and speculation on prices is anticipated to be insignificant due to low stocks held by traders and the severe measures taken by the government against profiteering. The supply constraints have mainly been due to the difficulties faced by the government in financing food imports while the serious erosion of the value of the Iraqi dinar currently reflects a general disruption of the economy. (FAO/WFP, 1993a).

1996–1997/98. With the implementation of the OFFP, open market prices for commodities included in the food ration (i.e., wheat flour, rice, vegetable oil, and sugar) declined substantially. In the Centre/South, the open-market price of wheat flour fell from 700 ID/kg in August 1995 to 500 ID/kg in March 1997 and 152 ID/kg by June 1997 (Fig. 4.2). In the three northern governorates, the open-market price of wheat flour fell from 11,200 OI/kg in June 1995 to 5,700 OI/kg by June 1997 (Fig. 4.2). Open-market prices of commodities not included in the OFFP food ration continued to rise during this period (FAO/WFP, 1997).

After adjustment for the exchange rate between the Iraqi dinar and the U.S. dollar, the trend remains intact. This suggests that although the exchange rate played a role in determining food prices, it was not the only determinant; the supply and demand sides were also instrumental in the trend seen from 1995 to 1997 (FAO/WFP, 1997).

The 1997 FAO Mission to Iraq noted that

Food prices vary according to the quality of the food as well as residential area. However, with the food ration and due to the deteriorating purchasing power of the people as a result of the collapse of personal incomes in the private sector and extremely low incomes in the public sector, the effective demand for food has slumped and the quantities of food being sold, especially of meat, [are] much reduced (FAO/WFP, 1997).

With regard to the low incomes in the public sector, the FAO reported in 1999 that

In the Centre/South, the monthly emoluments (salaries + allowances) for lower-level government employees are ID 500–600, and the average for all civil servants is about ID 5,000 (about US\$3 at the unofficial exchange rate). Unskilled workers can earn about ID 500 a day but work is hard to come by. The situation in the northern region is similar (FAO, 1999).

1998–2003. The trends continued in 2000/01, as food prices for commodities included in the food ration remained low and prices for commodities not included in the food ration remained high, putting them effectively out of reach for a large portion of the population. Incomes and purchasing power remained low, especially for individuals working in the public sector, and demand for food outside the food ration continued a downward trend. The 2000 FAO Mission to Iraq suggested that, at the time, there was a depressed demand for food products outside the ration, especially vegetables and meat. This situation had negative consequences for the nutritional well-being of the population, especially for children, pregnant women, lactating mothers, and other vulnerable groups (FAO/WFP, 2000).

*Procurement prices.* After the start of the UN sanctions, the Government of Iraq implemented a “price support system for food grains but...[required]...that the total output of each of these crops be sold to the Government at Government determined prices” (FAO, 1997). This system operated in the Centre/South regions, while a free market system operated in the three northern governorates. An open market offering

privately imported flour, rice, and other food commodities also operated in the Centre/South regions (FAO/WFP, 1997).

According to the 1997 FAO Mission to Iraq,

Procurement prices were increasing steadily over the years for all crops. However, prices of wheat and barley were reduced in 1997, from 105,000 ID per ton to 85,000 ID per ton for the best quality wheat and from 60,000 ID per ton to 50,000 ID per ton for regular barley. In June 1997, the Government allowed farmers to sell barley either to the Government at the announced procurement price or on the open market. All other crops continued to be sold to the Government (FAO, 1997).

The 1997 FAO Mission to Iraq goes on to mention that the

fall in the procurement price of wheat and all other foods...may constitute a disincentive for the farmers in the Center/South, particularly since the ration has been increased under the MOU...[and furthermore]...there is no fixed arrangement for the GOI to buy all or a given proportion of the wheat output from the northern Governorates and there is genuine concern that the MOU food imports may have adverse effects on wheat in the northern Governorates. (FAO/WFP, 1997)

In response to this concern, the Distribution Plan under the Memorandum of Understanding was altered for the North, beginning with Phase II of the OFFP. An additional US\$6 million was allocated to the North, which brought the total to US\$26 million out of US\$50 million for essential agricultural inputs (FAO/WFP, 1997).

## **NUTRITION**

### **Nutritional Surveys Available**

Available survey results (all in reports except UNICEF 2000, for which the raw data are also available) included the following:

- 1991 Infant and Child Mortality and Nutrition Survey, International Study Team (IST, 1991)
- 1993 FAO Nutritional Status Assessment Mission (FAO/WFP 1993)
- 1995 FAO Evaluation of the Food and Nutrition Situation in Iraq (FAO, 1995)
- 1996 UNICEF Multiple Indicator Cluster Survey (UNICEF, 1996)
- 1997 FAO/WFP Food Supply and Nutrition Assessment Mission to Iraq (FAO/WFP, 1997)
- 1997 Nutrition Status Survey at Primary Health Centres During Polio Immunization Days (PNID) in South/Centre Iraq (UNICEF/MOH/WFP, 1997)
- 1997 Nutritional Status of Children Under 5 In Autonomous Northern Region (UNICEF/MOH, 1997)
- 1998 Nutritional Status of Children Under 5 In Autonomous Northern Region (UNICEF/MOH, 1998)

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- 1998 Nutrition Status Survey at Primary Health Centres During Polio Immunization Days (PNID) in South/Center Iraq (UNICEF/MOH/WFP, 1998)
- 1999 Nutrition Status Survey at Primary Health Centres during Polio Immunization Days (PNID) in South/Center Iraq (UNICEF/MOH/WFP, 1999)
- 2000 UNICEF Multiple Indicator Cluster Survey (UNICEF, 2000)
- 2000 Nutritional Status of Children Under Five in the Northern Governorates of Dohuk, Erbil, and Suleimaniyah (UNICEF/MOH, 2000)
- 2002 Household Nutritional Status Survey in South/Center Iraq (UNICEF) (UNICEF/CSO/MOH, 2002)
- 2003 FAO Iraq Baseline Food Security Study (WFP/GOI, 2003)

The International Study Team (IST), also called the Harvard Study Team, conducted the first nationally representative survey immediately after the 1991 war. The survey is considered “nearly” nationally representative, because it did not obtain data from one of the 18 governorates. The 1996 UNICEF Multiple Indicator Cluster Survey (MICS) (UNICEF, 1996) was the next survey with national coverage. Because of the timing, the 1996 MICS provided useful baseline indicators before implementation of the OFFP. According to the UNICEF report “Situation Analysis of the Women and Children of Iraq”:

The purpose of the MICS was to assess the progress towards the Mid-Decade goals of the National Plan of Action for children, drafted by the GOI after the World Summit for Children ... Another purpose of the survey was to have baseline data against which the impact of the implementation of OFFP could be assessed. It was conducted throughout Iraq’s 18 governorates during August and September 1996. (UNICEF, 1998)

However, the 1996 MICS data sets are not available and therefore cannot be checked directly; apparently they were never released, according to Garfield (1999). We were unable to locate a set of the data, although the report gave no cause for thinking that the data were falsified: the results seem typical of such surveys, and the stunting by age bands was in line with apparent trends (as discussed later).

The 2000 UNICEF MICS survey, for which the raw data were made available, appears satisfactory. The 2002 UNICEF survey is of unknown character and the raw data were not available, but results are included, although treated with some caution. Very recently the 2004 Iraq Multiple Index Rapid Assessment (IMIRA) survey (FAFO/UNDP, 2004) has become available, but as it was conducted after the 2003 Gulf War it is of limited value in determining nutritional conditions in 2003 and earlier. Some preliminary results from analysis of the 2004 IMIRA survey (FAFO/UNDP, 2004) are used here.

The Ministry of Health and UNICEF Iraq collected data every six months, beginning in April 1997, from children attending health centres. Surveys in April 1997 (UNICEF/MOH/WFP, 1997), March 1998 (UNICEF/MOH/WFP, 1998) and April 1999 (UNICEF/MOH/WFP, 1998) were carried out in the 15 Centre/South governorates with children under five years of age taking part in National Immunisation Days for Polio at the Primary Health Centres. Children under two years of age were measured in October 1997, 1998, and 1999 by similar methods (UNICEF, 1999). A major limitation of these

surveys is that the data are not representative of the population. In particular, those who do not attend immunisation days are likely to be worse off regarding care and feeding. In the other direction, sick children may preferentially attend clinic sessions. The convention is to accept that comparisons of clinic-derived data may reflect *trends* in the population, but the prevalence *levels* do not well match those in a representative sample.

Three FAO missions to Iraq produced data on nutrition, food security, and related factors. These were not intended to be representative and sampled only a small number of sites. However, they do provide supporting information. As examples, the FAO Nutrition Status Assessment Mission in November 1993 (FAO/WFP, 1993) performed a small case study to investigate household food security and nutrition status among underprivileged households in Baghdad. The 1995 and 1997 FAO Missions (FAO, 1995; FAO/WFP, 1997) had similar terms of reference and composition (Pellet, 2002). The 1997 Mission conducted a population-based nutrition survey in Baghdad and in the town of Kerbala, approximately two hours southwest of Baghdad (FAO, 1997).

### **Trends in Prevalence of Malnutrition by Governorate**

Comparable nutritional survey data between 1991 and 2002 at the governorate level are not readily available. An exception is the data for Baghdad and Kerbala, which were studied in repeated FAO surveys. Only the 1991 IST (IST, 1991), 1996 MICS (UNICEF, 1996), 2000 MICS (UNICEF, 2000), and 2002 Household Nutrition Status Survey in the Centre/South (UNICEF, CSO/MOH, 2002) provide data on the governorate level from household-level surveys that utilised random sampling (and we do not have available the 1991 IST and 2002 Household Nutrition Survey results at the governorate level). Facility-based surveys during Child Immunisation Days were conducted in 1997 (UNICEF/MOH/WFP, 1997), 1998 (UNICEF/MOH/WFP, 1998), and 1999 (UNICEF/MOH/WFP, 1998) and provided data that may be disaggregated by governorate in the Centre/South region. Caution should be used when interpreting the results of the health-centre data, particularly when comparing these with the household surveys, insofar as considering them to be representative. Furthermore, the 1999 facility-based surveys are not comparable to those in 1997 and 1998 due to strong targeting of rural areas and a larger sampling of clinics in the 1999 survey.

The available results for stunting, underweight, and wasting according to governorate and year were examined, comparing results by governorate. The other surveys—from health centres or surveys with sampling frames below the governorate level—were also considered. The 2004 data were not used for this comparison, as the 2003 Gulf War intervened, presumably with fundamental effects on child health and nutrition, although later a preliminary view of stunting in 2004 is included. The prevalences from 1991 to 2002 according to governorate either were taken from the WHO database, or when calculated by us were very similar to those in the WHO database; and our results were compared with the WHO results by telephone. A summary of the findings is included here.

The patterns of stunting according to governorate are shown in Fig. 4.3 for 1996, 1997, 1998, and 2000. The 1996–2000 comparison is thought to be the most valid, but since the 1996 data cannot be checked, the intervening health-centre-derived data provide a useful check. The results indicate that in most areas the improvement was most rapid at the beginning; however, even without the 1996 data we would still conclude that there was substantial improvement up to 2000. Thus the conclusion on improvement is not entirely dependent on the reliability of the 1996 MICS data. The pattern of most rapid improvement soon after 1996 is also seen in Fig. 4.3, with the use of the 2002 data (which is not available at governorate level), and this pattern is typical of that expected when a crisis begins to be reversed.

The drought started in 1999 and continued through 2001, so the effects will be seen between the 1998 and 2000 datapoints. It is likely that the general slowdown in improvement after 1998 may be in part due to the drought, especially in the areas more dependent on agriculture—which applies particularly to the North, for which health-centre data are not available.

The governorates appearing to show the least improvement or deterioration from 1996, were Diyala (worsening), Babil, and Wassit (little change). These three are geographically contiguous, east and south of Baghdad.

The smaller-scale surveys, mainly supported by FAO in 1993 (FAO/WFP, 1993), 1995 (FAO, 1995), and 1997 (FAO/WFP, 1997), generally are in line with these trends. They do confirm that nutrition had deteriorated by 1996, as far as could be judged from the areas visited (for example, in Baghdad), and the 2000 data are in line with improvement by that time. However, the match with the larger representative surveys is not very close.

### **Methods for Further Analysing Trends in Indicators of Child Malnutrition**

The trends described in Chapter 2 are based on a conventional analysis of the available data. Given the uncertainties and the paucity of data that are comparable across time (or that can be directly verified), we now describe some different approaches to assessing the trends in child malnutrition and examine whether these tend to support the apparent story. The hope was that the next stage of analysis would be able to examine differentials according to area (governorate), but, as will be seen, no really consistent pattern emerges; nonetheless, it is useful to see if the general picture is similar within areas.

The interpretation seems most crucial in judging trends for 1991–1996, 1996–2000, and 2000–2003 (for the latter there are very few data). Thus the estimate for 1996 is crucial, and unfortunately the original data are not to be found. The only original data available are from the 2000 MICS survey (UNICEF, 2000), which have been extensively used in this analysis, and normally would be used at this stage to compare with 1996 raw data. Since this cannot be done, other methods to diagnose likely trends have also been tried.

### *Analysis of Height Deficits by Age Band to Assess Trends Retrospectively*

Under normal conditions, when growth failure occurs in young children (except in emergencies involving severe health and food availability problems), the usual pattern is for children's linear growth to fall behind rates achieved by well-nourished, healthy children of normal birth weight at around six months of age or earlier (depending in part on breastfeeding practices), and for this phase of "active stunting" (Beaton et al., 1993) to continue up to about two years. At this point the child becomes better able to get enough food and less vulnerable to early childhood illnesses, and the usual pattern is for the linear growth rate to then parallel that of the reference (well-fed and healthy) population. Stunting is not caught up at this stage, it persists, but the height deficit may not get much greater. Thus stunting at older ages (say, three to seven years) can be used to reflect the severity of health and nutrition conditions around zero to two years of age.

There are many provisos. The growth rate of the infant and young child is importantly determined by birth weight, which is in turn affected by the nutrition and health of the mother. Second, active stunting (increasing height deficit) can continue after the age of two years. The idea is that if there is more stunting at older ages than at younger ages (e.g., at five versus two years), then conditions are improving, because the younger children are no longer becoming stunted at the same rate. This would be negated if for some reason active stunting shifts to an older age group—one could draw the wrong inference concerning the overall direction of change in malnutrition.

Attained height in children has occasionally been used to look back in time when there are long gaps between surveys. One example comes from Brazil for the period from the late 1970s to the early 1990s, when it was thought that child nutrition had been set back, but it could be shown that the height attained by seven-year-olds had actually improved a lot, a first indication of Brazil's success in dealing with social problems during the period of military rule (Iunes and Monteiro, 1993). A similar approach has been tried here, although the time period is shorter and the risk of confounding by two opposing processes is significant (later active stunting giving an appearance of improvement, versus persistence of early stunting). Some checks were feasible by comparison with neighbouring countries, in this case mainly Egypt.

Two analyses were used. First, the relation of height-for-age with age, after 18 months or 2 years, was estimated by fitting the regression line: a negative slope implies that stunting of 0- to 2-year-olds was more active in the past; children would in this case be (becoming) less stunted now. This required the raw data. Second, when only prevalences were available (as well as for displaying results), then stunting prevalences by age band were compared: here a higher stunting prevalence at later ages again implies improvement.

For comparison, the 2000 DHS survey for Egypt was analysed for these relationships, and it was shown that overall, and for subnational areas (groups of governorates), the coefficient for height-for-age on age was insignificant (for children >18 months, measured standing). The stunting prevalences were slightly higher in older ages, although



little change had happened in the 5 years before 2000, but this was not significant (from the regressions). So the expectation if there was little change is for insignificant coefficients, with only small excesses of stunting at higher ages.

From the 2000 MICS (UNICEF, 2000) dataset for Iraq, the height-for-age on age coefficients were estimated for each of the 18 governorates. These were all negative, with 13 of the 18 significant ( $P < 0.05$ ). The expectation is that the more negative coefficients are associated with greater improvements (e.g., as shown for the improving trends in Fig. 4.3 for 1996–2000), and this was so for 9 of the 13 significant coefficients, when coefficients were plotted against stunting prevalence changes by governorate. Diala was a major outlier, as it is an exception in Fig. 4.3 for unknown reasons. This analysis gave some credence to the improvement estimated by subtracting 1996 prevalences from those in 2002, being based only on 2000 data; in other words, even if the 1996 data were wrong, this analysis provides independent evidence for improvement in stunting in at least half the governorates.

Another way that these considerations can help is by comparing stunting prevalences according to age band, which are provided through the WHO database and from the UNICEF reports even when the raw data are not available. The results are shown in Fig. 4.4, for surveys designed to have representative samples, for the North and the Centre/South, and including results calculated from the Egypt DHS 2000 survey for comparison. (Note that the x-axes differ, so the slopes are not fully comparable.) These results should be viewed in relation to Fig. 2.5 in Chapter 2, and the mean values can be compared, bearing in mind that the values in Fig. 2.5 are for children from zero to five years of age and these values are for children three to five years of age.

In the Centre/South, the 1991 pattern of stunting by age implies little change so far: the only cohort that would have been affected by the sanctions and the 1991 Gulf War, i.e., those 24 to 35 months of age, is not much affected, although in a stable situation stunting might have been less in this cohort than in the older cohorts. (The 1991 data on stunting according to age are not broken down to North versus Centre/South, but the North has only 20% of the population, and one northern governorate was excluded, so that the mixing in of data from the North does not greatly alter the conclusions; other data are from the Centre/South.) The 12- to 23-month age group is reported to have a prevalence of stunting of 34% (WHO, 1995), which is considerably higher than expected and higher than, for example, the 26% reported for this age band for 2000. However, comparisons should be made with care, since we do not know the lying/standing measurement for 1991 and we do not have the raw data. Thus these results may be picking up the beginnings of a deterioration starting in 1990. The 1996 pattern clearly confirms a massive deterioration in the previous (roughly) one to four years: stunting is highest in the two- to three-year age band (and is already at a high level in the older groups). The negative slope is clearly indicative of deterioration, and indeed, even if for some reason the level of the 1996 data was incorrect—and we have no reason to suspect that—the internal relations in the data point to substantially increasing child malnutrition.

In 2000 (for which we have the raw data) the pattern reverses, consistently with an improving trend. The positive slope was tested by using the more robust method of

regression, with the continuous height as the dependent variable, and was found to be highly significant (in contrast to the data from Egypt; see below). This analysis, using sample survey data, is supportive of the Centre/South picture of large deterioration in 1991–1996, followed by rapid improvement, nearly but not quite back to the 1991 levels, by 2000.

For the North, the 1996 results imply that improvement has occurred, since the slope is positive. This again is in line with the improvement from 1991 to 1996 indicated in the prevalences themselves, as seen in Fig. 2.5. This improvement apparently continued in 1996–2000; in fact, the apparently greater slope in 2000 (Fig. 4.4) may reflect the more rapid improvement seen in Fig. 2.5 for the North for 1996–2000.

For comparison, the age-band stunting prevalences for Egypt by region were calculated from the DHS 2000 dataset and are shown in Fig. 4.4. In related analyses, the regression coefficients of height-for-age on age were not significant in any region. The prevalences show no slope overall (“total” group), and although four of the six regions show a positive slope, this is much less than in Iraq; for example, lower-urban in Egypt has 3 ppts difference between 24–35 months and 48–59 months, versus 6 ppts for Iraq-N-1996, or 14 ppts for Iraq-N-2000. This lends some credence to the interpretation of the Iraq age band results (certainly a negative slope is clear deterioration).

All the available survey results for this analysis are shown in Fig. 4.5, pooling health-centre and sample survey data, and including a preliminary analysis of the 2004 IMIRA data (FAFO/UNDP, 2004). Mainly what can be said is that adding these new results does not contradict the previous interpretation. We do not know the distribution of ages at which children attend clinics, for instance. The deterioration followed by improvement around 1996, which implies that stunting in 1996 was indeed unusually high, seems established. The failure to improve further after 2000 (see stunting in Centre/South in Fig 4.4) could be explained in part by the drought in drought 1999–2001.

In Fig 4.5 this analysis is repeated for all the available surveys. The results clearly support the deterioration in from 1991 to 1996—which is the most crucial and difficult to establish—as the slope is obviously reversed for the 1996 data. After 2000 the picture is less clear, with the prevalences themselves not decreasing much (as seen before, e.g., in Figs 2.5 and 4.3), but the comparative stunting between cohorts still suggesting improvement. Generally the picture of deterioration then improvement is supported for 1991–999, with less certainty about 1999–2002, in part no doubt because of the effects of the severe drought.

### *Analysis by Cohort*

An attempt can be made to assemble the implied trends by taking the stunting prevalences in the three older age bands (24–35, 36–47, and 48–59 months) to reflect the conditions when that cohort was 12 to 23 months old; in other words, assuming that stunting occurred at that age and persisted. This should be regarded as no more than a way of combining the data. The plot using this assumption from the 1991 survey (IST,

1991), the 1996 (UNICEF, 1996) and 2000 MICS (UNICEF, 2000) surveys, and the 2002 survey (UNICEF, CSO/MOH, 2002), is shown in Chapter 2, Fig. 2.6. The graph is interesting in expressing what we think happened to child nutrition, and may be valid enough for discussion; it does not substitute for the more reliable results in Chapter 2, Fig. 2.5, but does support them. In particular, it draws attention to the failure to improve further after about 1999. Moreover, the shape is reminiscent of the changes often seen when programmes start, especially (but not only) in relief situations: rapid progress followed by a slower improving trend.

### *Birth Weight*

Data on low birth weight through 1997 are available from the Ministry of Health. However, their validity is questionable, as only a limited proportion of births take place in facilities where the weight is measured; these facilities might be those with delivery problems or those with patients of higher socio-economic status, so that biases could be in either direction. Moreover, the selection and recording of birth weights may be biased. Interpretation is complicated, since part of the low birth weight rate is due to prematurity and part to intra-uterine growth retardation, the latter being linked to maternal malnutrition and ill-health.

Garfield (1999) points out that “An increasing but unknown proportion of all births occurred outside medical facilities during the 1990s. Those giving birth in hospitals are thus likely to be progressively less representative of the general population through 1997.” Diaz and Garfield (2003) note that “The rate of low birth weight was reported to have risen to greater than 20% in Iraqi government hospitals during 1995–1999. These data are highly suspect as they are inconsistent with expected levels in comparable countries and demonstrate an opposite trend to the slow improvement found in all other child health and nutrition indicators.”

The Ministry of Health reported that 60% of children in 1990 were born in hospitals, and of these, 4.5% weighed less than 2.5 kg (Garfield, 1999). Similar to these reports, the FAO/WFP mission (1993) calculated an incidence rate of 3.9% for low-birth-weight babies born in hospitals between January and September 1993 in Basrah Governorate using Ministry of Health data. However, it is important to note that in Basrah only 50% of births took place in a hospital (FAO/WFP, 1993). According to the UNICEF Situation Analysis Report (UNICEF, 1998; citing the GOI Initial CRC Report, 1996), until 1990 the prevalence of low birth weight in Iraq was 5%, a level similar to that in industrialised countries. The Ministry of Health reported that the prevalence had risen to 22% in government hospitals by 1995.

Ministry of Health data cited by Garfield (1999) suggest that the rate of low birth weight increased from 5% in 1990, to 20% in 1993, to 23% in 1997. These rates are plausible, given the prevalence of child malnutrition (birth weight is a major determinant of child underweight or stunting), but on the other hand the data are less reliable and therefore may add little to the anthropometric survey data.

The FAO Mission in 1995 made similar observations about the validity of the low birth weight data. The Mission report states that

[Regarding Ministry of Health estimations of low birth weight between 1990 and 1995] statistics that were made available to the Mission from the Ministry of Health, Nutrition Research Institute and several hospitals, did not include denominators necessary to calculate incidence rates. The 1993 mission (FAO/WFP, 1993) had visited the Basrah governorate and obtained raw data collected from 60 health centres which included birth weights and total number of births by month for 1993. The incidence of low birth weight (based on 33,971 births, February to September 1993) was 3.86 per cent. The Basrah maternity hospital reported to the Mission that 4.8% of births (based on 13,089 births) were below 2.5 kg in 1994–95. Similarly, the Mosul Saddam Hospital reported an incidence of low birth weight of 3.7 per cent (Table 22), ranging from 1.0 to 4.2 per cent. A large percentage of births takes place at home, and thus there could be a low birth weight problem which is not visible (FAO, 1995).

The 2000 UNICEF MICS (UNICEF, 2000) estimated that the rate of low birth weight was 12.3% in the 12 months before the survey. Low birth weight was not associated with place of residence (rural versus urban) or the mother's level of education. Further analysis (by us) of the MICS 2000 survey data showed that birth weights were recorded for only 983 of the 2,935 women reporting births in the last year. According to these data, 11.5% of birth weights were recorded as exactly 2.5 kg, with 10.0% as less than 2.5 kg and 78.5% as more than 2.5 kg. This rounding, plus a reporting rate of only 33%, makes it difficult to determine the rate of low birth weight; if half the birth weights recorded as exactly 2.5 kg were rounded up and half were rounded down, the rate of low birth weight would be about 16%, which sounds plausible.

### **Vitamin A Deficiency**

According to the UNICEF report, "Situation Analysis of Children and Women in Iraq" (UNICEF, 1998), WHO classified Iraq as a country where vitamin A deficiency was not a problem in 1998. FAO also notes that "No information had been collected to document the prevalence of vitamin A deficiency in 1993 but several physicians had reported occasional cases of children observed with Bitot's spots as well as two cases of keratomalacia in Al-Mansour Children's Hospital" (FAO, 1995). The 1994 vitamin A assessment survey, supported by UNICEF and the Nutrition Research Institute, found the prevalence of night blindness was 1.6%, which surpassed the WHO cut-off of 1% for a moderate public health problem. The survey covered 8,575 children under five years of age (4,436 boys and 4,139 girls) in the three governorates of Nineveh, Baghdad, and Basrah. Diaz and Garfield (2003) note that vitamin A deficiency was estimated at 2.2% in 1994 (presumably from the same survey, though no citation is included). The results of the 1994 Vitamin A survey were reported in UNICEF (1998) and FAO (1995)

A supplementation programme supported by the Ministry of Health and UNICEF began in late 1995, focussing on new mothers and on children 9 and 18 months old. Vitamin A capsules were distributed to children when they were vaccinated for measles at 9 months of age (100,000 IU) and when they received the diphtheria-pertussis-tetanus (DPT) booster at 18 months of age (200,000 IU) (UNICEF, 1998). The 1996 MICS found that

the average coverage of the programme was 45%, ranging from 11% to 69% (UNICEF, 1996). UNICEF blames problems of deficiency on “lack of dairy products, meats and eggs in the diet; the rationing distributed previously by the government; and more recently through the ‘Oil for Food’ [Programme]” (UNICEF, 1998).

The results of the 2000 MICS reveal that 12.7 % of children between 6 and 59 months of age had received a vitamin A supplement during the six months prior to the survey. An additional 13.8% of the children had received a supplement, but not within the previous six months, and 6.7% had received a supplement but their mothers could not ascertain the time frame. The 2000 MICS also showed that 21.6% of women who had given birth during the six months prior to the survey had received a vitamin A supplement within six weeks of the birth. Urban women were more likely to receive the supplementation than rural women (23.2% versus 18.7%) (UNICEF, 2000).

### **Iodine-Deficiency Disorders**

National-level data on iodine-deficiency disorders (IDD) are not available for Iraq. Diaz and Garfield (2003) state that iodine-deficiency disorders “in school children were estimated between 8–14% in 1978 and had risen to 44% by 1993.”

According to the UNICEF Situation Analysis:

IDD is probably not new to Iraq, where leaching of iodine from the soil occurs especially in the mountains and foothills. However, the awareness to the deficiency is new, as in most Middle East countries...The price of once abundant fish, an important source of iodine which used to be considered poor people's food, became unaffordable to most (UNICEF, 1998).

The report mentions one study conducted in 1993 in the northern governorates of Dohuk and Erbil, which showed a high incidence of goitre in primary schoolchildren. In some districts, such as Zakho, over one-half of the children had goitre (the report does not specify the source). A further study in 1994 concluded that “IDD is no longer limited to the Northern governorates; it exists even in the governorate of Basrah, a port in the southern part of the country where goiter had not been familiar in the past” (study presented by Dr. Amal Swaidan at the 1994 IDD National Workshop, Baghdad).

The 1996 MICS survey reported a very limited distribution of iodised salt, especially throughout the South/Centre governorates (see Fig. 5 in the report). Only one in ten households had at least the minimal recommended 25 ppm of iodine in their salt on testing (UNICEF, 1996). According to UNICEF:

The SCR986 ration for 1997 is meant to include the provision of iodised salt. However, because of erratic deliveries, the situation is still not much better, based on recent reports from the NRI/MOH. In the North, the population is more sensitised to iodine deficiency and iodised salt is available through plants and across borders. Hence results for the 1996 MICS showed a much higher percent of households using iodised salt than in the South/Centre. (UNICEF, 1998)

The 2000 MICS survey found that 36% of households had salt with at least 15 ppm iodine (all households responded, N = 14,587) (UNICEF, 2000).

### **Iron Deficiency**

Data on iron deficiency are quite limited. The UNICEF Situation Analysis claims that “Anemia due to iron deficiency is the most common nutritional disorder in Iraq, affecting more than one-half of pregnant mothers and probably a similar percent of young children. It is an important cause of maternal mortality and young child morbidity” (UNICEF, 1998). However, the report does not include citations for these statistics. The report mentions a “TBA survey by the MOH/WHO/UNICEF in late 1996” that showed that one-quarter of pregnant women who attended the Primary Health Centres received a full course of iron/folate. Similar results were obtained by the “MCH Health Facility survey conducted by MOH/WHO/UNICEF in August 1997” (UNICEF/MOH/WFP). It is not clear whether the low coverage (25%) is due to lack of supplies, screening of women, or other factors.

According to the WFP, “The FAO/WFP Crop Food Supply and Nutrition Assessment (2003) report noted that ‘the prevalence of anemia in pregnancy increased from 51 percent in 1995 to 60 percent in 1999’ (WFP, 2003). The 2000 MICS Final Report has no mention of iron deficiency or anemia (UNICEF, 2000).

### **Breastfeeding**

The Government of Iraq initiated a Child Survival Campaign in the mid-1980s to promote population growth. The campaign included a push for breastfeeding and is associated with a steep decline in mortality (Diaz and Garfield, 2003). The rate of ever having breastfed reportedly rose from 89% in 1988 (Hurwitz, 1992) to 94.7% in 1996 (UNICEF, 1996). Similarly, the rate of breastfeeding at 6 months of age rose slightly from 60% in 1988 (Hurwitz 1992) to 65.4% in 1996 (UNICEF, 1996).

The nutrition status surveys at Primary Health Centres during Polio Immunisation Days (PNID) in October 1997 (UNICEF/MOH/WFP, 1997), 1998 (UNICEF/MOH/WFP, 1998), and 1999 (UNICEF/MOH/WFP, 1999) for children less than two years old are particularly useful in giving a clear picture of the status of breastfeeding in the Centre/South. Fig. 4.6 shows the relatively high rate of ever having breastfed, yet a low rate of exclusive breastfeeding even in the first months of life in 1997 (13% for zero to five months) (UNICEF, 1998). A household survey in 2002 reported that the rate of exclusive breastfeeding among zero- to four-month-olds rose from 17.1% in 2000 to 30.7% in 2002 (UNICEF, CSO/MOH, 2002).

It appears from the 1996 UNICEF MICS that children in the North had a shorter duration of breastfeeding and a greater extent of bottle-feeding (UNICEF, 1998). The results from the 2000 UNICEF MICS showed that

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- Approximately 17.1% of children aged under 4 months were exclusively breastfed, a level considerably lower than recommended;
- At 6–9 months, 51.0% of children were receiving breastmilk and solid or semisolid foods;
- By 20–23 months, 27.0% were continuing to breastfeed.

The 2000 data did not show any noticeable effect of level of mother's education on breastfeeding practice. The final report attributes this to “the positive long-standing tradition in Iraqi society of giving special care to infants, and is also affected by the presence of the mother at home” (UNICEF, 2000a).

Low rates of exclusive breastfeeding have been attributed to the distribution of infant formula with the ration. In 1994, the Iraqi cabinet approved a code on the protection and promotion of breastfeeding. However, the president's office never approved it. According to Diaz and Garfield (2003), at that time infant formula had been taken off the ration and the price of formula in the marketplace rose rapidly. It is assumed that this experience convinced the government not to implement the code despite heavy advocacy by UNICEF, pediatricians, and many international visitors.

Significant controversy exists about the role of infant formula within the food ration in Iraq during the OFFP. It is well known that the ration included infant formula and weaning cereal for all children less than one year of age. Because of the absence of clean water caused by deteriorating infrastructure, the inclusion and proliferation of infant formula in Iraq during the OFFP was especially dangerous for the health and well-being of Iraqi children.

Of particular concern is a statement made within a report by the 1997 FAO nutrition mission to Iraq, that

under the MOU a family with an infant could choose whether to take either the formula or an adult ration and at the time of the Mission's visit, 75 percent of eligible families had preferred to take the adult ration. However families with infants no longer have this choice and must take the infant formula. (FAO/WFP, 1997)

If this statement is accurate, there are tremendous implications for the adequacy and appropriateness of the ration.

Unfortunately, there is no other conveniently accessible documented evidence that would corroborate the statement made by the FAO. The bulk of the controversy focuses on the availability and inclusion of infant formula within the ration, with no mention of the mandatory nature of the formula ration. However, a report by the Humanitarian Information Centre of Iraq suggested that only 20% of families used infant formula (UNICEF, 2003), which may suggest that the formula ration was not in fact mandatory.

Although there may be no conclusive evidence that families with infants had no choice but to accept infant formula, the supply of infant formula through the OFFP may have

undermined the promotion of breastfeeding and consequently the health and well-being of a certain population of Iraqi children.

## **ENVIRONMENTAL INFRASTRUCTURE AND HEALTH CONDITIONS**

*The following section is excerpted and edited from “Iraq: Social Sector Watching Briefs,” by J. Diaz and R. Garfield, published in July 2003 by UNICEF and WHO (Garfield, 2003). The Watching Brief was used extensively by the Working Group, of which R. Garfield was a member, and the data and text included below are accepted by the Group. The material is included here as background to Chapter 2, Environmental Infrastructure and Health Conditions, and to provide additional information on data and sources.*

In the 1990s the Government of Iraq claimed to have invested heavily in health during the 1970s and 1980s. Large scale funding from a newly nationalised petroleum industry was available through highly centralised socialist state structures to institute developmental projects in this rapidly urbanising country. However, the state was already secretive about budgets, and no detail is available to examine these claims. Thirteen hospitals are known to have been built during the 1980s with support from Japan; this represents only a fraction of the more than 150 public hospitals in the country. Many physicians and medical educators were sent overseas for training and they serve as the bulk of medical leaders today. Priority activities expanded rapidly through centralised planning. Where capacity was limited, guest workers were employed in large numbers. In health, these were mainly physicians in some specialties and most of the nurses in the country.

The fully envisioned system of hospitals was never completed. Suleimaniyah, for example, only started construction on its governorate-level referral hospital in 2002. More than a third of all beds and physicians were located in Baghdad, and close to half of these were located in the complex of five hospitals known as Saddam Medical City. The cities of Basrah and Mosul also built on long traditions as referral medical centres with the construction of major new hospitals in the 1980s.

Subsidies were instituted to encourage more childbearing and a child survival campaign was developed in the mid-1980s. This involved 1,000 mobile outreach service teams in rural areas. Campaign priorities included breast-feeding promotion, diarrhoea treatment programmes, immunisation campaigns, outreach for tuberculosis (TB) care, and the building of a large network of primary health care centres. Primary health care services were reported to be within reach of 97% of the urban population and 71% of the rural population. With the exception of this one programme, the health system concentrated almost all its resources on developing and maintaining sophisticated hospitals in cities and subsidising the purchase of pharmaceuticals.

Services provided, including the provision of pharmaceuticals, were also without user fees. Health Insurance Clinics (HIC) were built in remote areas for new graduate



physicians to work in for a year providing social service to populations with poor access. Some 893 of the Health Centres (HC) had a laboratory. There are Public Clinics (PC) in remote areas that are staffed by nurses and visited by physicians periodically and some HC have Chronic Disease Pharmacies (CDP) to provide medication for chronic conditions. There was a network of 2,899 private pharmacies, 490 private clinical laboratories, and private medical facilities in major and minor cities. Specialised pharmacies exist to dispense medicines for rare conditions. There were 9 forensic labs, 5 dental labs, 2 tropical disease centres, 18 emergency care centres, and 21 specialty dental centres.

### **Morbidity**

#### ***Infectious Diseases***

The incidence of infectious diseases from 1989 to 2000, as reported by the Ministry of Health, is reproduced in Table 4.5.

Diarrhoea incidence among under 5 year olds is reported to have increased substantially after 1990. The reportable disease reporting system recorded a skyrocketing increase in diarrhoea cases (see for example amoebic dysentery and giardiasis in table 4.5), but this likely reflects a strong bias in reporting. More useful were household surveys, in which diarrhoea increased from 3.8 episodes per child per year in 1990 to 14.4 per child in 1999. Outbreaks of diarrhoeal diseases are especially common in the summer. Poor electric and water services, deterioration of infrastructure, and poor sanitation habits, all combined with overcrowding contributed to cholera outbreaks (most recently in 1998 and June–August 2002) as well as other diarrhoeal diseases. Cholera became endemic in all governorates of the Centre/South regions following the 1991 Gulf War period (see Table 4. 6). Rural areas are particularly affected during April to November. Cholera reporting is far better than diarrhoea reporting overall and can be considered an indicator for trends in diarrhoea incidence.

Among the health indicators in the MICS 2000 household survey, only rates of diarrhoea in the last two weeks were not lower in the three northern governorates than in the rest of the country, where the average was 15%–20% (see Fig. 4.7).

In a health facility survey of 1997, three-quarters of reported diarrhoea cases occurred in under two-year-olds, with the highest peak in those 6–11 months of age. Ministry of Health data showed a decrease in the incidence of diarrhoea cases between 1998 and 2001. The MICS household survey 2000 showed that 30% of children under five years of age in northern Iraq had diarrhoea in the two weeks prior to the survey. The percentage of ARI cases dying in hospitals was reported as 2.9%, and the percentage of diarrhoea cases dying was 1.4%. The Ministry of Health reported this to represent a ten-fold increase.

The incidence of ARI was also reported to increase in the early 1990s, and has remained high over the last decade; 32,000 cases of ARI were recorded in 1990, while 152,932 were reported in 2000 (Garfield et al., 1997). According to a survey conducted in health

facilities in six governorates in 2001, of all under five-year-olds registered, 16% had pneumonia. In the northern governorates, a high proportion of under five-year-olds had ARI in the two weeks prior to the survey (17.2% in June 2000; 12% in October 2000).

### ***Vaccine-Preventable Diseases***

Measles is the third most common cause of registered death in children under five years of age in Northern Iraq. In Centre/South Iraq, more than two-thirds of measles cases are now occurring in older children who most probably escaped immunisation. Reports of other vaccine-preventable diseases such as pertussis (whooping cough) and diphtheria have also risen (see Fig. 4.8). The last pertussis epidemic occurred from June–December 1996 with 40% of those affected under five years of age. Almost 20% of children ages 1–4 years were not immunised. Pertussis has no seasonal pattern but tends to occur in summer/autumn months (June–October), while diphtheria tends to occur more in colder months. There were 2,312 cases of pertussis reported in 2001.

Three components of a surveillance system were in place at the end of the 2003 war. In the three northern governorates, the usual system of notifiable disease reporting remained operative. In most of the Centre/South, weekly reporting was set up from sentinel hospitals and clinics to make up for the collapse of regular reporting. In most of Baghdad, it was possible to set up daily sentinel reporting.

### ***Cardiovascular Diseases***

The major modifiable cardiovascular risk factors are smoking, hypertension, hyperlipidemia, and diabetes. Virtually nothing is being done in Iraq to reduce these risks. The Smoking Control Committee reports a prevalence of smoking of 40% among males over the age of 16 years and less than 5% in females (Kreisel, 2001). Report of the most recent FAO survey includes data on body mass index (BMI) from adult population samples from Baghdad, Diyala and Karbala. 4-6% of adults had a BMI of less than 18.5 (chronic energy deficiency) but 47% had a BMI of 25 or over. Most of the overweight were male. Thus, despite a problem of under-nutrition (especially among children), Iraqis also suffer from a high prevalence of over-nutrition (especially among adults). This information is virtually unknown in Iraq, even in the Ministry of Health.

The first population-based survey on hypertension was conducted in 1979. Using the cut-off levels of 160/90 a prevalence of about 12% was reported, and only every fifth person with hypertension was aware of the diagnosis (Alwan et al., 2001). In 1998, the Ministry of Health provided medicines to 436,000 people with heart disease and 323,000 with hypertension.

## *Diabetes*

A survey in 1979 revealed a prevalence of 5% in a small rural population in Basra (Alwan et al, 2001). This high rate indicates that Iraq was experiencing an epidemiological transition with a rise in non-communicable diseases.

Before 1990, there were several specialised diabetes centres staffed with endocrinologists, ophthalmologists and nurses trained in diabetes care. Since 1990, it became difficult to maintain and staff these centres. As a result, internists treat most people with diabetes. A national centre for diabetes is located at Al-Kindi Hospital in Baghdad. There are no programmes for patient education. In 1998, the Ministry of Health provided medicines to 165,681 people with diabetes mellitus. There are no patients on continuous ambulatory peritoneal dialysis (CAPD). Also, dialysis machines are few and concentrated in large urban centres.

## *Cancer*

The Iraqi cancer registry was established in 1976. Iraq was one of the first countries in the region to initiate a population-based cancer registry and a national cancer control plan. The Iraqi Cancer Board is chaired by the Minister of Health with members representing experts in cancer control and governmental, educational and research institutions. The Board has subcommittees on smoking control, cancer registries, prevention, early detection, radiotherapy and chemotherapy, and palliative care. It also has 14 provincial committees. There is no specific plan for cancer control or registration in the North.

The most common tumours are those of the breast (14%), lung (10.6%) and bladder (7.5%) followed by cancer of the lymphatic system. Leukaemia was the fifth commonest cancer in 1998 responsible for 5.8% of all tumours (ranked 7th in 1989). The Ministry of Health began a breast cancer-screening programme in 2002. The Cancer Registry reports an increase in the number and proportion of cases of leukaemia in the southern governorates since 1993. It is not clear if this is the result of biased reporting; registry specialists are needed to evaluate and improve the quality of reported cases. Most tumours (50-80%) are detected in advanced stages and are thus incurable even if the best therapies could be offered.

Work on prevention has been focusing in principle on smoking control. A national campaign has been designed but no plan yet exists to implement it. Hepatitis B vaccination is now part of the Expanded Programme of Immunisations (EPI) but there are problems in the continuous availability of vaccines. Most bladder cancers are still of the squamous carcinoma type which is caused by schistosomiasis.

The department of non-communicable diseases and mental health is currently part of the General Directorate of Prevention. An advisory committee serves a similar function in the North. The Minister of Health chaired the national smoking control committee with members from the Iraqi Cancer Society, Armed Forces Medical Services, Women's

Union, Youth and Students Union, Olympic Committee, Ministry of Health departments as well as the Ministries of Education and Information. A Presidential decree issued on 31 August 2000 prohibiting tobacco advertising went entirely unnoticed.

### ***Mental Health***

Information on mental health status is limited to that which is available via the services provided by the two mental hospitals in Baghdad and wards in several other regional centres. This provides no information on the magnitude of need, coping mechanisms, or adaptation methods for any population groups.

### ***Vaccines***

Vaccination coverage for childhood illnesses overall fell dramatically in the early 1990s from higher pre-1991 Gulf War levels. Good data are only available for the period starting in 1998. By 1996, vaccine availability began to improve, and by the end of the decade, coverage rates had largely recovered or exceeded pre-1990 levels. DPT coverage was higher in the North (80%) than in the rest of the country (17%) by the year 2000 (Fig. 4.9).

Immunisation coverage rates identified by household survey were higher for BCG (tuberculosis vaccine), OPV (oral poliovirus vaccine), and TT (tetanus toxoid) and lower for DPT (diphtheria-pertussis-tetanus vaccine) than rates estimated by the routine reporting system. Continued reports of large numbers of vaccine-preventable diseases, a polio outbreak in Northeast Iraq in 1999 (with no further cases reported to date since February 2000), and the fact that half of mothers did not have an immunisation card during the 2000 MICS survey suggests that there continue to be great problems with immunisation service and social mobilisation to motivate public awareness and timely application. The cold chain has been a particular problem in assuring vaccine quality. Most of the equipment was newly purchased by the OFFP, but old equipment included 160 of 710 kerosene refrigerators, 135 of 1,005 electric refrigerators, and 3 of 18 cold rooms.

### ***Sanitary Infrastructure***

A survey in 2000 indicated that 99.1% and 77.8% of the urban and rural populations respectively used a “sanitary means of excreta disposal.” This perception of “sanitary” at household level may have been directly related to the presence of in-house toilet facilities. In reality however, the vast majority of septic systems and sewerage treatment plants did not function properly, resulting in overflows of raw effluent into the immediate or distant environments.

Diseases associated with poor sanitation, unsafe water, and unhygienic practices had also increased to alarming rates, contributing to a fast growing problem of malnutrition, morbidity, and mortality of infants and under five-year-olds. Poor sanitation and insufficient access to safe water, particularly at family level (for drinking, cooking, and

family and home hygiene) is a key underlying cause of diseases and malnutrition in Iraq. Globally, it is estimated that water and sanitation-related diseases are responsible for about 19 % of all children's deaths.

Exacerbating the situation is an acute lack of awareness—at all levels—of the relationships between disease and poor sanitation and unsafe water and unhygienic practices, including the necessary life skills to prevent and protect against such diseases. This lack is particularly visible among illiterate mothers and child caregivers. Unhygienic practices for early childhood care and feeding, unsanitary living environment and a poor understanding of the links between poor sanitation, and use of unsafe water and that of diseases, exacerbate the disease burden. There is an insufficient focus on strategies that promote good sanitation, hygienic behaviours, management and conservation of water, especially at the family level and insufficient attention given to collaboration and coordination with health and nutrition sector to combat disease and malnutrition.

### ***Reproductive Health and Birth Spacing***

The maternal mortality (MM) rate was calculated from demographic survey to be 294 per 100,000 women aged 15–49 years during 1989–1998. This represents a more than doubling of the rate of 117 per 100,000 estimated in 1989. Total fertility in Iraq is estimated at 5.7, which is extremely high. Most maternal deaths occur after delivery (61%) or during pregnancy (24%). Prenatal care or delivery with trained assistance and referral can prevent most of these deaths; 65% of births occur outside of formal health institutions. Traditional birth attendants (TBAs) attended 79% of these births in 1998. The proportion of women delivering without trained assistance increased during the 1990s to 30% in urban areas and 40% in rural areas. About 80% of women reportedly received some kind of prenatal care, but only 60% received postnatal care. Of those women who delivered in public or private health institutions, many received inadequate care because essential drugs were missing, transport to more advanced institutions was poorly organised, or doctors lacked training in emergency obstetric care. It is mainly referral institutions at a district level that have the capacity to attend complicated births; about half of these lack some key resources to provide appropriate care. Women are at increased risk for poor birth outcomes because of high rates of anaemia (51%–70%), short birth intervals (41% spaced less than two years apart), high total fertility (5.7) and early marriage (40% prior to age 18 years). Some 15%–20% of deliveries are at high risk and need advanced medical support.

Only a third of Ministry of Health facilities offer emergency obstetric care, and only a third of Iraq's women give birth with a qualified health worker in attendance. Of these women, 15%–20% face high risks to their health and need advanced medical support, but referral systems have not yet been developed. This explains the high maternal mortality of 294 maternal deaths per 100,000 live births, which is a much higher rate than in other countries of the region.

There are 502 obstetricians/gynaecologists, about 2,000 TBAs, and perhaps 3,000 untrained TBAs. Most of them have had in-service and refresher training. TBAs assist many women who do not have professionally supervised births. There have been some

efforts to train and integrate TBAs into the health system. It is reported that this has been successful, resulting in increased referral of pregnant women for prenatal care and delivery services.

The prevalence of contraceptive use rose from 14% to 25% nationally, but this still falls far below the average for Arab countries in 2000 of 51%. Rates varied from 5% to 47% by governorate. There are 147 family planning clinics run by the Ministry of Health and 46 run by the Iraqi Family Planning Association. Only 550 of the country's more than 1,700 public hospitals and health centres are equipped to provide emergency obstetric care.

Iraq has a good network of Ministry of Health institutions that include 3,532 maternity beds. All general hospitals have an obstetrics/gynaecology department, and each governorate has a maternity-child care obstetric and gynaecology department. In 2001, there were 147 family planning or reproductive health clinics, of which 97 were managed by the Ministry of Health. Of these, 59 were attached to or were in hospitals and offered some specialist-level and referral care. Another 22 were PHC-level clinics, and 16 were "popular" clinics (open in the afternoon). The Iraqi Reproductive Health and Family Planning Association (IRHFPA), working in collaboration with other national NGOs, operated another 46 clinics.

In 1996, 78% of pregnant women reportedly received some type of antenatal care. Less than 60% of women are currently covered by tetanus immunisation. A Ministry of Health survey found that only 17% of medical staff are conversant with the relationship between adequate birth spacing and maternal health. Less than 50% of health care facilities are capable of providing emergency obstetric care. The referral system has broken down as a result of poor pregnancy monitoring, poor linkages between PHC and specialised hospitals, lack of telecommunications, poor ambulance services, and the lack of security following the 2003 war.

### **Facilities, Personnel, and Administration**

In May 1997 when the first OFFP supplies reached Iraq, visits to health centres and hospitals, and the number of x-rays, lab tests, surgical procedures, and prescriptions provided by the public medical care system had each decreased by about one-half. Goods provided via the OFFP had a dramatic, if limited effect on the health system. Before 1996, 148 ambulances served Baghdad; after 1996 only 4 ambulances worked in the capital city. Although the OFFP provided 1,270 new ambulances, some were soon out of service as the imported models required new maintenance expertise and a large bank of spare parts. Furthermore, the Iraqi government estimates that 2,000 patients needing emergency care died because all air transport was grounded, from 1991 to 1999 (Garfield, 1999).

In 1998 the Ministry of Health reported that the use of public ambulatory health services rose 42% from March 1997 to March 1998, hospital stays became longer on average, and more lab tests and x-rays were performed per patient. In what appears to be a political manipulation of the data system, rising utilisation was later reported to be far more

modest. In November 1998 WHO/UNOCHI surveys showed that an average of 44 % of 18 essential medicines were available in health centres. Overall, 22 % of all formulary medicines were found in hospitals and health centres, and 32 % of medicines were available for patients registered with chronic diseases. In August 1998 essential medicines were unavailable at clinics in the Centre/South, an average of twenty-four days per month and by December 1998 this declined to eight days per month. Fewer shortages existed in the North.

### *Private Sector*

The mix of public and private services in Iraq is complicated and has been dynamic since the government stopped restricting private practice in 1994. This was done mainly to retain physicians, many of whom left the country. It was extended in 1998 to hospitals, where institutions were permitted to charge cost-recovery fees. These fees have been used to purchase supplies and provide as much as 80% of medical income. All public hospitals and clinics were integrated into this system in 1999, wherein patients pay a base fee of at least 250 dinars (US\$0.25) per visit. Out of pocket costs for health care had been estimated at 40% of all expenses; with self-finance this was assumed to rise to 60%.

Physicians and dentists were always permitted to have private fee-for-service practices after a required period of social service. Most do establish such practices, but it is not clear how many patients they attend to. The government in the 1970s discouraged this approach. In the 1990s, to retain doctors, Public Clinics (PC) were used in the afternoons for semi-public practice. The arrangement kept physicians attending clinics in the morning and helped them to establish private practices. There are about 3,000 private pharmacies; all received allotments of some products at heavily subsidised prices. They were also limited in this way to dependence on the government for supply and the government also set prices. About 10% of stock is provided to private pharmacies in the South; no distribution to private pharmacies exists to the North.

A system of private hospitals grew during the 1990s. The 71 private hospitals were not able to provide better technical services than the 211 public hospitals, but they were cleaner, had more nursing staff, and provided more hotel function (Garfield et al, 1997). Most of them were doctor's hospitals with less than 50 beds. Public hospitals also responded to the demand for such beds by charging for private rooms and providing better hotel services to these patients. About 500 of the country's 1,400 clinical laboratories were private.

During the OFFP, investment in imported medical goods was not matched by internal investment in salaries, training, and physical plants. The latter items would normally have come from the regular Government of Iraq budget, but few funds were made available from any source. "Special Allocation" budgets siphoned off public funds to the President's pocket. OFFP thus limited the health system, making it relatively commodity-rich and human capacity-poor. The deficit in training in health administration and public health before 1990 was continued throughout the crisis period of the 1990s. Another key

drawback was that in the Centre/South, there was no cash component for implementation of projects or for incentives to staff.

Some of the stunning increase in mortality among under-fives may be related to capital shortages and drought that would have affected Iraq even in the absence of the political crisis associated with the Gulf War and sanctions. How much these factors influenced conditions is not known. No information systems were established to monitor humanitarian conditions or evaluate efforts to relieve suffering and the existing information systems of the Ministry of Health were increasingly deteriorated and politically manipulated during this period. The Government of Iraq limited OFFFP evaluations to studying commodity delivery systems and not humanitarian conditions overall. Despite UN Security Council resolutions in 1998 and 2000 calling for a comprehensive evaluation of humanitarian conditions in Iraq, neither the UN nor the Government of Iraq facilitated such an effort. More than a decade after one of the major humanitarian crises of our time began, the specific causes of this damage were not clear and we remain without a minimally adequate information base to address it.

One positive development in information system policy occurred in response to the polio epidemic of 1999. To improve immunisation coverage and identify cases more effectively the Division of Preventive Medicine started to use EPI-INFO software in 2000. Early in 2003, it initiated the automation of data entry, analysis, and reporting for communicable diseases.

### *Personnel*

The number of Primary Health Centre (PHC) facilities per person varied widely, from 4,700 to 39,000 people per facility. This is an appropriate distribution given differences in population density. Visits to public facilities as recorded by the Ministry of Health showed a generally equitable distribution around the country. Sparsely populated Saladin had more doctors per population, but fewer visits. There were far more variations among specialised centres, as there are few of these in some outlying governorates (see Table 4.7).

The doctor to population ratio increased from 1977 to 1998 but was still low at 4.7 per 10,000 compared with most other countries in the region with ratios above 10 per 10,000. In the central and southern governorates in 1999, the physician to population ratio was 1 per 1,926 persons, or 52 per 100,000 persons. Neighbouring Jordan had a physician to population ratio four times greater.

Far more problematic is the situation in nursing. The ratio of nurses per population was always low, and fell off precipitously after foreign workers left in 1990. In Iraq, there were almost the same number of nurses and nursing auxiliaries, as there were doctors (see Table 4.8). In most countries, there are three to six nurses and nursing auxiliaries per physician. Among nursing staff, few were professional or trained nurses, and only a small fraction had graduated from university nursing schools; more than 80% of trained nurses were graduates of high school or post-high school nursing institutes. Only a handful of those trained in other countries have any background in public health. During the same



time, Jordan had 70 times more nurses and twice as many auxiliary nurses. There was one professional nurse for 24 physicians, two professional nurses per 100,000 persons, and 50 auxiliary nurses per 100,000 persons. Overall, in 1999, the ratio of total health workers to population in the Centre/South region of Iraq was 11 per 10,000, while in Jordan there were 60 per 10,000.

Entry to medical school was partly determined by location of residence. This helped to insure the equitable distribution of all doctors and specialists throughout the country. From the highest to lowest doctor to population ratio governorates, there was only a twofold difference (see Table 4.8).

## **CHILD MORTALITY**

### **Data Sources**

Iraq does not have a complete system of registration of births and child deaths, so estimates of child mortality have to be based on reports of women concerning the survival or otherwise of their children. A number of surveys have collected such information relevant to the measurement of infant and child mortality (henceforth called child mortality for brevity) over the period since 1975; a particularly concentrated period of observation occurred in the period 1985 to 1991, including the national 1987 census (CSOI, 1987)(which collected summary birth histories, numbers ever borne and numbers still living, from women over the age of 15), a Child Health Survey in 1989 (MOH, 1990) (complete birth histories, collecting information on the date of birth and, if applicable, age at death, of each child of a surveyed woman), an Immunisation Survey in 1990 (UNICEF/MOH/MOP, 1990) (summary birth histories), and the 1991 International Team Survey (IST, 1991)(births and deaths for the preceding two years). Unfortunately, observations have been much less frequent since 1991, with only three major sources: the 1997 census (CSOI, 1997) (summary birth histories, but only for the 15 southern and central governorates under Baghdad's control); the 1999 Child and Maternal Mortality Survey (UNICEF/GOI, 1999) (complete birth histories, with parallel surveys in the North and South/Central); and the 2004 IMIRA survey conducted by FAFO (FAFO/UNDP, 2004) (birth histories).

### **Data Analysis Issues**

A full birth history can be analysed to produce estimates of essentially any indicator of child mortality (e.g., the Infant Mortality Rate, or IMR [the probability of dying before first birthday], or the Under-5 Mortality Rate, or U5MR [the probability of dying before fifth birthday], or any intermediate measures). The procedures involved in collecting full birth histories usually insist that a survivorship outcome, alive or dead, be obtained for every child reported so that there are no missing values on overall survivorship. Indirect estimates, on the other hand, can only produce a limited range of indicators of child mortality, different for each age group of mothers. Estimates based on reports of women aged 15 to 19 reflect the IMR, estimates based on reports of women aged 20 to 24 reflect the probability of dying by age two, estimates based on reports of women aged 30 to 34

reflect the U5MR, and so on; even to arrive at these estimates, an age pattern of child mortality has to be assumed. Some method, typically the selection of a model life table system, has to be adopted to make the estimates comparable across age groups. Further, when women are asked the two simple questions needed for indirect estimates (“How many children have you ever borne alive?” and “How many of those children ever born are still alive today?”), a numerical response might be given to the first question and the second question might be not answered. Good survey supervision would avoid this outcome, of course, but it is hard to ensure adequate supervision of a national population census.

An age pattern of child mortality for indirect analysis can be selected if at least one full birth history survey has been conducted in the population in question. As noted above, several birth history surveys have been conducted in Iraq. One of the most comprehensive is the 1999 Child and Maternal Mortality Survey. Figure 4.10 plots the probability of dying between exact ages one and five (vertical scale) against the IMR for calendar years from 1974 to 1998; also shown are the relationships observed in four families of model life tables (Coale and Demeny, 1983); observed points for years before 1991 and 1991 and later are distinguished. The points for pre-1991 are scattered widely between the higher “North” pattern and the lower “East” pattern, providing no clear guidance as to which model to choose. The 1991 and later points, on the other hand, are clustered well below the lowest “East” pattern, indicating very high mortality in infancy relative to later childhood. We will return to this point later, but given the general scatter of pre-1991 points around the “West” pattern, we have used this model for indirect estimation.

The issue of non-response is particularly relevant to the analysis of data from the 1987 and 1997 censuses. The tabulations from these censuses show very few ever-married women aged 15 to 49 failing to answer the question on children ever borne (around one-tenth of one percent), but substantial proportions (1.5% in 1987, 3.5% in 1997) failing to answer the question on the number of children still alive. It is not clear why these differences arose. One possibility is that for women none of whose children had died the interviewer simply put a dash in the relevant box, an answer that the data entry staff would interpret as missing; under this scenario, most of the “missings” would have lost no children, and the average number of children surviving should be calculated after subtracting the women with missing data. Another possibility is that women all of whose children had died might have been reluctant to report; under this scenario, the women with missing data should not be subtracted. Figure 4.11 shows the indirect estimates of U5MR calculated using these two extreme assumptions. Unfortunately, the choice makes a huge difference to the results, particularly for the 1997 census: although estimates based on the youngest women differ less, those based on women aged 30 and over vary by 30 per 1,000 births from 1997, and by 10 per 1,000 births from 1987. The first type of error seems the most plausible, in which case attention should focus on indirect estimates adjusted for non-response.

## Data Consistency

Figure 4.12 plots estimates from all the available sources covering the period 1974 to 2002; indirect estimates calculated from full birth histories are not shown. Indirect estimates from the 1987 and 1997 censuses are shown both adjusted and not adjusted for non-response. All estimates are shown in the form of probabilities of dying by age five, the U5MR. As discussed above, indirect estimates have been converted into estimates of U5MR when necessary using the Coale-Demeny (1983) “West” family of model life tables. As can be seen, there is considerable disagreement between estimates, not just in level but also in terms of changes over time.

The estimates from the 1987 and 1997 censuses not adjusted for non-response agree reasonably closely if the two right-most points of each set, based on reports of women aged 15–19 and 20–24, are ignored: they indicate a level of U5MR in the range of 0.085 to 0.110, and suggest gradual decline during the 1970s and early 1980s, followed by a gradual increase during the 1990s, with U5MR ending up about where it started in the mid-1970s. The estimates from the 1987 and 1997 censuses adjusted for non-response, on the other hand, do not agree: the 1997-based estimates for the mid-1980s are some 20 per 1,000 lower than the 1987-based estimates; the 1997-based estimates also suggest a rather sharper increase in child mortality in the early 1990s. Direct estimates from the 1989 Child Health Survey and 2004 IMIRA surveys are below any other estimates, although the 1989 Child Health Survey trends mirror those of other sources reasonably well. Indirect estimates from the 1990 Immunisation Survey are below the indirect estimates from the censuses, even when the latter are adjusted for non-response, but are above the direct estimates from the Child Health Survey and agree very closely with the direct estimates from the 1999 CMMS through the 1980s. The direct estimates from the CMMS are below the census-based estimates in the 1980s, but then jump above the census estimates in the early 1990s, though being roughly consistent with the 1997 census-based indirect estimate from women aged 20 to 24. The direct estimates from the 1991 International Survey Team support the very sharp rise in U5MR between 1990 and 1991 found by the 1999 CMMS, but from a base in 1989 below most other available estimates.

Can we reconcile these disparate estimates? Let us assume initially that there was no strong reason in 1987 to falsify census returns to show higher child mortality than was actually the case (we will return in the discussion to this assumption, though note here that the Government of Iraq put pressure on international agencies in the late 1980s to show low child mortality rates, especially relative to the estimates for Iran). Given this assumption, it is reasonable to treat the estimates from the 1987 census (adjusted for non-response) as a lower bound on U5MR (extensive experience of child mortality estimation in the developing world has revealed few instances in which census-based indirect estimates of U5MR, except those based on reports of women under age 25, are too high, but several in which they are too low). If this is correct, two of the sources of estimates from around 1990 can be immediately discounted: direct estimates from the 1989 Child Health Survey show levels of U5MR close to 30 per 1,000 lower than the census for

comparable time periods, and the indirect estimates from the 1990 Immunisation Survey are also systematically lower for comparable time periods. Estimates from the 1999 CMMS for the late 1970s and 1980s are also generally lower than the 1987 census-based estimates.

The four sets of census estimates stand out for having a very distinctive J-shape with time (time corresponds to the age of the mother providing the information: the estimates closest to the date of the respective census are derived from reports of young women aged 15–19 and 20–24, whereas the estimates furthest in the past are based on reports of women aged 45–49 and 40–44). This J-pattern is very common with indirect estimates, and is generally explained in terms of adverse socio-economic selection into early marriage and childbearing inflating the child mortality estimates based on reports of women under the age of 25. The J-shape should therefore not be interpreted as indicating a rapid rise in child mortality in the period immediately before the census. The left-hand-most five points (based on reports of women aged 25 to 49) of each series can be taken as representing average population child mortality levels. With the use of estimates based on data not adjusted for non-response, the four left-hand-most estimates from the 1987 census line up rather well with the three left-hand-most points from the 1997 census, giving the impression that the two data sources are rather consistent. As noted, however, this consistency disappears when estimates adjusted for non-response are used: the estimates for the mid-1980s from the 1997 census are 20 per 1,000 lower than those from the 1987 census. One could argue that the estimates from the 1997 census should be somewhat lower, because they are derived from 15 governorates with lower child mortality than the 3 excluded, but the effect of this on U5MR (based on estimates from the 1999 CMMS parallel surveys) is not likely to exceed 3 or 4 per 1,000.

The 1999 CMM survey shows somewhat lower child mortality for comparable periods than the 1987 census (averaging around 10 per 1,000 difference relative to the non-response-adjusted estimates) but agrees quite closely with the 1997 census estimates adjusted for non-response. The 1990 estimate from the ITS is lower still. If the assumption about the 1987 census estimates representing a lower bound is correct, the CMMS and ITS estimates of U5MR prior to 1991 are too low.

What about the period since 1990? The 1999 CMMS estimates U5MR at around 115 per 1,000 (and gradually trending upwards) from 1991 onwards, and the ITS survey estimate is around 130 for 1991, both much higher than the 90 or so (unadjusted) or 60 to 80 (adjusted) estimated for the 1980s by the 1987 and 1997 censuses, and higher for the early 1990s than the 1997 census estimates ranging from around 70 to 100. The 95% confidence intervals around the annual CMMS estimates are approximately plus or minus 10 per 1,000 (Ali et al., 2003: Appendix 1), so sampling error is unlikely to be the explanation. The IMIRA estimates, on the other hand, are so low that we discount them. Did U5MR really spike to the extent suggested by CMMS and ITS? The census estimates provide two potential points of comparison, but both require a clear understanding of how indirect estimates based on summary birth histories categorised by age of mother work.

Summary birth histories provide no information about individual children, such as their date of birth or age at death. As a result, conventional mortality rates cannot be calculated from the data by the usual process of dividing deaths by exposure time. Instead, proxies for exposure time are used. Women are categorised into groups, generally by age, with different lengths of exposure to the risk of their children dying. Thus women who are aged 15 to 19 at a survey will have had almost all their children in the two or three years prior to interview, and the proportion of their children who are dead reflects very recent levels of child mortality at very early ages. On the other hand, women aged 30 to 34 have had their children over the 15 years preceding the interview, so the proportion of their children dead reflects some average of mortality over both ages and the 15-year period. Women aged 45 to 49 have had their children over the 30 years preceding the interview, so the proportion of their children dead reflects some average of mortality over a very long time period, but, importantly, these women have had few children in the previous 10 years, so the average is little affected by very recent mortality conditions (since under-five mortality is such a very high proportion of the risk of dying by age 30, it is mortality conditions around the time the children are born that have the greatest effect on estimates).

Does any of this help us draw conclusions about what happened in the 1990s? Estimates from young women in 1997 are almost entirely determined by mortality conditions in the 1990s, so we should be able to infer something about mortality levels in the early 1990s, virtually unaffected by conditions prior to 1991, from reports of women under age 25. But these estimates, as already discussed, are generally biased upwards by socio-economic selection. Also, the lack of consistency between the adjusted 1987 and 1997 estimates for the 1980s suggests some under-reporting of dead children (and consequently underestimation of child mortality) in 1997. Estimates from 1987 based on reports of young women will also have been biased upwards by socio-economic selection, however, so if we make the simple assumption that the extent of this bias is the same in both data sets, we can compare (Table 4.9) the age-group specific estimates from the 1997 census with those from the 1987 census.

The 1997:1987 ratios in Table 4.9, of indirect estimates based on the same age groups, suggest that the U5MR may have risen by about 5% to 10%, depending on whether we adopt the adjusted or unadjusted estimates, from the five years immediately preceding the 1987 census to the five years immediately preceding the 1997 census.

The second comparison that can be made using the 1987 and 1997 census data together is that between cohorts of women, that is, comparing the average number of children ever borne (“parity”) and the average number of children dead for women aged, say, 20 to 24 in 1987 with that of the survivors of the same women, aged 30 to 34, in 1997. Such comparisons are a very effective diagnostic of data errors. Assuming that mortality selection effects on reporting women are negligible, these average numbers can only increase from one observation of the cohort to the next; any decline from one observation to the next is indicative of worsening reporting. However, any very large increase in, for example, average parity of older women (whose actual fertility will have been low) is indicative of improved reporting. Table 4.10 shows these averages. Panel A shows that

the census data unadjusted for non-response are well-behaved: there are no negative cohort changes, and the cohort changes for older women are small; Panel B, adjusted for non-response, shows that data on children ever borne are consistent, but the increments in average numbers of children dead are small, and indeed negative for the cohort aged 35 to 39 in 1987. A more formal test of consistency of reporting of children ever borne is available by summing the cohort changes in average parity across cohorts: the resulting sum estimates a parity distribution for a hypothetical cohort exposed only to fertility between the two observations, and the hypothetical cohort parity for the age group 45–49 is an estimate of Total Fertility for the period.

This can be readily understood as follows. Women aged 15–19 in 1997 had all their children between 1987 and 1997, so their average parity represents only fertility conditions between 1987 and 1997. Women aged 25–29 bore some of their children before 1987 and some after, but the difference in the parity of women aged 25–29 in 1997 and that of the same cohort aged 15–19 in 1987 represents only fertility from 1987 to 1997. Adding this difference to the 1997 parity of women 15–19 estimates the parity of women aged 25–29 had they been exposed to the fertility conditions of 1987–1997 only. Adding the parity difference for the cohort aged 35–39 in 1997 and subtracting the parity of women aged 25–29 in 1987 estimates the hypothetical cohort parity of women aged 35–39, and similarly for ages 45–49. A parallel string of calculations provides hypothetical cohort parities for women aged 20–24, 30–34, and 40–44.

The values estimated for 1987–1997 of 5.2 (unadjusted) and 5.0 (adjusted) are reasonably consistent with the IMIRA estimate of 4.7 for the period 1994–1998 (Pedersen, 2005, Table 10), but is rather lower than the total fertility estimates obtained by Ali et al. (2003) of 6.43 for 1989–1994 and 5.69 for 1994–1999, and than the UN estimates for 1990–1995 of 5.70.

The change in average numbers of children dead according to cohort are also of interest. If the mortality of children increased sharply between 1987 and 1997, it should be reflected in a steep increase in the average number of children reported by the cohort as having died, particularly for women who are still adding rapidly to their stock of children. One way of looking at this, controlling for numbers of births, is to calculate the hypothetical cohort average number of children dead, and divide by the hypothetical cohort parity to approximate a hypothetical cohort proportion dead, reflecting only conditions in the 1987–1997 intercensal period. The results, shown in Table 4.10, column 8, are rather consistent by age for the unadjusted data and do not suggest any sharp surge in child mortality risks; for adjusted data, on the other hand, the proportions fall steadily with age. Applying standard indirect estimation methods to the hypothetical cohort proportions dead (Table 4.10, Panel A, column 9) indicates child mortality levels rather similar to those observed in the early 1980s. Since the hypothetical cohort should not be affected by mortality trends, the estimates all refer to the 1987–1997 period; a single estimate of U5MR of 98 per 1,000 has been obtained by averaging the estimates for age groups 25–29 to 45–49 (the large diamond in Fig. 4.12).

## **Other Sources of Data**

Demographers tend to put more trust in demographic estimates from representative household surveys than in process or programme data such as immunisations performed or deaths in hospitals. However, Iraqi government reports of rates of under-five deaths in hospitals (Garfield, 1999) show a steep increase, from pre-1991 to 1991 and later. The U5MR per 100,000 (presumably admissions) increases from around 650 per month in 1989–1990 to 4,500 or more in 1995–1997. The time pattern of these numbers would correlate very closely with the series of estimates of U5MR by Ali et al., though the hospital death rates increase by a factor of almost 5, rather than 2, from pre-1991 to 1992 and onwards. The reported hospital deaths are not fully representative of all deaths, however, and the denominators appear to be hospital admissions rather than the general population, so general conclusions cannot be drawn from these rates.

## **Can We Trust the 1987 Census?**

Doubts have been raised about the quality of the 1987 census on the grounds that cooperation with the census was low in Kurdish parts of the country and that the age distribution failed to show the devastation of the young male population by six years of war (R. Garfield, Personal Communication). Neither of these issues would necessarily affect the piece of the census results that we are using, namely the reported number of children ever borne and the reported number still alive at the time of the census, though if Kurds were under-represented and had above-average child mortality, the national estimates would be biased downwards (such an error might actually improve comparability with the 1997 census, from which most predominantly Kurdish areas were excluded). Thus these errors do not necessarily undermine confidence in the child mortality estimates from the 1987 census. However, if one part of the census results was tampered with for political motives, it is possible that other parts were also, and the regime would certainly not have felt any moral obligation not to do so.

Would the regime have tampered with the data to arrive at estimates of child mortality higher than it really was? The difficulty involved in doing this in an internally consistent way should not be underestimated. Without a very strong understanding of indirect estimation procedures for child mortality, which was not available in Iraq at the time, it would be impossible to fabricate or falsify the data without introducing clear internal discrepancies.

## **What Can We Trust?**

Child mortality estimates using data unadjusted for non-response from the 1987 census and the 1997 census are consistent, but because non-response to the question on the number of children surviving increases in 1997, estimates based on adjusted data are not consistent. Estimates from the 1999 CMMS are basically inconsistent with the 1987 census data, but are reasonably consistent with the adjusted 1997 estimates for the 1980s, though higher for the 1990s. The CMMS data look in general plausible, except for the fact that almost the entire increase in U5MR observed in the 1990s occurs as a result of

increases in infant mortality: As seen in Fig. 4.10, the age pattern of child mortality is distinctly unusual post-1991. Why would the increase in child mortality be limited to a narrow age range?

We are left in a situation in which we can trust nothing. The census data suffer from non-response, but cannot plausibly be supposed to have been tampered with. The 1999 CMMS data could conceivably have been tampered with (at least for the Centre/South; the 1997 census provides no evidence about the short-lived increase in child mortality in the three northern governorates for 1991–1992 indicated by the CMMS, since they were excluded from the census, and such a short-term blip would not have a discernible effect on indirect estimates). The facts that the CMMS arrives at rather high estimates of fertility, combined with the fact that the indicated increase in child mortality after 1990 occurs amongst infants, the easiest age to adjust, would be consistent with this interpretation. The 1991 IST data support the existence of a blip from 1990 to 1991 but provide no information thereafter.

We cannot conclude anything with much confidence, though the 1997 census data, for all their flaws, make the very sharp surge in child mortality reported by Ali et al. (2003) somewhat implausible.

### **What Can We Say About Child Mortality Since 1998?**

Of particular importance to our assessment of the impact of the OFFP is what happened to child mortality from 1998 onwards, when the programme got into high gear. We have little to go on. 1998 is the last year of the series from Ali and co-workers, and it is the year with the highest single U5MR value (142 per 1,000). Estimates based on the IMIRA survey provides a graphical representation of U5MR by year (Fig. 8 in that chapter); reading roughly from the figure, the U5MR varied narrowly around 35 per 1,000 from 1989 to 1997, increased to 44 in 1998, then declined in 1999 to 42, declined further to 37 in 2000 and 34 in 2001, before increasing again to 40 and 45 in 2002 and 2003 respectively. This pattern would be consistent with an effect of the OFFP once oil production rose above US\$2 billion per phase. However, this account would not explain why child mortality rose again in 2002, when OFFP revenues were still substantial. The fact that the IMIRA estimates of child mortality are only about half any other estimates for comparable time periods raises serious doubts about the accuracy of any trends they show.

### **Summary**

The following are guesstimates of possible patterns of infant and child mortality over the period from 1976 to 1996. The 1997 census results make it unlikely that U5MR increased by more than about 10% after 1991. What happened after about 1996 we simply do not know at this point, in the absence of trustworthy birth history data for the period. It cannot be emphasised too strongly that these guesstimates are extremely rough, but they represent what we regard as the most plausible scenario, given the many inconsistencies in the data.



**Table 4.1. Dietary energy supply (DES)(kcal/capita/day) according to year (1984/9–2003), source (domestic production, OFFP imports, or non-OFFP imports), and distribution route (market or PDS).** Figures for cereals are in roman type, figures for *non-cereals* are in *italics*, and **totals** (given most likely cereal/non-cereal ratio) are in **boldface**. Highlighted figures are from reports, others are by addition/subtraction. \*Notes deficit in domestic production after balancing (feed, seed, losses, etc.); these deficits were made up by imports. OFFP, Oil-for-Food Programme; PDS, Public Distribution System.

### 1984-1989 average

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35%	Total at 55%/45%
Market	-126/-102*	1920/1571	0/0	1794/966/2760	1794/1469/3263
PDS	0/0	0/0	0/0	0/0/0	0/0/0
Total	-126/-102*	1920/1571	0/0	1794/966/2760	1794/1469/ <b>3263</b>

Total cereals from domestic production, imports (non-OFFP), and imports (OFFP) are from FAO/WFP (1997); source for cereal/non-cereal ratio for Total and PDS at 55%/45%: FAO/WFP (2003), Table 11.4; source for cereal/non-cereal ratio for Total at 65%/35%: (estimated)

### 1990

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35%	Total at 55%/45%
Market	770/415	955/514	0/0	1725/929/2654	1845/1509/3354
PDS	0/0	779/420	0/0	779/420/1199	659/540/1199
Total	770/415	1734/934	0/0	2504/1349/ <b>3853</b>	2504/2049/4553

Total cereals from domestic production and imports (non-OFFP) are from FAO (2005); source for cereal/non-cereal ratio for Total at 65%/35%: (estimated); source for cereal/non-cereal ratio for Total at 55%/45%: (estimated)

### 1991

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35%	Total at 55%/45%
Market	424/228	58/32	0/0	483/260/743	620/508/1128
PDS	0/0	892/480	0/0	892/480/1372	755/617/1372
Total	424/228	950/512	0/0	1375/740/2115	1375/1125/ <b>2500</b>

Total cereals from domestic production and imports (non-OFFP) are from FAO (2005); source for cereal/non-cereal ratio for Total at 65%/35%: (estimated); source for cereal/non-cereal ratio for Total at 55%/45%: (estimated)

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### 1992

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35%	Total at 55%/45%
Market	658/354	348/0	0/0	658/354/1359	1027/839/1866
PDS	0/0	803/620	0/0	803/620/1423	782/641/1423
Total	658/354	1151/620	0/0	1809/974/2782	1809/1480/3289

Total cereals from domestic production and imports (non-OFFP) are from FAO (2005); source for cereal/non-cereal ratio for Total at 65%/35%: (estimated); source for cereal/non-cereal ratio for Total at 55%/45%: (estimated)

### 1993

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35%	Total at 55%/45%
Market	546/294	0/0	0/0	546/294/840	720/582/1302
PDS	325/175	783/422	0/0	1108/597/1705	934/771/1705
Total	871/469	783/422	0/0	1654/891/2545	1654/1353/3007

Total cereals from domestic production and imports (non-OFFP) are from FAO (2005); source for cereal/non-cereal ratio for Total at 65%/35%: (estimated); source for cereal/non-cereal ratio for Total at 55%/45%: (estimated)

### 1994

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35%	Total at 55%/45%
Market	355/191	0/0	0/0	355/191/546	495/404/899
PDS	379/204	530/286	0/0	909/490/1399	769/630/1399
Total	734/395	530/286	0/0	1264/681/1945	1264/1034/2298

Total cereals from domestic production and imports (non-OFFP) are from FAO (2005); source for cereal/non-cereal ratio for Total at 65%/35%: (estimated); source for cereal/non-cereal ratio for Total at 55%/45%: (estimated)

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### 1995

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35%	Total at 54%/46%
Market	-99/138	578/119	0/0	479/257/736	479/629/1108
PDS	710/383	0/0	0/0	710/383/1093	710/383/1093
Total	611/521	578/119	0/0	1189/640/1829	1189/1012/2201

Total cereals from domestic production and imports (non-OFFP) are from FAO/WFP (1997);

source for cereal/non-cereal ratio for Total 65%/35%: FAO/WFP (2003), Table 11.4;

source for cereal/non-cereal ratio for Total at 54%/46%: (estimated)

### 1996

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35%	Total at 55%/45%
Market	363/175	41/22	0/0	404/197/601	521/467/988
PDS	457/269	0/0	370/199	827/468/1295	712/583/1295
Total	822/442	41/22	370/199	1233/664/1897	1233/1050/2283

Total cereals from domestic production and imports (non-OFFP) are from FAO (2005);

source for cereal/non-cereal ratio for Total at 65%/35%: (estimated); source for

cereal/non-cereal ratio for Total at 55%/45%: (estimated)

### 1997

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/45% PDS=72%/28%	Total at 73%/27% PDS=72%/28% %
Market	374/138	19/7	183/67	714/383/1097	577/213/790
PDS	0/0	0/0	1245/461	1108/598/1706	1245/461/1706
Total	374/138	19/7	1428/528	1822/981/2803	1822/674/2496

Total cereals from domestic production and imports (non-OFFP) are from FAO/WFP

(1997); Total cereals from imports (OFFP) are from WFP (2005); source for cereal/non-

cereal ratio for Total at 73%/27%: FAO/WFP (2003), Table 11.4; source for cereal/non-

cereal ratio for PDS at 72%/28%: WFP (2005); source for cereal/non-cereal ratio for

Total at 65%/45%: (estimated)

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**1998**

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35% PDS=67%/33%	Total at 55%/45% PDS=67%/33%
Market	501/269	15/8	52/30	529/346/875	529/862/1391
PDS	0/0	0/0	1277/687	1316/648/1964	1316/648/1964
Total	501/269	15/8	1329/717	1845/994/2839	1845/1510/3355

Total cereals from domestic production and imports (non-OFFP) are from FAO (2005); Total cereals from imports (OFFP) are from WFP, 2005; source for cereal/non-cereal ratio for Total at 65%/35%: (estimated); source for cereal/non-cereal ratio for PDS at 67%/33%: (WFP, 2005); source for cereal/non-cereal ratio for Total at 55%/45%: (estimated)

**1999**

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35% PDS=64%/36%	Total at 55%/45% PDS=64%/36%
Market	247/133	11/6	197/67	451/210/661	451/708/1159
PDS	0/0	0/0	1324/752	1328/748/2076	1328/748/2076
Total	247/133	11/6	1521/819	1779/958/2737	1779/1456/3235

Total cereals from domestic production and imports (non-OFFP) are from FAO (2005); Total cereals from imports (OFFP) are from WFP (2005); source for cereal/non-cereal ratio for Total at 65%/35%: (estimated); source for cereal/non-cereal ratio for PDS at 64%/36%: WFP (2005); source for cereal/non-cereal ratio for Total at 55%/45%: (estimated)

**2000**

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 63%/37% PDS=62%/38%	Total at 55%/45% PDS=62%/38%
Market	-188/-110*	7/4	576/292	389/192/581	389/598/987
PDS	0/0	0/0	1362/846	1368/840/2208	1368/840/2208
Total	-188/-110*	7/4	1938/1138	1757/1032/2789	1757/1438/3195

Total cereals from domestic production and imports (non-OFFP) are from FAO (2000); Total cereals from imports (OFFP) are from WFP (2005); source for cereal/non-cereal ratio for Total at 63%/37%: FAO/WFP (2003), Table 11.4; source for cereal/non-cereal ratio for PDS at 62%/38%: WFP (2005); source for cereal/non-cereal ratio for Total at 55%/45%: (estimated)

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**2001**

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35% PDS=61%/39%	Total at 55%/45% PDS=61%/39%
Market	-314/-169*	37/20	661/232	393/74/467	393/567/960
PDS	0/0	0/0	1381/868	1372/877/2249	1372/877/2249
Total	-314/-169*	37/20	2042/1100	1765/951/2716	1765/1444/3209

Total cereals from domestic production and imports (non-OFFP) are from FAO (2005); Total cereals from imports (OFFP) are from WFP (2005); source for cereal/non-cereal ratio for Total at 65%/35%: (estimated); source for cereal/non-cereal ratio for PDS at 61%/39%: WFP (2005); source for cereal/non-cereal ratio for Total at 55%/45%: (estimated)

**2002**

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 65%/35% PDS=60%/40%	Total at 55%/45% PDS=61%/39%
Market	-99/-54*	65/35	453/58	414/44/458	414/548/962
PDS	0/0	0/0	1381/930	1386/925/2311	1386/925/2311
Total	-99/-54*	65/35	1834/988	1800/969/2769	1800/1473/3273

Total cereals from domestic production and imports (non-OFFP) are from FAO (2005); Total cereals from imports (OFFP) are from WFP (2005); sources for cereal/non-cereal ratio for Total at 65%/35%: (estimated); sources for cereal/non-cereal ratio for PDS at 60%/40%: WFP (2005); sources for cereal/non-cereal ratio for Total at 55%/45%: (estimated)

**2003**

Distribution route	Source				
	Domestic production	Imports, non-OFFP	Imports, OFFP	Total at 62%/38% PDS=63%/37%	Total at 52%/48% PDS=63%/37%
Market	453/0	93/67	0/300	545/367/912	545/927/1472
PDS	42/359	0/0	1218/382	1261/740/2001	1261/740/2001
Total	495/359	93/67	1218/682	1806/1107/2913	1806/1667/3473

Totals cereals from domestic production and imports (non-OFFP) are from FAO/WFP (2003); Total cereals from imports (OFFP) are from WFP (2005); sources for cereal/non-cereal ratio for Total at 52%/48%: FAO/WFP (2003), Table 11.4; sources for cereal/non-cereal ratio for PDS at 63%/37%: WFP (2005); sources for cereal/non-cereal ratio for Total at 62%/38%: (estimated)

**Table 4.2. Average energy value of monthly rations according to phase of OFFP with comparison of planned supply and actual ration. MOU, Memorandum of Understanding; GOI, Government of Iraq.**

Phase	Full MOU food basket ration (kcal)		Actual GOI food basket ration (kcal)		Actual end-user availability ( % of full)	
	Centre/South	North	Centre/South	North	Centre/South	North
I	2,038	2,038	1,565	1,565	77	77
II	2,038	2,038	1,906	1,853	94	91
III	2,038	2,038	1,978	1,978	97	97
IV	2,300	2,300	2,004	2,004	87	87
V	2,150	2,150	1,994	1,994	93	93
VI	2,200	2,200	1,993	1,993	91	91
VII	2,330	2,330	2,011	2,011	86	86

**Table 4.3. Average protein value of monthly rations according to phase of OFFP with comparison of planned supply and actual ration. MOU, Memorandum of Understanding; GOI, Government of Iraq.**

Phase	Full MOU food basket ration (g)		Actual GOI food basket ration (g)		Actual end-user availability ( % of full)	
	Centre/South	North	Centre/South	North	Centre/South	North
I	47.0	47.0	41.3	39.7	88	84
II	47.0	47.0	43.2	43.2	92	92
III	47.0	47.0	44.8	44.8	95	95
IV	50.77	50.77	44.6	44.6	88	88
V	50.77	50.77	43.1	43.1	85	85
VI	50.77	50.77	42.8	42.8	84	84
VII	52.5	52.5	43.0	43.0	82	82

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**Table 4.4. Agricultural production 1990–2002.** Sources: FAO/WFP (1993a); FAO (1995, 1997, 2000, 2003). OF, Official estimate; ME, Mission estimate; MoP, Ministry of Planning, GOI, Government of Iraq; mMT, thousands of metric tons; N, North; C/S, Centre/South.

Year	Cereals mMT			Vegetables mMT			Fruit mMT*			Livestock		
	N	C/S	Total	N	C/S	Total	N	C/S	Total	N	C/S	Total
1990			3,451 (OF?)				232 (MoP)	870 (MoP)	1,102 (MoP)	3,590 (GOI)	12,176 (GOI)	15,766 (GOI)
1991			2,670 (OF?)			3.1-3.5 (OF)			1,194 (MoP)			
1992			2,955 (OF?)			3.1-3.5 (OF)			1,195 (MoP)			
1993			3,235 (ME)			3.13.5 (ME)			1,267 (MoP)			
1994			2,824 (MoP)			3.1-3.5 (OF)	288 (MoP)	982 (MoP)	1,270 (MoP)			
1995	540 (ME)	1,993 (ME)	2,533 (ME)			3.1-3.5 (ME)	300 (MoP)	1,000 (MoP)	1,300 (MoP)			
1996	460 (OF)	2,534 (OF)	2,995 (OF)									
1997	495 (ME)	1,710 (ME)	2,206 (ME)	500 (ME)	1,500 (ME)	2,000 (ME)	325 (MoP)	1,175 (MoP)	1,500 (ME)	3,212 (ME)	6,200 (ME)	9,412 (ME)
1998	496 (OF)	1,930 (OF)	2,426 (OF)									
1999	165 (OF)	1,337 (OF)	1,502 (OF)									
2000	165 (ME)	629 (ME)	794 (ME)	240 (ME)	1,000 (ME)	1,240 (ME)	300 (ME)	1,000 (ME)	1,300 (ME)	4,500 (ME)	9,500 (ME)	14,000 (ME)
2001												
2002			3389 (ME)					400 (ME)				
2003			4119 (ME)							7,130 (ME)	9,815 (ME)	16,945 (ME)

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**Table 4.5. Cases of reportable diseases, 1989–2001.** Source: Ministry of Health. After 1991, figures do not include the three northern governorates. Diseases in italics and shaded are vaccine preventable.

Disease	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Amoebic dysentery	19,615	32,957	58,311	61,939	62,864	76,864	668,064	543,295	329,950	264,290	609,920	643,251	652,314
Brucellosis	2,464	2,816	13,106	14,546	14,989	15,476	19,040	7,531	8,911	5,305	7,083	8,551	9,166
Cholera	-	-	1,217	976	825	1,345	1,216	831	486	2,560	2,398	757	560
Cutaneous leishmaniasis	1,829	1,894	8,233	8,779	7,378	6,662	7,703	7,606	2,939	2,985	1,261	955	625
<i>Diphtheria</i>	96	168	511	369	239	132	119	258	290	160	142	34	32
German measles	514	693	2,848	1,663	928	584	338	23	17	65	4,127	1,612	91
Giardiasis	73,416	113,222	501,391	596,356	602,011	587,924	689,113	584,621	605,170	509,050	535,140	542,365	563,642
Haemorrhagic fever	38	42	196	65	48	39	48	48	11	2	2	4	4
Hydatidosis	370	406	1,787	1,991	2,108	2,520	2,908	184	257	345	440	521	752
Malaria	3,428	3,924	7,105	5,535	4,581	19,266	59,931	32,199	9,594	6,996	3,212	1,154	185
<i>Measles</i>	1,715	7,524	11,358	10,160	16,399	10,646	7,134	240	556	15,818	9,920	726	453
Meningitis	2,559	1,810	5,792	4,534	3,772	3,128	2,853	691	1,202	1,025	656	574	501
Mumps	9,639	15,963	22,718	23,883	46,961	39,642	29,195	14,817	49,556	35,881	25,554	18,720	2,780
<i>Neonatal tetanus</i>	42	393	936	233	171	89	64	74	73	36	49	37	21
<i>Pertussis</i>	368	489	1,537	1,601	767	526	475	1,179	535	1,271	466	407	2,312
<i>Poliomyelitis</i>	10	56	186	120	75	53	32	20	31	29	75	4	-
Rabies	25	37	256	84	49	32	34	23	6	14	27	14	7
Scabies	-	198	1,892	7,956	10,354	13,832	18,209	39,146	40,360	43,580	35,343	23,217	21,512
<i>Tetanus</i>	32	87	933	98	64	38	31	12	25	26	19	17	21
Toxoplasmosis	372	512	2,223	2,745	3,145	3,899	4,640	2,768	2,960	2,036	3,506	3,834	3,959
<i>Tuberculosis</i>	4,351	14,735	13,527	12,355	19,005	19,581	16,882	19,196	16,607	19,410	19,897	15,251	11,413
Typhoid	1,812	2,240	17,524	19,276	22,688	24,436	26,634	15,238	14,464	19,825	23,392	24,614	21,356
Viral Hepatitis	1,816	3,228	11,135	13,766	16,801	11,296	15,557	29,803	18,501	12,142	13,150	8,879	10,605
Visceral leishmaniasis	491	576	3,713	3,866	3,817	2,787	3,110	3,434	794	874	744	2,611	2,893



**Table 4.6. Cholera cases and deaths reported, Basra 1998–2003.**

Year	Cases	Deaths
1998	53	1
1999	1,985	30
2000	532	4
2002	718	0
2003	104	0

Source: WHO

**Table 4.7. Public health facility visits per 1,000 persons, 2000.**

Governorate	Emergency	Specialised centres	Primary Health Centres	Total
Baghdad	151.6	123.2	671.6	946
Basra	212.7	27.3	726.2	965
Ninewa	188.7	28.5	947.8	1,166
Maysan	78.3	13.4	708.9	800
Qadissiyah	195.4	23.4	650.8	869
Diallah	86.8	105	548.3	740
Anbar	130.9	1.3	513.5	646
Babil	161.7	24.3	348.1	388
Kerbala	145.7	28.7	355.6	531
Tamim	203.4	59.6	1,040.8	1,304
Wasit	120.1	208	723.4	1051
Thiqar	130.5	0.8	551.6	683
Muthena	171.3	47.4	468.3	586
Saladin	105.4	4	961	1,070
Najaf	81.4	0.5	388.1	470
<b>All</b>	<b>147.5</b>	<b>42.5</b>	<b>650.2</b>	<b>840</b>

**Table 4.8. Nurses and doctors per 100,000 population, 2000.**

Governorate	Specialists	General practitioners	Total doctors	Nurses	Nursing auxiliaries	Total nursing staff
Baghdad	16.4	44.8	61.2	14.3	15.9	30.2
Ninevah	9.0	28.4	37.4	6.8	19.7	26.5
Basra	11.5	36.0	47.5	9.8	32.6	42.4
Thi-Qar	7.1	15.8	22.9	10.4	24.2	34.6
Babylon	13.9	36.7	50.6	13.5	24.6	38.1
Diala	11.5	23.6	35.1	16.8	18.3	35.1
Anbar	13.5	32.3	45.8	9.1	22.1	31.2
Salah Al-Din	15.0	27.9	42.9	1.6	15.6	17.2
Najaf	14.8	33.0	47.8	8.3	23.4	31.7
Wasit	14.3	21.9	36.2	2.0	5.1	7.1
Qadisiya	10.8	30.4	41.2	4.8	29.3	34.1
Tameem	17.8	31.4	49.2	6.7	20.2	26.9
Maysan	8.3	15.2	23.5	9.0	27.2	36.2
Kerbala	14.6	35.4	50.0	10.9	48.2	59.1
Muthana	11.8	23.4	35.2	0.2	12.1	12.3
Suleimaniyah	27.7	44.2	71.9	62.2	141.8	204.0
Erbil	7.3	37.5	44.8	32.6	110.5	143.1
Dohuk	5.8	48.6	54.4	7.6	88.2	95.7
<b>Total Iraq</b>	<b>13.5</b>	<b>32.2</b>	<b>47.7</b>	<b>14.0</b>	<b>38.1</b>	<b>52.1</b>

**Table 4.9. Indirect estimates of mortality rates of children under five years of age born to young women, 1987 and 1997.**

Age group (yr)	Unadjusted for non-response			Adjusted for non-response		
	1987 census	1997 census	Ratio 1997/1987	1987 census	1997 census	Ratio 1997/1987
15–19	0.180	0.196	1.089	0.176	0.189	1.074
20–24	0.122	0.134	1.098	0.113	0.115	1.023
25–29	0.096	0.108	1.125	0.085	0.080	0.948

Source: 1997 census data from Tables 25 and 26 of 1997 Census Report. 1987 census data from child mortality estimation database.

**Table 4.10. Cohort changes in number of children born, number of children dead, and proportion of children dead for a hypothetical intercensal cohort.**

## A. Unadjusted for non-response

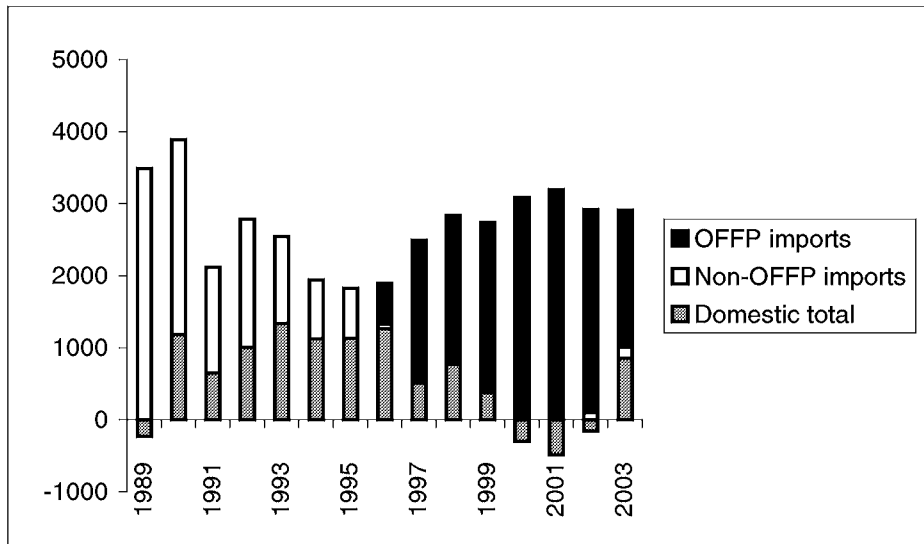
Mothers' age group (yr)	Average parity			Average no. of children dead			Hypothetical cohort proportion dead	Hypothetical cohort U5MR
	1987	1997	Cohort increase	1987	1997	Cohort increase		
15–19	0.155	0.118	0.118*	0.0180	0.0147	0.0147*	0.124*	0.196*
20–24	1.035	0.815	0.815*	0.1014	0.0871	0.0871*	0.107*	0.134*
25–29	2.489	2.031	1.876	0.2141	0.1975	0.1795	0.097	0.108
30–34	4.151	3.491	2.456	0.3694	0.3237	0.2229	0.095	0.098
35–39	5.643	4.825	2.336	0.5474	0.4324	0.2169	0.095	0.092
40–44	6.309	5.887	1.737	0.7003	0.5907	0.2222	0.106	0.095
45–49	6.553	6.482	0.839	0.8781	0.6953	0.1483	0.108	0.088

## B. Adjusted for non-response

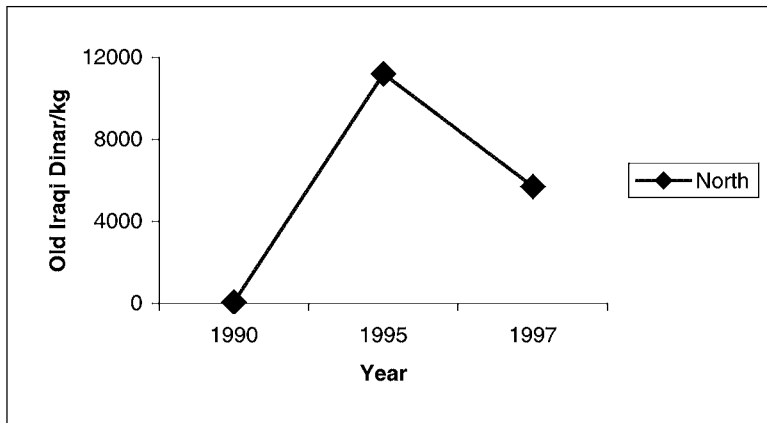
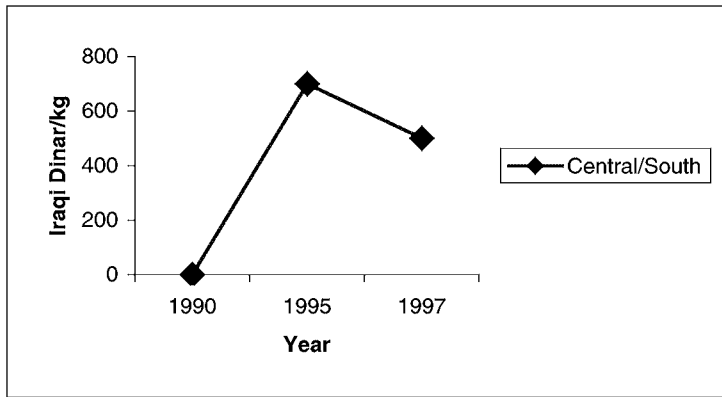
Mother's age group (yr)	Average parity			Average no. of children dead			Hypothetical cohort proportion dead	Hypothetical cohort U5MR
	1987	1997	Cohort increase	1987	1997	Cohort increase		
15–19	0.170	0.118	0.118*	0.0196	0.0143	0.0143*	0.121*	0.190*
20–24	1.088	0.816	0.816*	0.0990	0.0750	0.0750*	0.092*	0.115*
25–29	2.573	2.032	1.862	0.1981	0.1473	0.1277	0.072	0.079
30–34	4.263	3.494	2.406	0.3338	0.2191	0.1202	0.061	0.062
35–39	5.785	4.831	2.259	0.5008	0.2821	0.0840	0.053	0.051
40–44	6.460	5.898	1.635	0.6535	0.3817	0.0479	0.050	0.045
45–49	6.715	6.495	0.711	0.8363	0.4659	-0.0349	0.039	0.031

\*For the age groups 15–19 and 20–24, the hypothetical cohort values are assumed to be the same as the observed 1997 values, since no prior cohort values are available for them. U5MR. Under-five mortality rate.

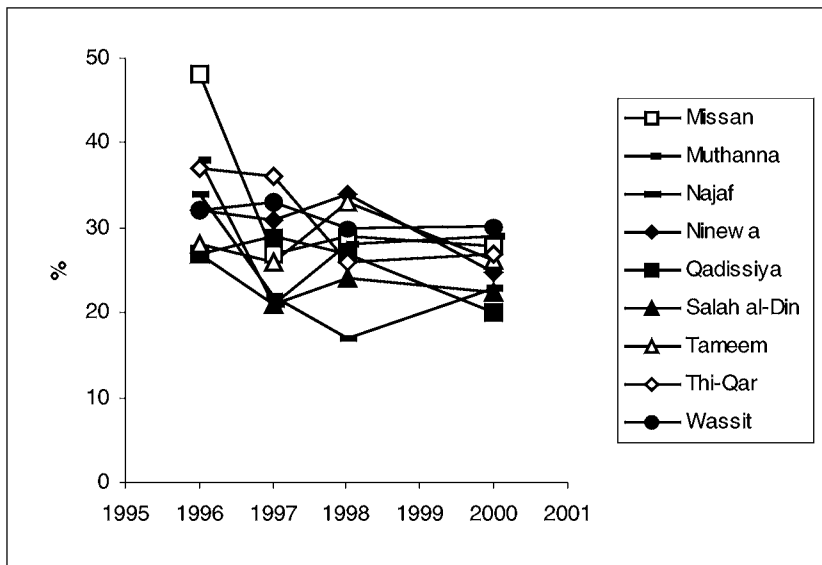
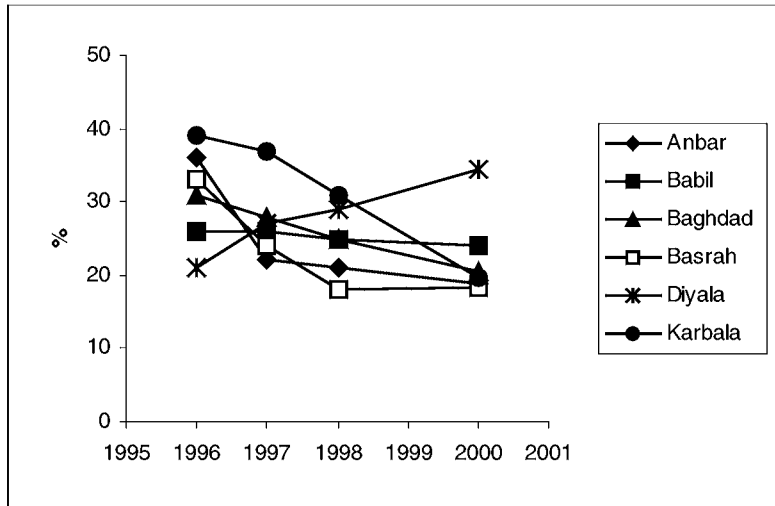
**Figure 4.1. Dietary energy supply (DES) according to source of food: domestic production and imports, with and without OFFP resources (kcal/capita/day).**



**Figure 4.2. Trends in the price of wheat flour in Iraq.** Source: Evaluation of the Food and Nutrition Situation in Iraq," FAO 1997 Table III-15. III-16.

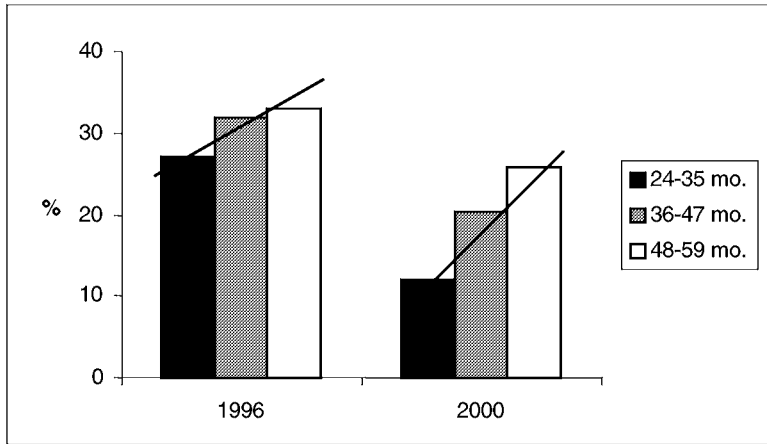


**Figure 4.3. Prevalence of stunting in children < 5 years (< - 2SD WHO/NCHS standards), according to governorate.**

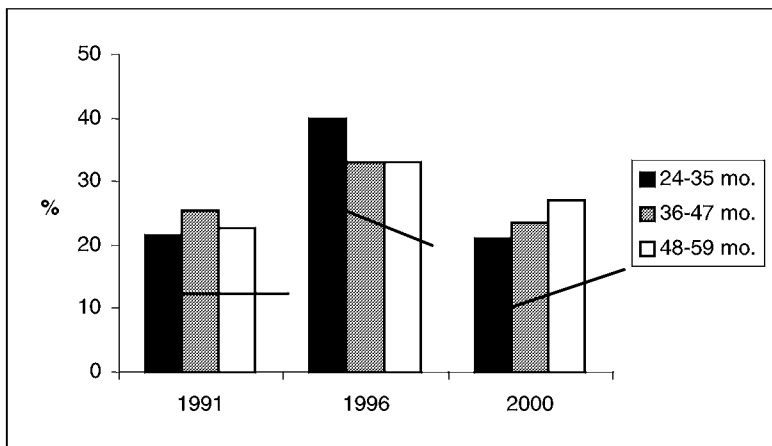


**Figure 4.4. Prevalence of stunting according to age band in 1996 and 2000, indicating trends in previous 3–5 years; data from Egypt Demographic and Health Survey (DHS) 2000 according to governorate for comparison. Based on sample survey data only. Positive (upward) slope indicates improvement. See text.**

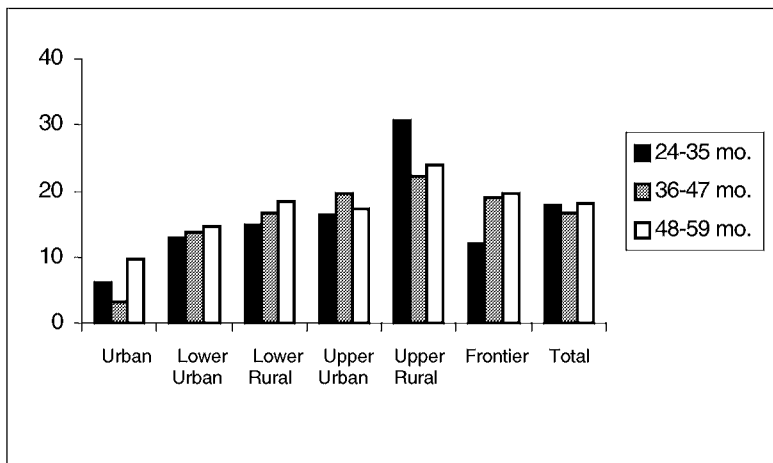
**North**



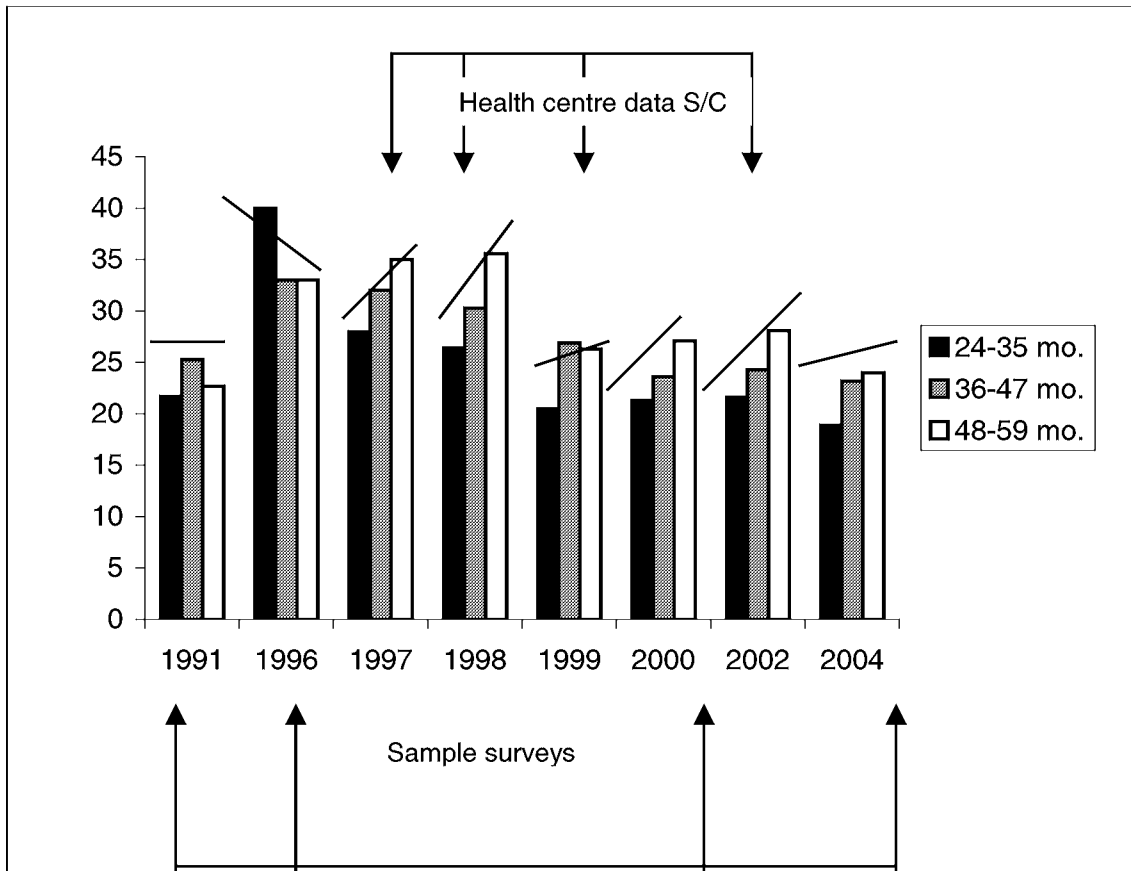
**Centre/South**



**Egypt, 2000**

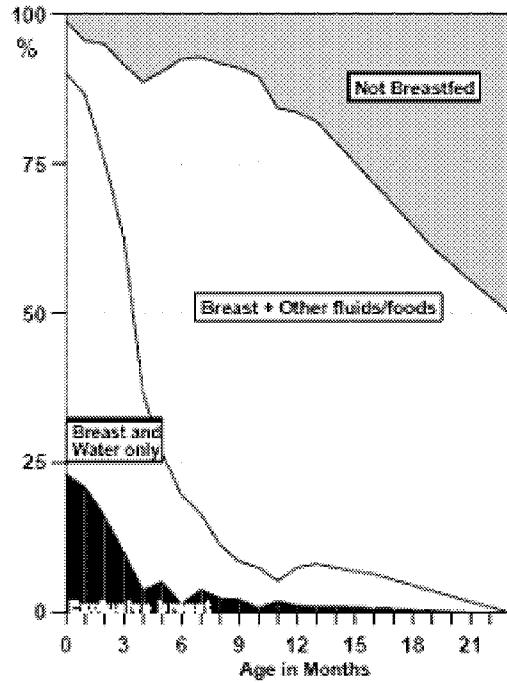


**Figure 4.5. Prevalence of stunting according to age band. including both representative sample surveys and data from health centres. S/C, South/Centre**

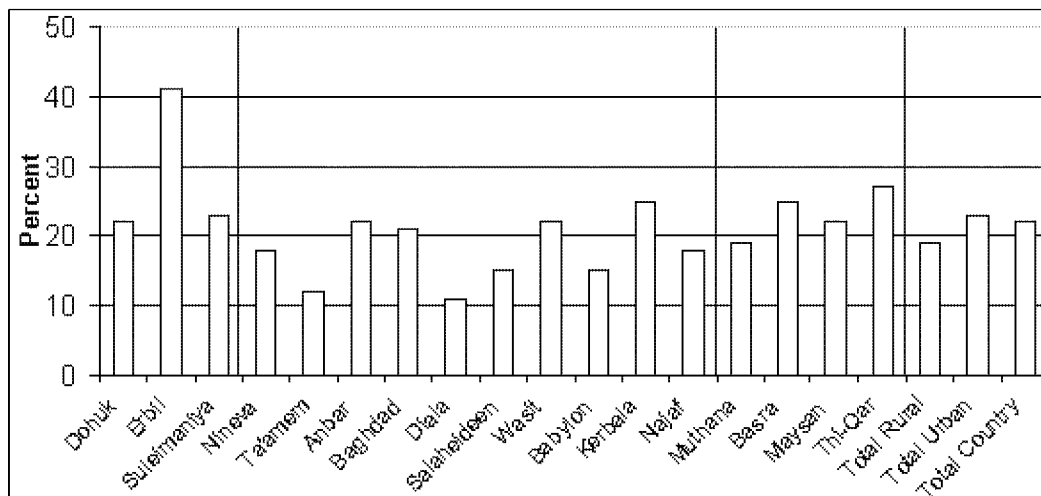


1991: stunting moderate (20%), no change. 1996: stunting high (35%), deteriorating nutritional status. 1997: stunting probably high (30%) but level not reliable, trend improving. 1998: stunting probably high (30%) but level not reliable, trend improving. 1999: stunting probably lower (25%) but level not reliable, trend improving somewhat. 2000: stunting moderate (23%), trend improving. 2002: stunting probably lower (25%) but level not reliable, trend improving. 2004: from IMIRA survey, post-second Gulf War. If younger children are less stunted than older, then nutrition is improving, and vice versa; thus positive slope indicates improvement. Health centre data are not from representative sample, and thus the estimated prevalence level does not necessarily measure that of the population; but it is likely to be unbiased internally by age, so the internal comparisons may be valid. Lines are drawn by eye.

**Figure 4.6. Pattern of breastfeeding by age in Iraq, October 1997.** Source: Nutrition status survey at Primary Health Centres during Polio Immunization Days (PNID) in South/Centre Iraq.

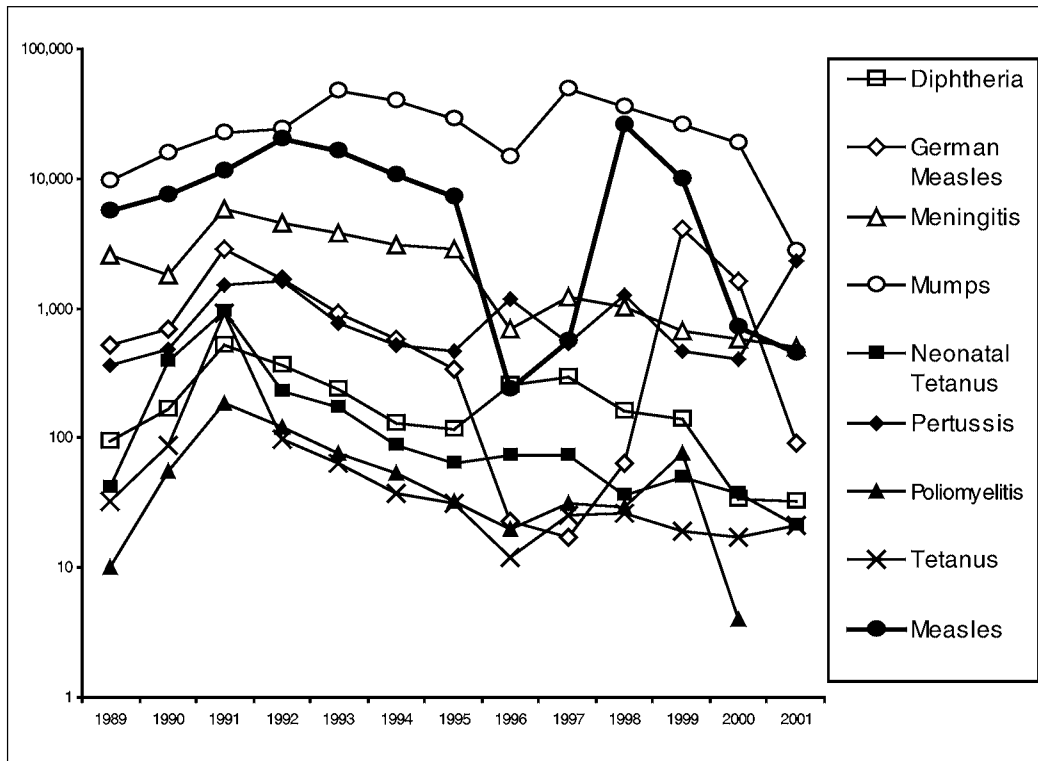


**Figure 4.7. Percentage of children under five with diarrhoea in the previous two weeks according to governorate, 2000.**

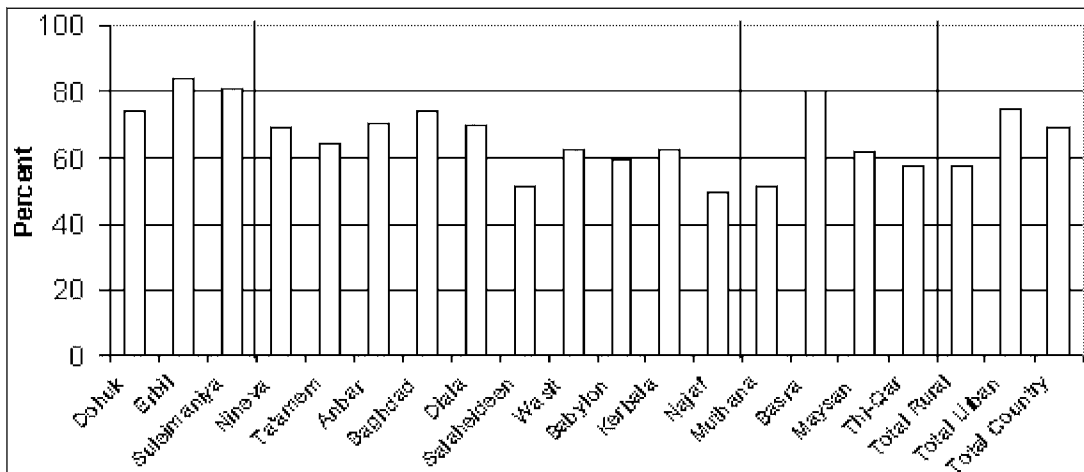




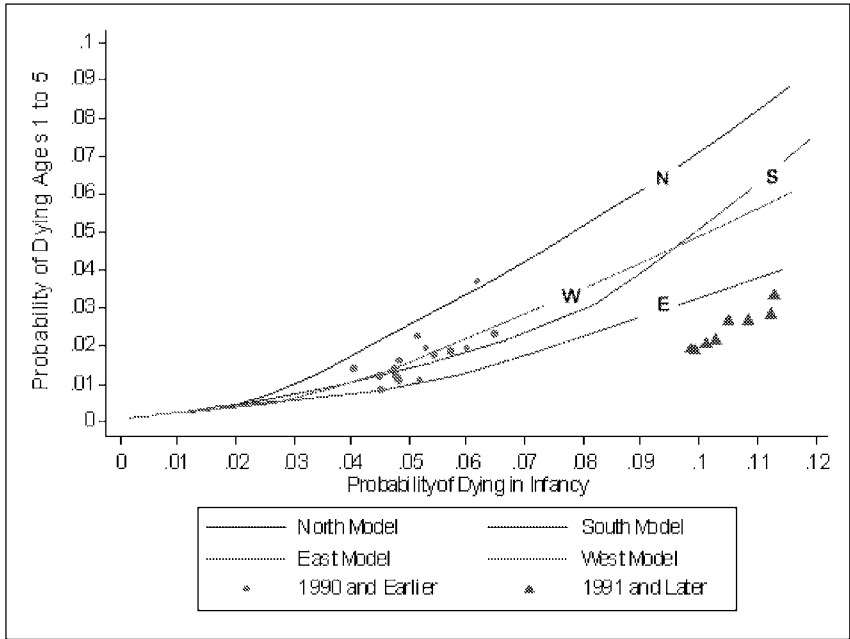
**Figure 4.8. Incidences reported of vaccine-preventable diseases, 1989–2001.**



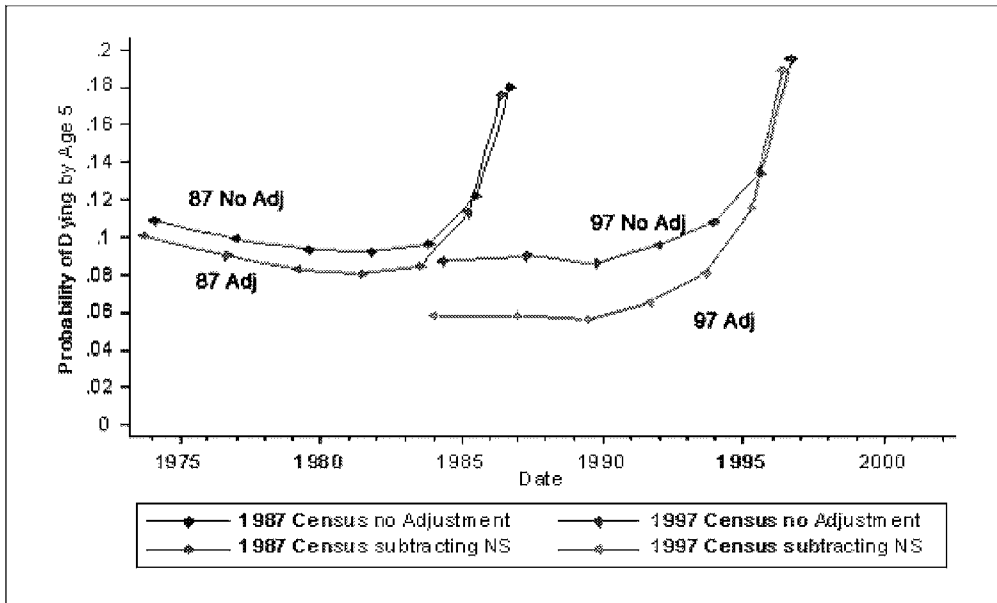
**Figure 4.9. Percentage of children under five receiving diphtheria-pertussis-tetanus (DPT3) immunisation in 2000, according to governorate.**



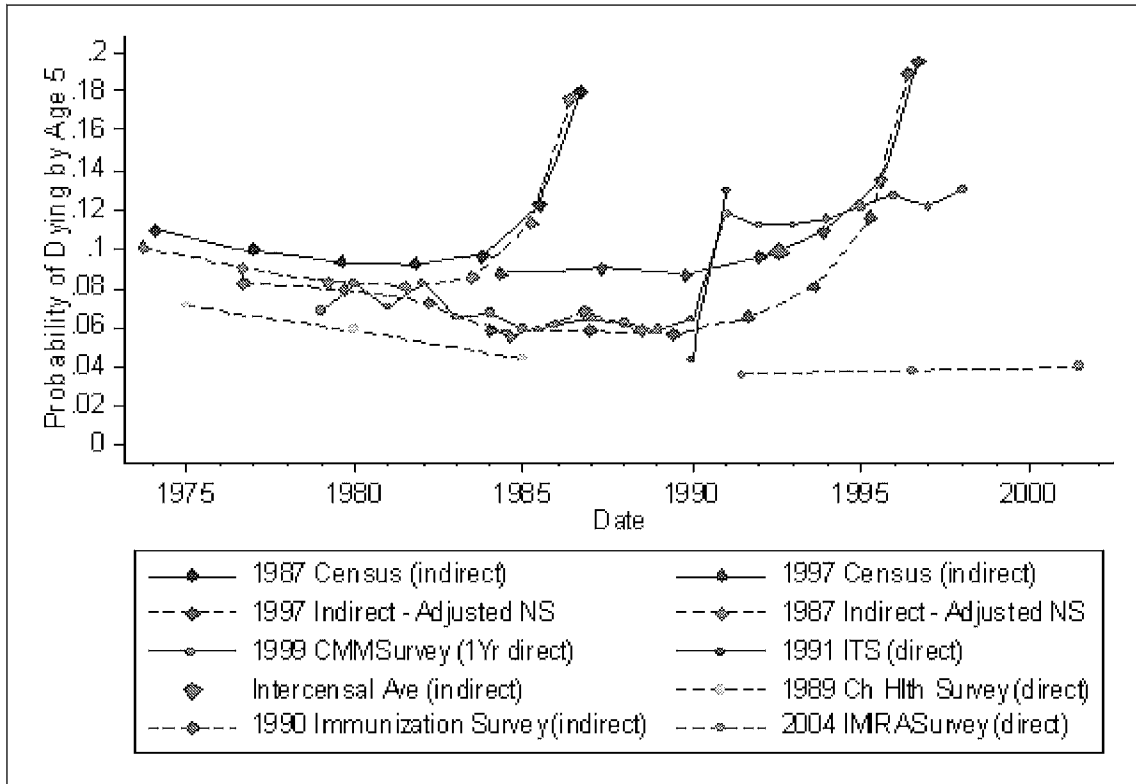
**Figure 4.10. Patterns of infant and child mortality.**



**Figure 4.11. Census estimates of mortality rate among children under the age of five (U5MR).**



**Figure 4.12. Mortality rate among children under the age of five (U5MR) according to time period.**



## **CHAPTER 5. METHODS AND FURTHER DETAILS FOR RESOURCE FLOWS**

This chapter provides additional details on the methods by which the figures on resources requested and received were obtained, the amounts of resources requested according to the phase of the OFFP, how these changed over time, and how these broke down into different sectors.

### **METHODS**

The IIC auditors had files that provided information on all contracts that had been requested for both the Centre/South and the North regions of the country. These files provided information on the sector of the contracts. The level of standardisation of the process was clearly not intended to facilitate an audit or for research purposes, although the latter should not be surprising. The sectors in the North included agriculture, child protection, demining, education, higher education, primary education, secondary education, electricity, epidemiology, food handling, food basket, housing, medicine/health, nutrition, resettlement, telecommunications, and water and sanitation. The sectors in the Centre/South region were agriculture, education, higher education, electricity, food handling, food basket, housing, medicine/health, oil, special allocation (which included some medicine and health items in the later part of the OFFP), telecommunications, and water and sanitation. Notable differences between the two regions included targeting a larger number of specific levels of education in the South, the inclusion of epidemiology in the North (although this was a very small portion of the total), the inclusion of housing in the North, the inclusion of nutrition in the North, the inclusion of resettlement in the North, and the inclusion of a special allocation category in the Centre/South region. Additionally, there were a small number of contracts worth a small amount of money that were included in an “unknown” category in the Centre/South region.

Each contract record also included data indicating the subsector and a specific name of the item. The difficulty with using data any more specific than the broadest sectoral levels is that the subsectors varied over the course of the OFFP and that the items were not always recorded in exactly the same way. Thus, we conducted all analyses at the sectoral level.

Each contract is associated with a number of dates. From the Working Group’s understanding of the way the records were kept, it would have been most useful to have a delivery date or a date of distribution for the goods associated with every contract. However, the data that were available to IIC for this project did not provide the date of delivery or the date of distribution for any part of the country. More importantly, the data from the South provided information on what was actually paid on the contract and at what times. The data from the North did not provide this information. This is most likely because all payments for goods going to the Centre/South region were made through a system that was monitored by the OFFP. This was not true in the North. The dates that

were associated with the contracts for the sake of analysis were the dates on which the requests were made, regardless of how the contract moved through the system. The latest status that could be determined both for contracts in the North and for those in the Centre/South was “approved,” and this is used as the common denominator for discussion.

Even the process of determining which contracts were approved was not as straightforward as it might seem. GRL stands for “goods review list” in the following list of final status categories. There were a number of categories indicating the final status of a contract. These included 661 approved, 661 rejected, 687 returned, approved, block, GRL-inactive, GRL-lapsed, GRL-noncompliant, GRL-notice, GRL-processing, inactive, lapsed, noncompliant, notified, null/void, OIP (Office of the Iraq Programme) approval, OIP approved, OIP review, returned, complier lapsed, and UNMOVIC–IAEA (United Nations Monitoring, Verification, and Inspection—International Atomic Energy Agency) review. For simplicity of reporting and because it is not clear how any aggregation more specific than what is described immediately below would be useful for interpreting the flow of goods into the country, we considered the contracts approved, GRL-noncompliant, not approved, or other final status.

The approved categories included 661 approved, approved, OIP approval, and OIP approved. The category “notified” was also grouped with the approved, as most of the contracts in the South that were “notified” were also funded in the Centre/South region.

GRL-noncompliant was its own category, because having a goods reviews list that provided an objective criterion to which contracts could be compared presumably sped up the process of approval or lack of approval. Making a request for a good on the GRL-noncompliant list would appear to lead obviously to rejection in a way that might be different from other rejections. The “definitely not approved” category included 661 rejected, blocked, and null/void. All other categories were aggregated into a single category that represents contracts that were neither approved nor rejected. Payments were not made and the goods were not received, but there was not a definite indication that the contracts were rejected. The Working Group has no information on how this affected decision-making or planning within Iraq during the time the OFFP was in operation. However, it seems a reasonable conclusion that having no final status is not useful for future decision-making.

Although the files with the contracts provided exact dates, most other analyses being conducted by the IIC have presented information in terms of 6-month “phases”, as shown earlier in Box 2.3. The odd-numbered phases (1–13) correspond fairly closely to the first half of each year from 1997 to 2003, and the even-numbered phases (2–12) correspond fairly closely to the second half of each year from 1997 to 2002. (In the figures the two notations per year on the horizontal axes refer to the two phases in each year.)

One other issue that was necessary to consider in processing the list of contracts was contracts that were transferred from one period to another. A relatively small set of contracts were transferred (as far as we can tell, for strictly administrative reasons) and

marked as null and void in the earlier phase. When these contracts could be identified, they were excluded from the aggregation of null and void contracts because their ultimate status was determined in the later phase to which they were transferred.

## **REQUESTS AND FINAL STATUS ACCORDING TO PHASE AND REGION**

Figure 5.1 shows the amount requested in each phase specifically for the North according to sector. In the first six months of the OFFP in early 1997, US\$246 million was requested, with the largest fraction being for items in the food basket (US\$119 million) and the second largest fraction being for medicine and health (US\$40 million). The largest amount requested in a single phase was in the second half of the year 2000, with over US\$602 million being requested and every sector other than telecommunications being represented. For the year 2000 a total of over US\$1 billion was requested in the North. The largest fraction requested, US\$210 million, was still for food basket, although the proportion of the total was smaller than in the first half of any one year. In the entire year of 2002, only US\$485 million was requested, with US\$368 million being for food. The total requested went back up again in the last six months of the programme, but it is impossible to know whether this would have represented a fundamental change in trend.

Figure 5.2 shows the amount requested according to phase and sector for the Centre/South region of Iraq. The pattern of increasing and then decreasing requests is similar to what is seen in the North. The total requested during the first six months of 1997 was US\$0.873 billion, of which US\$0.602 billion was for food basket and US\$0.140 billion was for medicine and health. The largest amount requested in a single year was in 2000, with US\$13.350 billion being requested. The largest single six-month period request was in the second half of 2000, with US\$7.886 billion being requested. Of that, US\$1.405 billion was for food basket items and US\$0.429 billion was for medicine and health. Medicine and health did not account for the second largest fraction at that point in the programme. The second largest fraction was for housing, with US\$1.399 billion requested. By the final full year of the OFFP (2002), the total requests were only US\$10.999 billion, with US\$2.384 billion being for food basket items. Finally, in the first half of 2003 in the final phase of the OFFP, only US\$2.750 billion was requested, with US\$1.525 billion being for food basket. Food basket dominated the requests throughout the entire time period, with the total requested for food basket being US\$12.8 billion of the US\$51.3 billion requested.

Only the Centre/South region had items on the GRL-noncompliant list. Figure 5.3 shows how this evolved over time. The goods review list did not exist at the beginning of the OFFP. In the earliest phases when it did exist (during 1998), only US\$7.1 million dollars worth of contracts were on the list, and these were confined to oil (US\$4.0 million), medicine and health (US\$1.9 million), and education (US\$1.2 million). The amount of money represented by contracts with items not compliant with the goods review list reached its maximum in the year 2001 (a year later than the maximum requested, although the amount requested in 2001 was still US\$12.472 billion), when US\$883 million worth of contracts were on the GRL-noncompliant list in every sector but the

food basket. By the final phase (early 2003), even the food basket sector had a small amount of GRL-noncompliant requests (US\$30.7 million). The two sectors with the highest dollar figures for goods on the GRL-noncompliant list were agriculture (US\$320 million over the life of the OFFP) and special allocation (US\$260 million), which was reported to contain some requests for medicine and health goods. The dollar value of contracts in the GRL-noncompliant category for oil was also high (US\$220 million).

The dollar value of contracts not approved in the North is shown in Fig. 5.4. The dollar value of contracts not approved in the North was consistently low except for the end of the OFFP in the first six months of 2003, when US\$63 million in agricultural contracts was not approved. Otherwise, the highest total not approved was in 2000, with US\$47 million not approved. The sector with the highest total dollars unapproved was agriculture, with US\$14 million unapproved. US\$13 million in demining contracts was also unapproved in 2000. US\$11 million in electricity contracts was unapproved. The amounts unapproved in 2001 and 2002, which were after the high amount in 2000 but prior to the high amount in 2003, were only US\$4 million and US\$0.1 million, respectively.

The total amount not approved in the Centre/South region of the country was US\$2.976 billion, in comparison with a total of US\$181 million in the North (Fig. 5.5). The amount not approved was, thus, approximately 16 times higher in the Centre/South region than in the North region. The only sector with no unapproved contracts during the entire programme was the special allocation sector. The highest total number of dollars not approved occurred in 1999, with US\$887 million in contracts unapproved. In 1999, US\$129 million in food basket contracts was not approved. Additionally in 1999, US\$231 million in oil contracts and US\$145 million in electricity contracts were not approved. In 2000, the total amount not approved was US\$786 million, and in 2001 the amount not approved was US\$631 million. In total, the value of oil contracts not approved was over one-third of the total (US\$1.031 billion).

The contracts that had neither an approved nor a rejected final status in the North totaled only US\$40.1 million over the entire course of the OFFP (Fig. 5.6). The majority of the contract value in this category was in the first half of 1999, as US\$28 million of telecommunications contracts were left without an approved or rejected status.

The contracts that had neither an approved nor a rejected final status in the Centre/South region totaled US\$6.5 billion (Fig. 5.7). This is over 150 times the amount left with neither an approved nor a rejected status in the North. No contracts were left in this category in the first two years of the OFFP. The year with the largest dollar value of contracts left in this state was 2002, when US\$2.442 billion was left in this category. The total in 2002 included US\$470 million that was left without an approved or rejected status for oil contracts and US\$463 million that was left without an approved or rejected status for electricity-related contracts. Agriculture also had US\$276 million in contracts that were neither approved nor rejected. Water and sanitation had US\$220 million in contracts that were neither approved nor rejected, and food handling had US\$225 million

in contracts that were neither approved nor rejected. Electricity had the largest overall total (US\$1.420 billion).

The total dollar value of contracts that were approved or notified in the North region of Iraq was US\$4.448 billion (Fig. 5.8). Nearly half of this (US\$2.052 billion) was food basket contracts. The amount in six-month periods ranged from US\$119 million to US\$210 million. The amount in each six-month period stayed between US\$119 and US\$127 million from 1997 through the first half of 1999. The amount requested peaked at US\$210 million in the second half of 2000. The total requested during a year was between US\$360 and US\$370 million in each year from 2000 to 2002. The other sectors, such as medicine/health and electricity, had contracts approved in every period. In contrast, the only approval for telecommunications was US\$0.5 million in contracts in 1997.

The total dollar value of contracts that were approved or notified in the Centre/South region was US\$40.021 billion (Fig. 5.9). Food basket contracts made up a smaller proportion of the total approved or notified in the Centre/South region than in the North; US\$11.862 billion was approved or notified in the Centre/South region. With the exception of a very small amount approved or notified in the second half of 1997, the amount approved or notified increased from 1997 to 2000. After 2000, the level remained similar for the remainder of the OFFP. The only approved contracts for higher education were in the first half of 2003 as the OFFP was ending. Housing had no approved or notified contracts until late 1999. Telecommunications had no contracts approved until the first half of 1999. The sector with the second highest dollar value of approved contracts was agriculture, for which US\$4.115 billion was approved. The minimum for this sector was US\$18.5 million and the maximum was US\$736 million.

Since we have data in the Centre/South region that indicate what was actually paid, it is useful in that region to look at what was actually paid. This is not possible for the North region. The amount paid is shown in Fig. 5.10. US\$31.186 billion dollars was actually paid. Nearly \$12 billion was paid for contracts for food basket items, which was more than the amount for the next four sectors combined.

In addition to examining the totals requested, rejected, GRL-noncompliant, left with neither a rejected nor approved final status, approved, and paid, it is worth considering what proportion of the total requested and total approved in each six-month period was associated with each sector. It is important to consider how this varied between the North and Centre/South regions, how this varied over time, and how the requested differed from the approved. The last fact is indicative of how the OFFP affected the distribution of the resources. The requests are closer to how local authorities would have allocated the resources, whereas the approved is closer to how an outside authority would choose to allocate resources, although the latter is constrained by the choices that were made by local planners, as outsiders could not grant requests that had not been made.

Figure 5.11 shows the proportions requested for each sector at each phase. The value of food basket contracts was approximately 50% of the total value requested for the first two



years. This decreased to less than 40% for 1998 and early 2000 and then became substantially more than 50% for the remainder of the OFFP. None of the sectors was stable throughout all periods during the programme.

The proportion of requests for each sector in each half-year in the Centre/South region is shown in Fig. 5.12. The proportions are not more stable than the proportions in the North, although the proportion of several sectors is always 10% or less: water and sanitation, telecommunications, education, and special allocation. The proportion for food basket contracts tends to be lower (ranging from 18% to 69%, with the median being 21% in the Centre/South region). The proportion for medicine and health tends to be lower (except in the second half of 1997) but closer to the proportion in the North than the proportion for food basket.

Each region has a substantial variance between what was requested and what was approved (Figs. 5.13 and 5.14). In the North, the proportion of the total approved each year according to sector is very similar to the proportion requested. This is consistent with the low levels of GRL-noncompliant (none), and low levels of rejections and contracts with neither an approved nor a rejected final status. Even in the Centre/South region, with the much higher value of contracts that were rejected, GRL-noncompliant, or left not approved and not rejected, the main difference between the proportion requested in each sector and the proportion approved in each sector was the fact that the proportion approved for food basket was 5 percentage points higher than the proportion requested in that sector.

### **FUNDS NOT USED FOR HUMANITARIAN PURPOSES**

Several sources of data were used for the assessment of funds not used directly for humanitarian purposes. For example, the amounts listed for each of the uses of funds (Iraq development fund, UNMOVIC, etc.) are from a previous IIC report. The amounts requested, rejected, etc. are from the analyses discussed above. The proportion taken out for agency administrative costs come from other IIC data. The 10% “tax” that was imposed by the Government of Iraq was based on reported information and is consistent with other analyses being performed by the IIC.

Figure 5.1. Dollars requested according to phase (North).

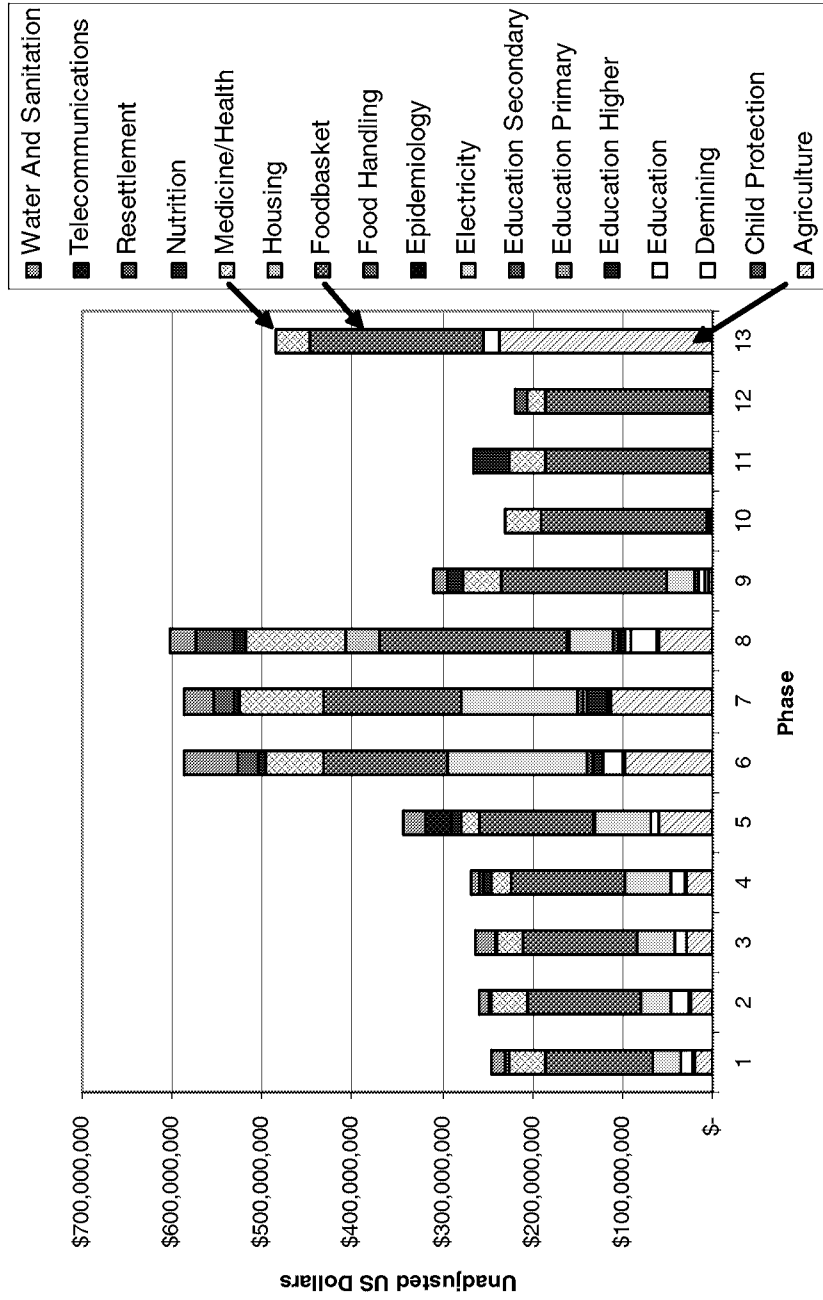


Figure 5.2. Dollars requested according to phase (Centre/South).

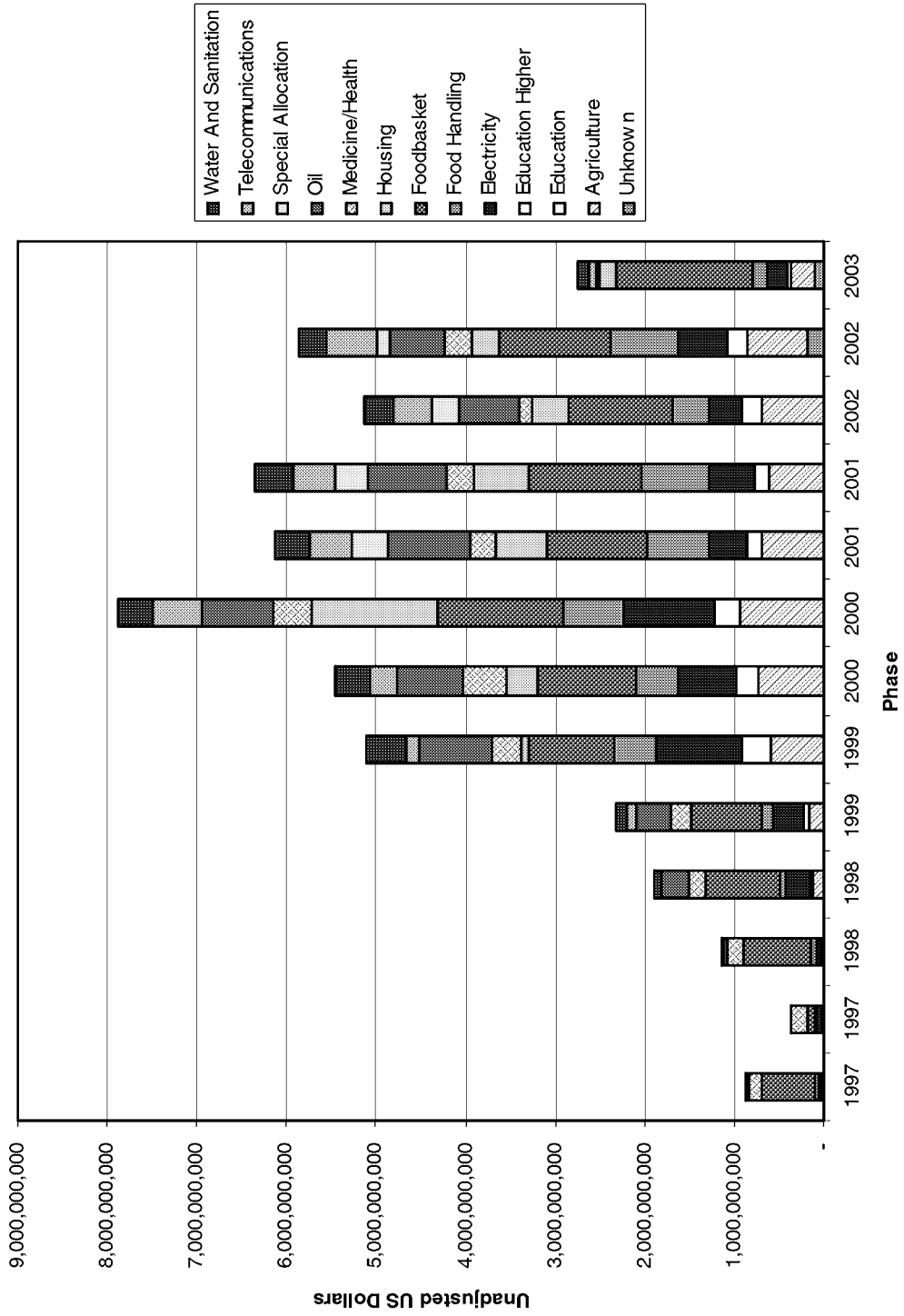


Figure 5.3. Dollar value of contracts GRL-noncompliant according to phase (Centre/South).

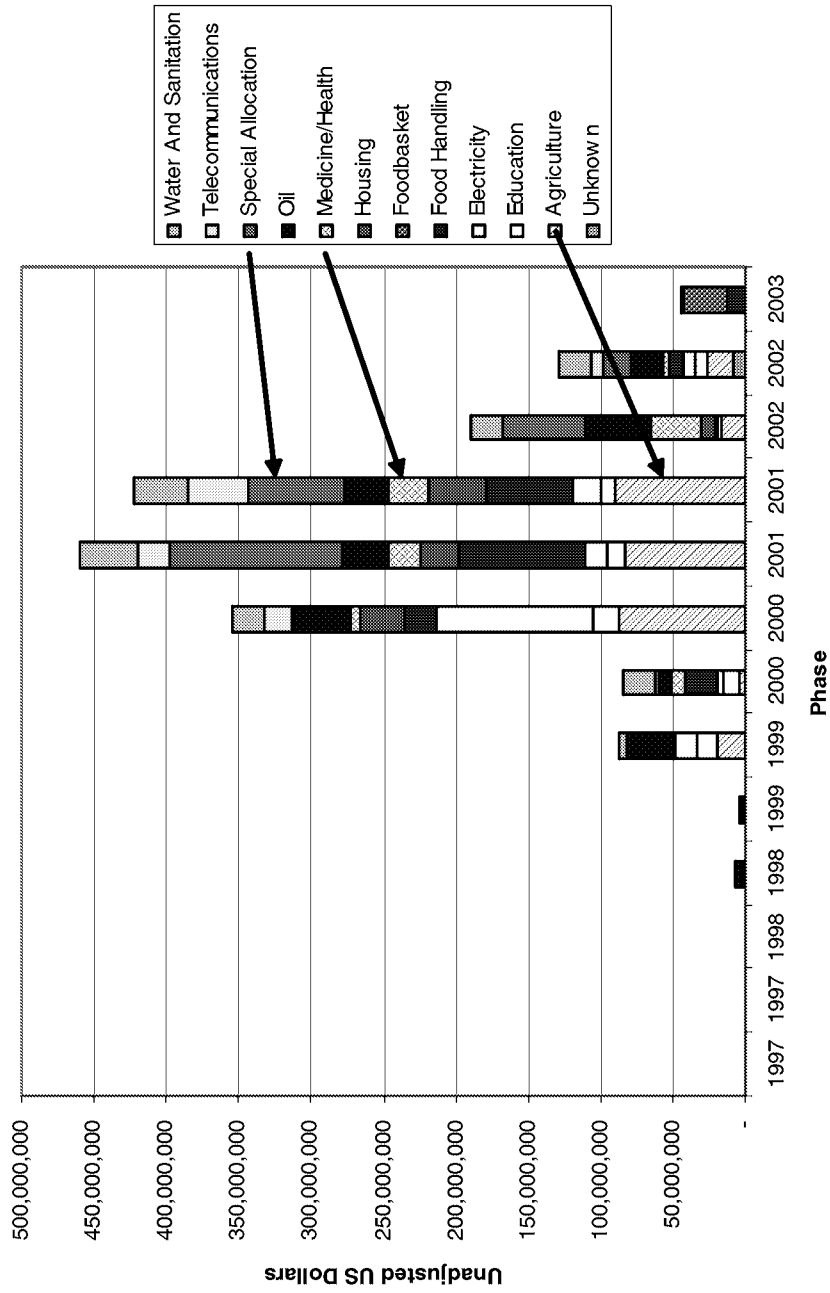


Figure 5.4. Dollar value of contracts not approved according to phase (North)

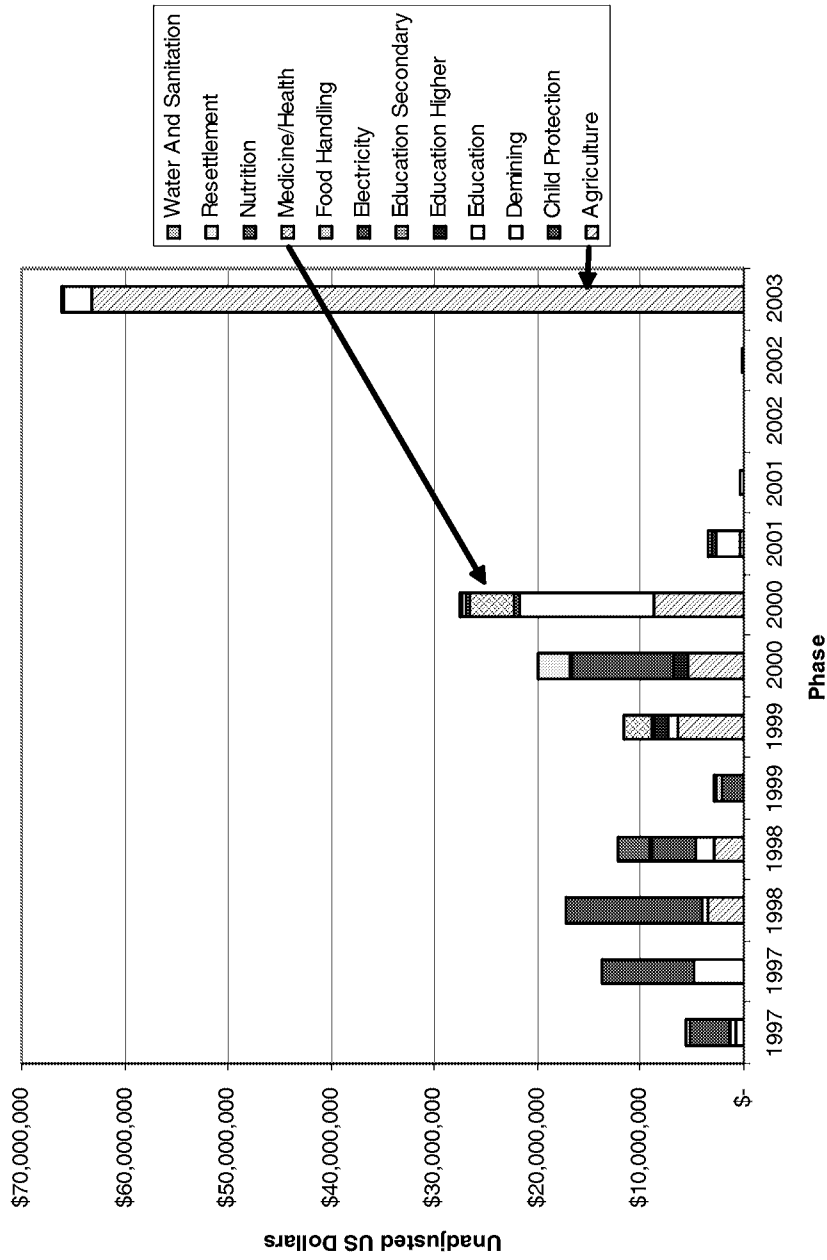


Figure 5.5. Dollar value of contracts not approved according to phase (Centre/South).

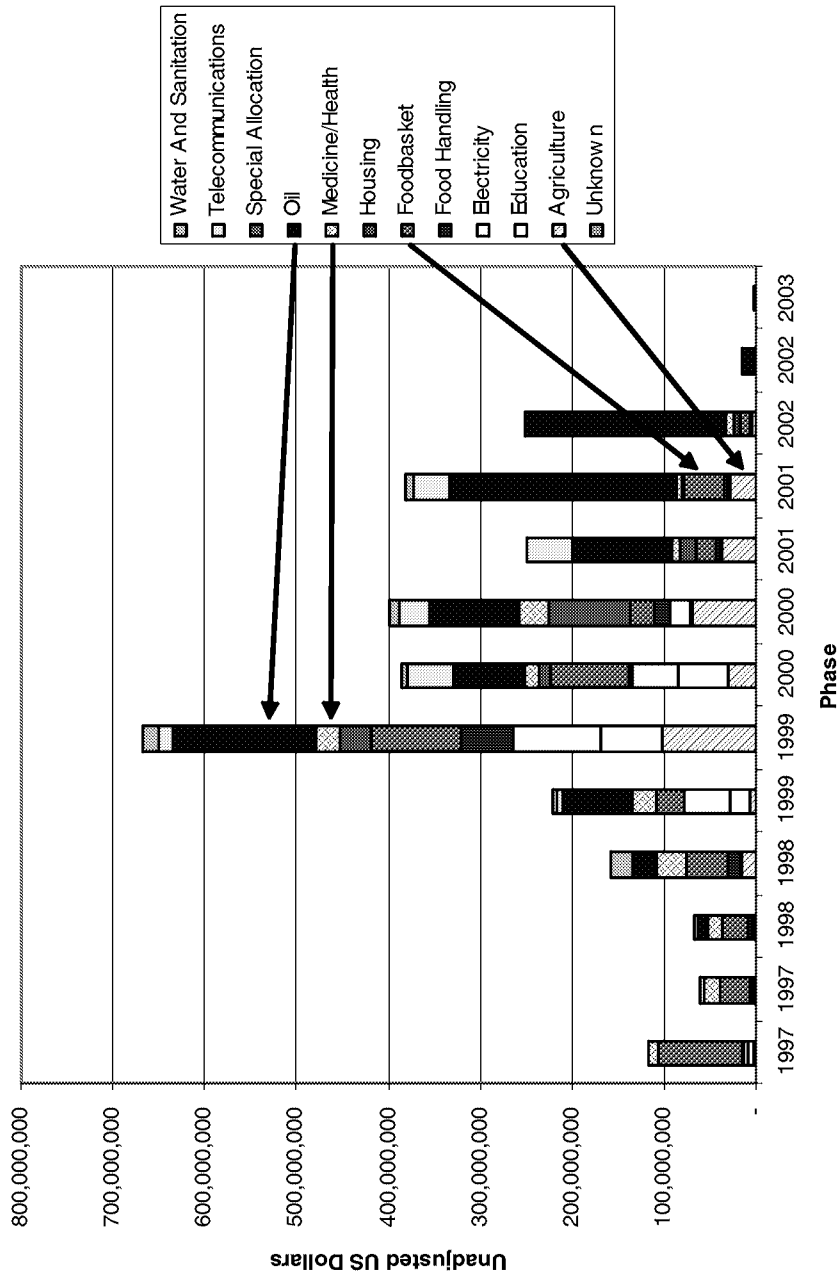


Figure 5.6. Dollars neither approved nor unapproved according to phase (North).

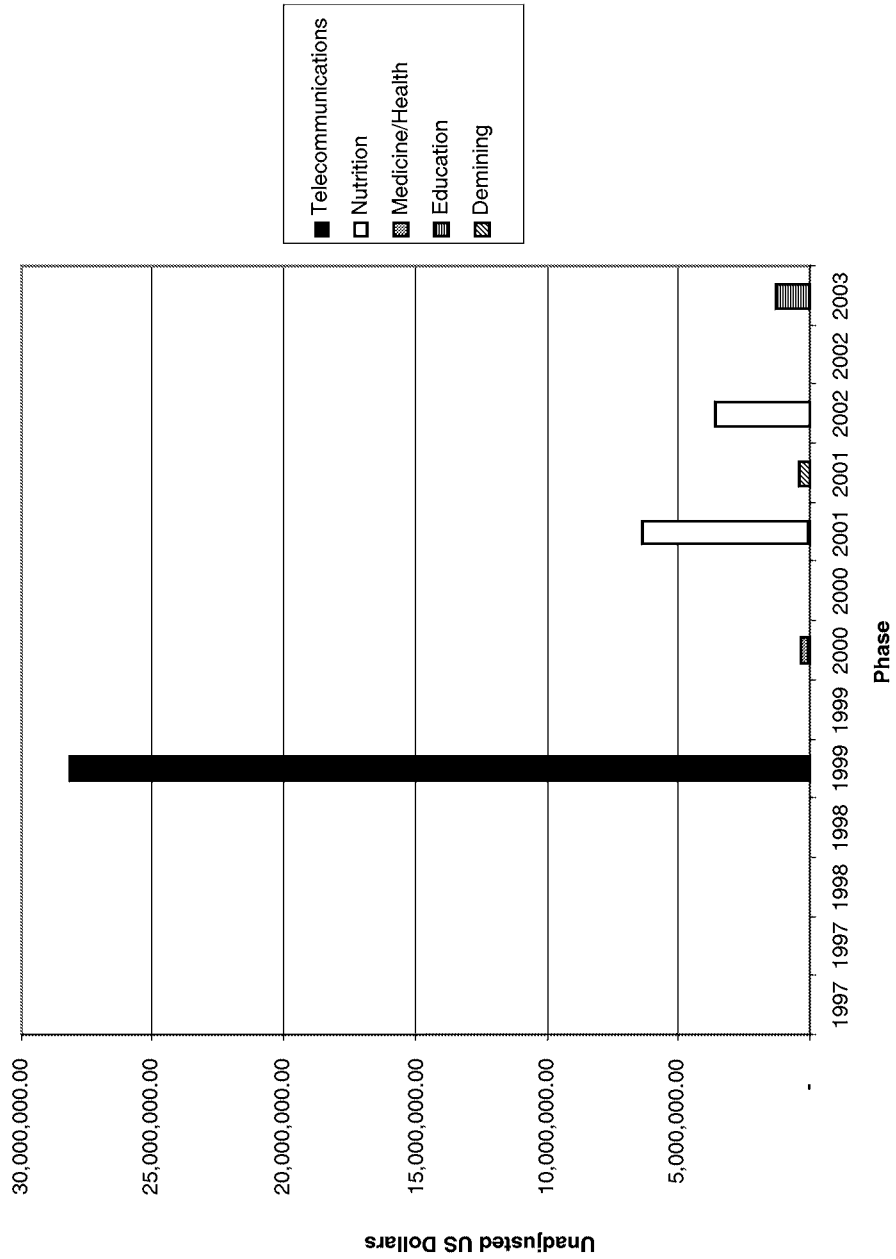


Figure 5.7. Requested dollar value neither approved nor unapproved according to phase (Centre/South).

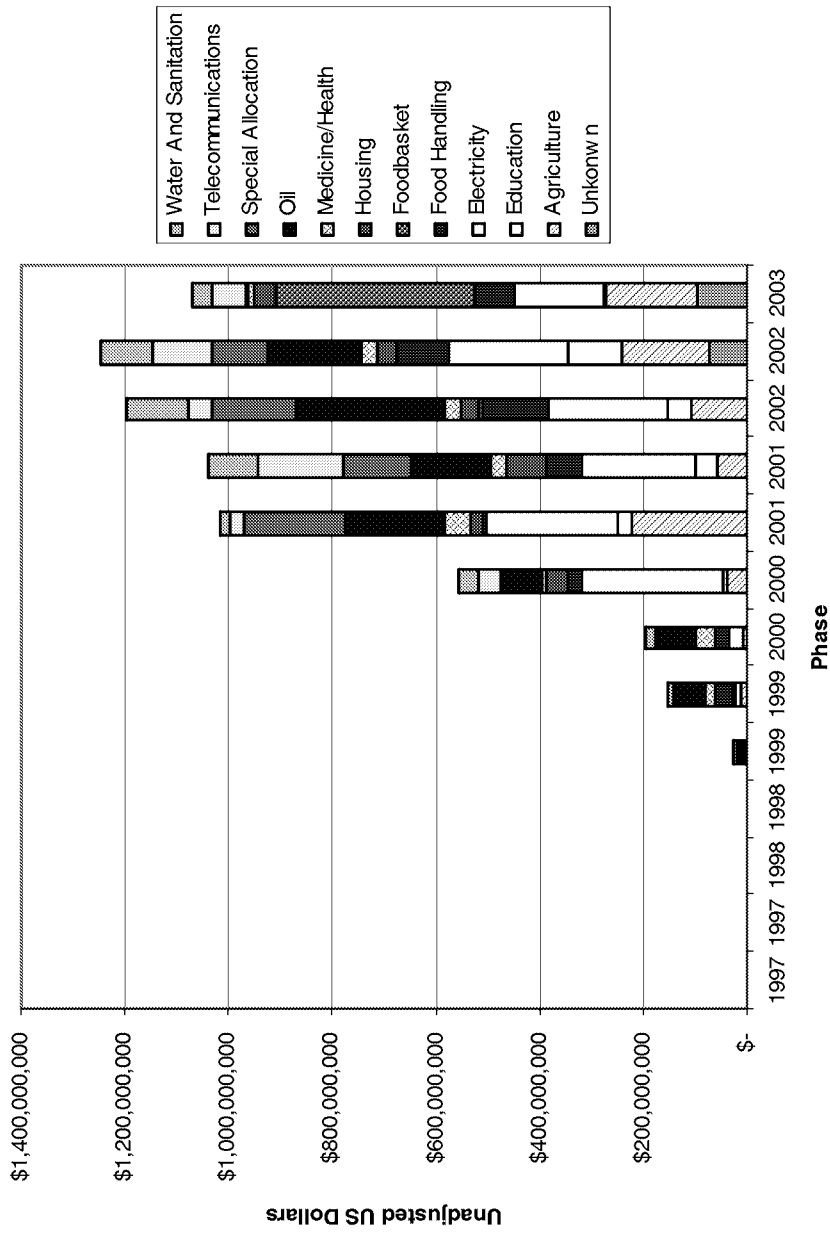




Figure 5.8. Approved or notified dollars according to phase (North).

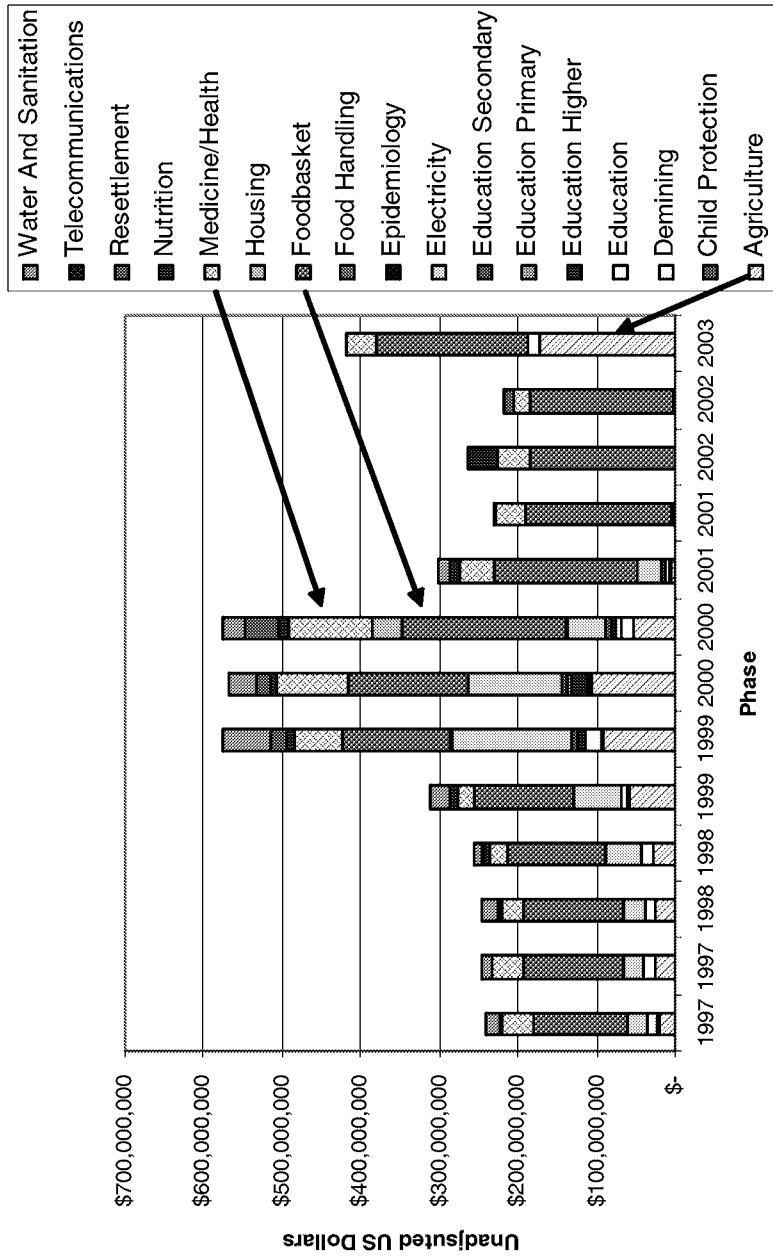


Figure 5.9. Dollars requested and approved or notified according to phase (Centre/South).

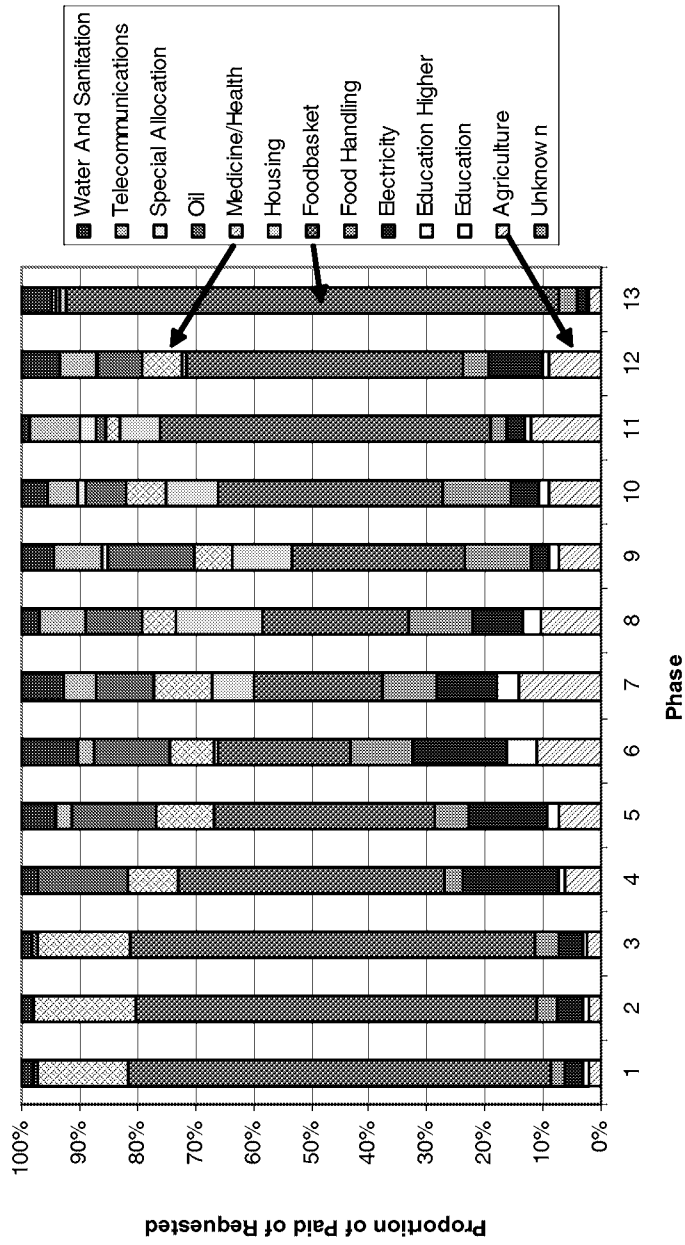


Figure 5.10. Dollars paid (of total requested) according to phase (Centre/South).

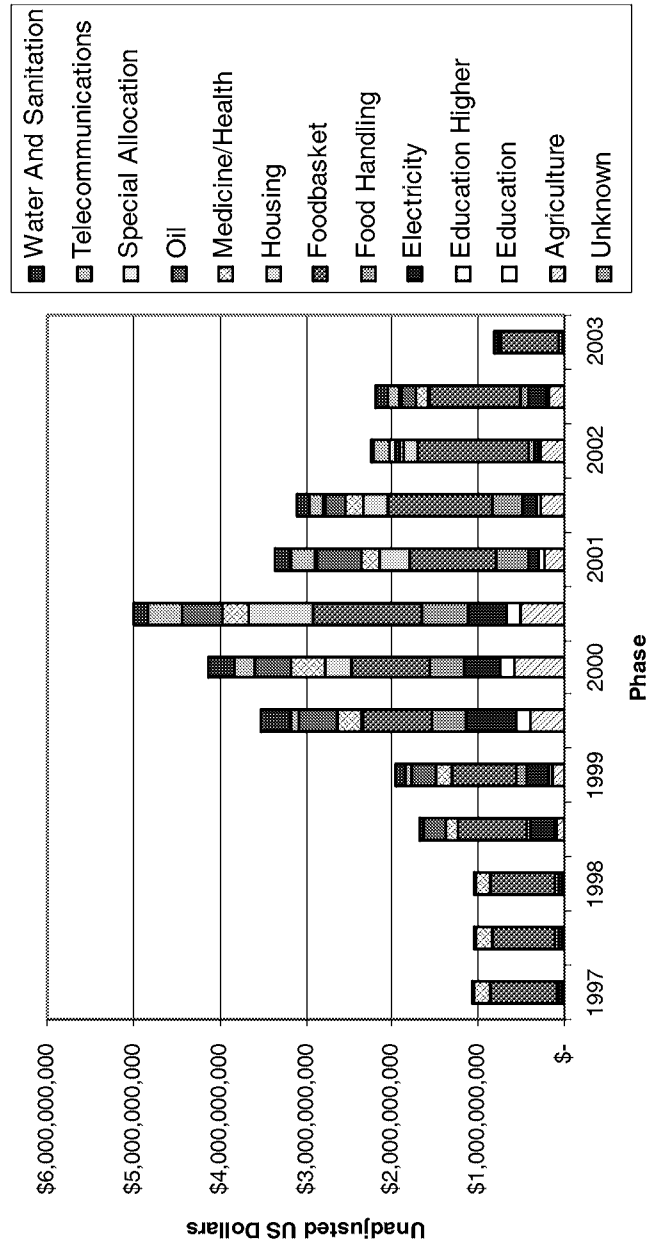


Figure 5.11. Proportion of dollars requested according to phase (North).

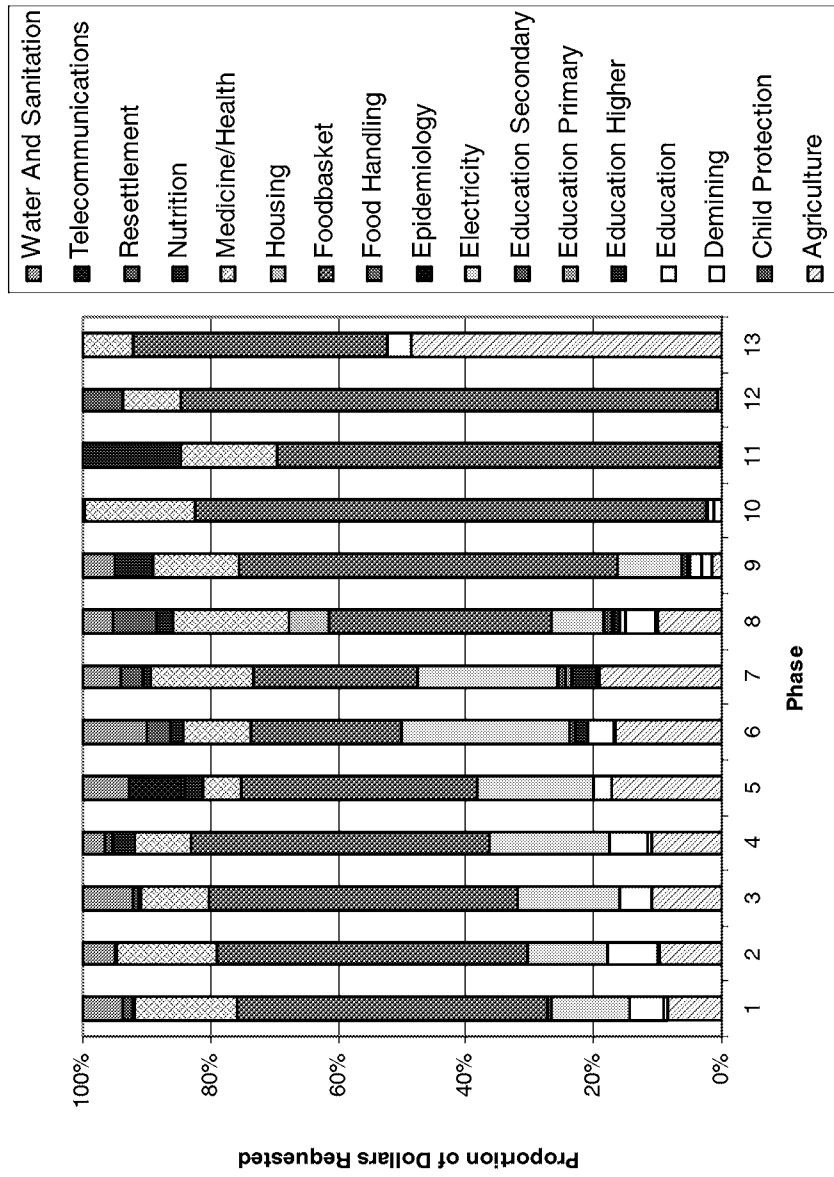


Figure 5.12. Proportion of total requests according to phase (Centre/South).

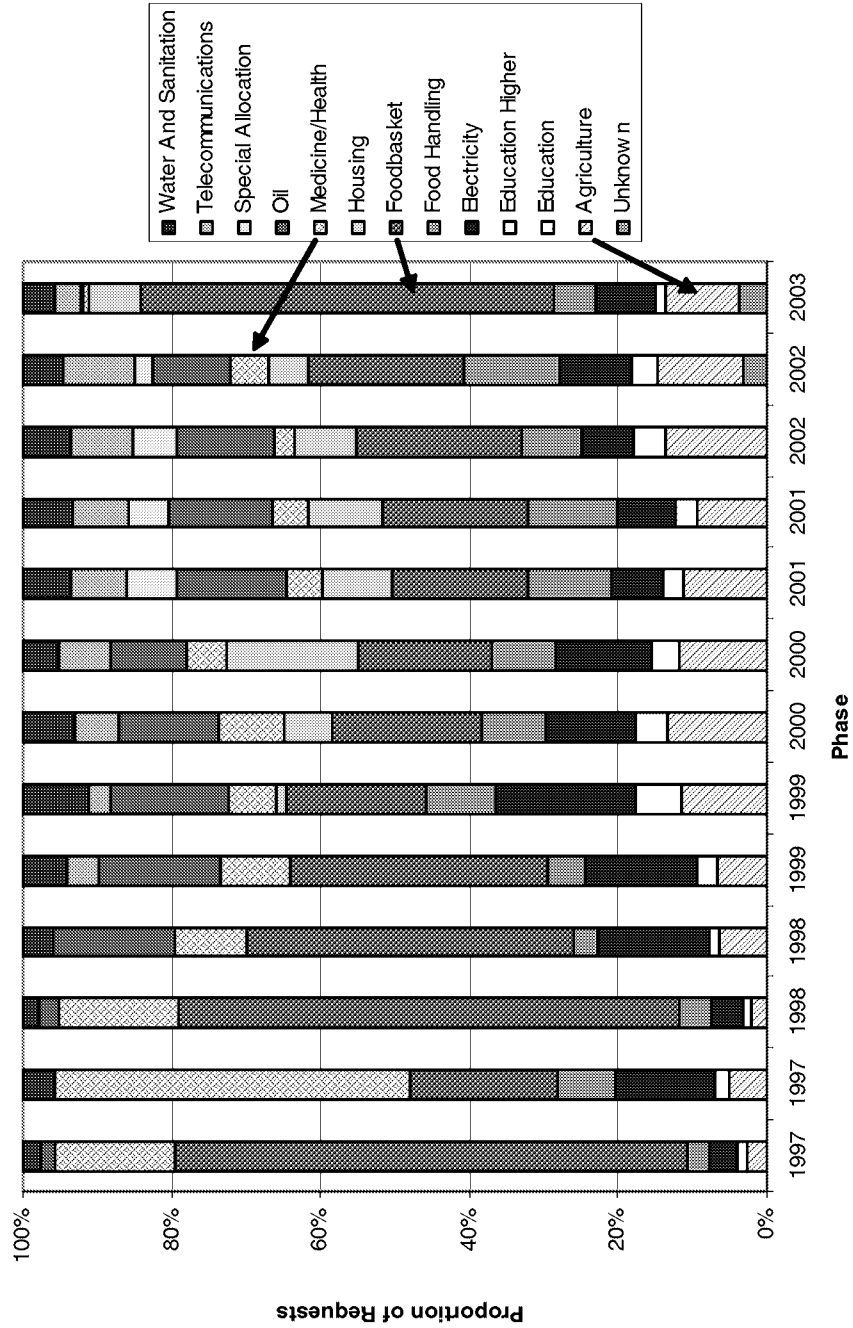


Figure 5.13 Proportion of Dollars Approved or Notified by Phase (North)

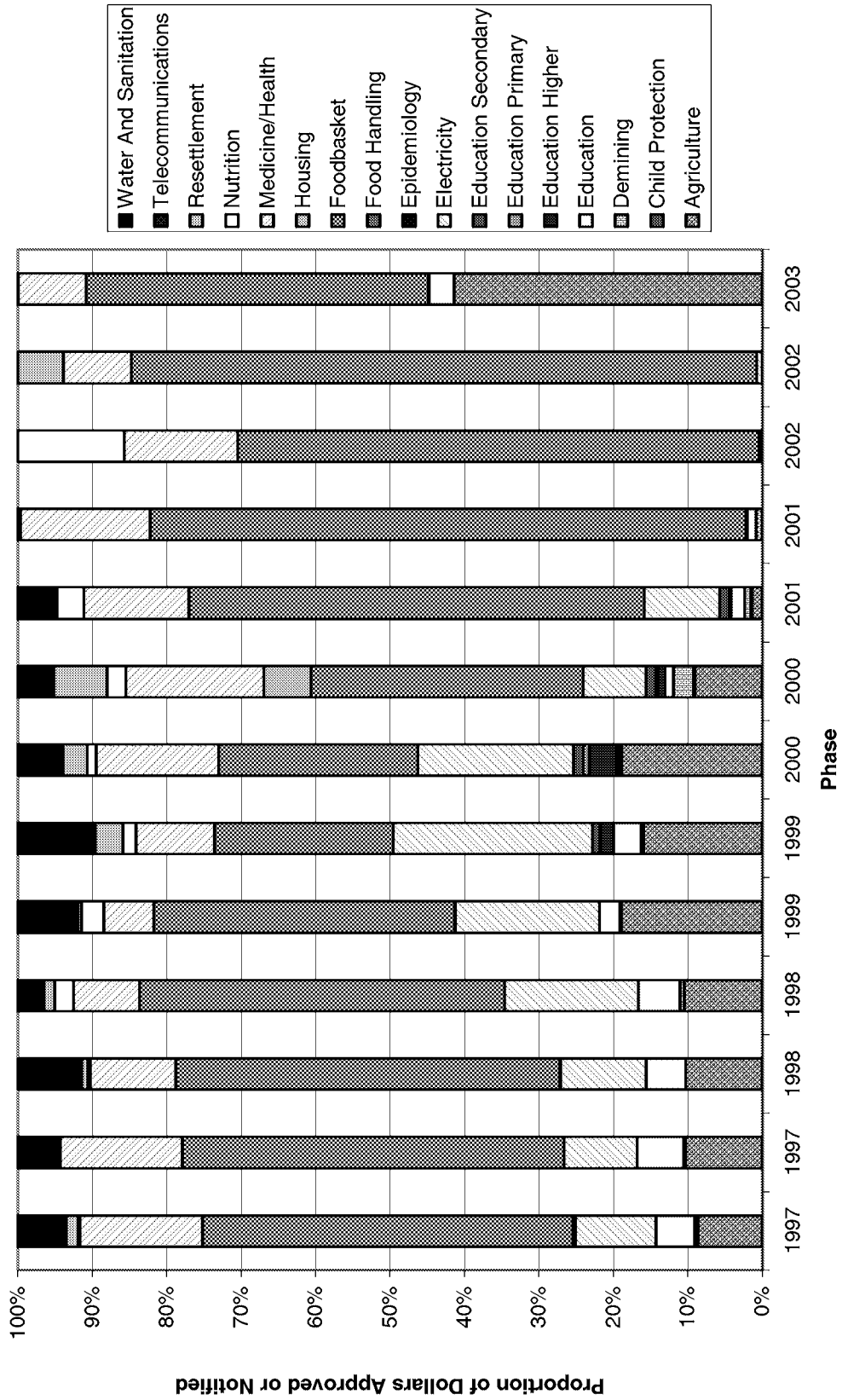
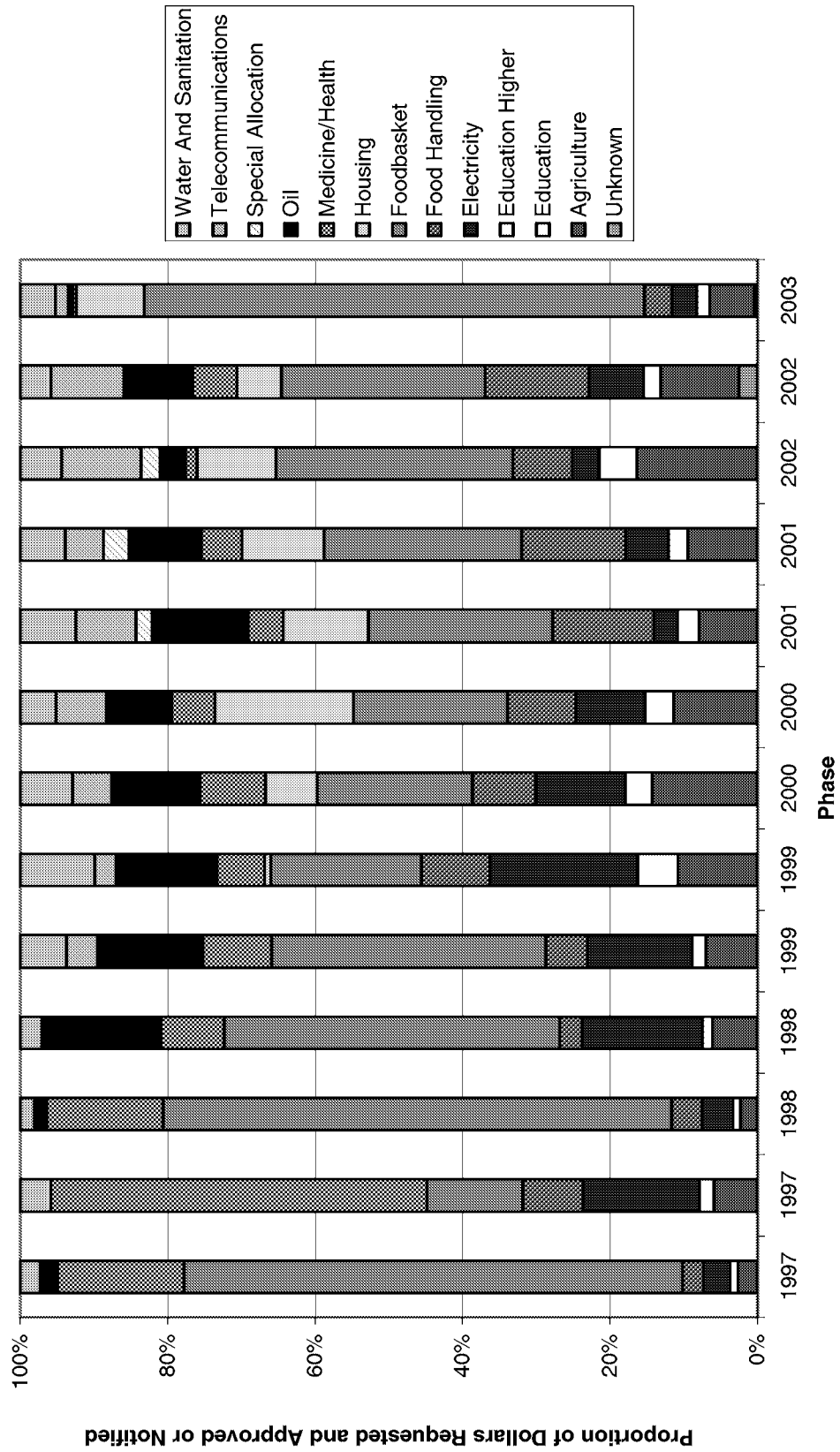


Figure 5.14 Proportion of Dollars Requested and Approved or Notified by Phase (South/Center)



**SECTION III****CHAPTER 6. CONCLUSIONS AND LESSONS**

The aim of the Working Group was to describe the humanitarian situation of the people of Iraq and to assess the extent to which the OFFP affected this.<sup>9</sup> This explicitly meant understanding the situation in the 1980s prior to the 1991 war; during the period of sanctions from 1991 to 1996; and then while the OFFP was operating, from 1996 to 2003. Attributing the changes in the humanitarian outcome to the resources and interventions supported by the OFFP was the most problematic aspect, requiring an assessment of what would have happened without the program—the “counter-factual” situation—which had to be approximated largely from the conditions and their trends before the OFFP started.

The measures of the humanitarian situation were decided at an early stage as involving hunger and poverty, nutrition, health, and mortality. Both quantitative indicators and reports of conditions, often unquantified, were used. The quantitative data came down mainly to estimates of food availability (as food energy, i.e., kcal/capita/day); child nutritional status (as stunting, underweight, or wasting); data on infectious and noncommunicable diseases primarily from health system reports; and mortality estimates (as mortality among children under five years of age, U5MR). Infrastructure was included, focusing on those aspects most relevant to public health and nutrition, mainly water supply, sewage disposal, and electricity.

In this Chapter we first summarize the conclusions on the humanitarian situation – responding to the questions defined in the terms of reference – drawing on information given in more details in Chapters 2 and 4. We also summarize how changes during the OFFP period were attributed to the resources, as covered in Chapter 3. Lastly, we suggest lessons, moving from a focus on the program itself to policy implications. It must be stated that nothing said here should be taken as supporting the approach of sanctions plus humanitarian relief in the future. The programmatic and some of the policy recommendations or lessons are therefore put forward for possible application to other, more appropriate, humanitarian interventions.

Further, we recognize that arguments widely made elsewhere (e.g., Report of the Select Committee on International Development, UK, 2000<sup>10</sup>; Global Policy Forum/Save the Children, 2000<sup>11</sup>; UNESCO, 2000<sup>12</sup>) concerning the implications of failing to protect human rights by the UN’s involvement in sanctions are highly pertinent to the overall issue, but the Working Group understood that these were not within its terms of

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<sup>9</sup> See Terms of Reference, reproduced in Chapter 1.

<sup>10</sup> Report of the Select Committee on International Development, of the UK House of Commons, 27 January 2000. <http://www.publications.parliament.uk/pa/cm199900/cmselect/cmintdev/67/6707.htm>

<sup>11</sup> Global Policy Forum/Save the Children, 2002. Iraq Sanctions: Humanitarian Implications and Options for the Future. <http://www.globalpolicy.org/security/sanction/iraq1/2002/paper.htm>

<sup>12</sup> Embargo Against Iraq: Crime And Punishment Sophie Boukhari, UNESCO *Courier*. July/August, 2000. UNESCO, Paris [http://www.unesco.org/courier/2000\\_07/uk/ethique.htm](http://www.unesco.org/courier/2000_07/uk/ethique.htm)



reference. Similarly, arguments concerning use of food as a weapon (e.g., FCNL, 1997<sup>13</sup>), on which there is a large literature, are not included here. It can be noted that the Food and Agriculture Organization of the United Nations (FAO) put forward in November 2004 Guidelines to “support the progressive realization of the right to adequate food...tak[ing] into account a wide range of human rights principles ...” (FAO Council, 2004<sup>14</sup>).

## **SUMMARY OF HUMANITARIAN EFFECTS OF THE OFFP**

### **Positive Impacts**

The food supplies provided through the OFFP reversed a serious and deteriorating food crisis, preventing widespread hunger and probably reducing deaths to which malnutrition was contributing. The average food supplies had by 1994 and 1995 fallen to a level where inadequacy was inevitable (estimated as below 2,000 kcal), and without the OFFP this would have continued, falling even further with severe drought in 1999–2001. After food supplies funded by the OFFP started arriving in 1997, the average supplies climbed to between 2,500 and 3,000 kcal, a level likely to have covered the needs of most of the population, and stayed at that level, including compensating for a collapse in local production in 1999–2002 due to infrastructure failure and drought. The numbers of people for whom hunger was mitigated cannot be estimated from the data, but most of the Iraqi population undoubtedly benefited.

While food intakes may have been nearly adequate in quantity with the OFFP, the diet quality was very unsatisfactory for extended periods. It is likely that malnutrition due to deficiencies in vitamins and minerals increased, particularly anaemia in women and young children, and subclinical deficiencies of a range of nutrients are probable.

Equipment and medical supplies from OFFP were delivered sporadically and in an uncoordinated manner which reduced much of their effectiveness. This was in large part due to administrative procedures and ‘holds’ imposed by the sanctions committee (‘661 Committee’), and a number of other factors which complicated the ordering and delivery procedures, including lack of cooperation by the Government of Iraq. The medical supplies undoubtedly also saved many lives – there is no way of estimating the number – but at the same time many preventable deaths and unnecessary suffering occurred.

The percentage of children under five years of age with growth retardation (here measured by stunting, i.e., reduced height growth) is an indicator of malnutrition, in fact measuring the combination of inadequate diet and sickness, primarily the common childhood illnesses of diarrhoea and respiratory infections. The prevalence of stunting

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<sup>13</sup> [http://www.fcnl.org/issues/int/sup/ira\\_ltrotnpres\\_111997.htm](http://www.fcnl.org/issues/int/sup/ira_ltrotnpres_111997.htm)

<sup>14</sup> <http://www.fao.org/newsroom/en/news/2004/51653/>

had risen from around 18% in the Centre/South in 1991 to more than 30% in 1996. This increase in child malnutrition (rapid in comparison with the changes usually seen) is attributed to the effects of war damage and sanctions on health environment and food availability. It is reasonable to assume that without the OFFP the prevalence would have stayed high, or continued to rise. By 1999, after two years or so of the OFFP, the prevalence had fallen back close to that of 1991, about 22%. This reduction in prevalence can probably be attributed to the OFFP, and indeed is one of the clearest positive impacts of the Programme. In terms of numbers, it can be estimated, for example, that there were some 360,000 fewer malnourished children in 2000 than there would otherwise have been.

In the three Northern governorates, child nutrition was initially worse, with stunting estimated as around 30% in 1991. Here malnutrition prevalences fell in the period 1991–1996, then faster in 1996–2002. The latter acceleration is also likely to be due to additional resources and programme activities supported by the OFFP.

Health impacts are problematic to assess because of lack of comparable data. Immunisation rates for children were maintained during the 1990s, despite all the difficulties, and the OFFP contributed to sustaining the coverage. Diarrhoeal disease was a major problem due to damage to sewage disposal and water purification plants. Reports of cases identified are in line with increases, in some cases (e.g., giardiasis) in 1991, in others (e.g., amoebic dysentery) in 1994–1995 as the situation deteriorated further; and then with a reduction in dysentery in 1996–1998, possibly due to improvements supported by the OFFP. Reported incidences rose again in 1999–2001, probably due to the drought and the much-reduced (and contaminated) water supplies.

Perhaps surprisingly, conclusions on mortality in relation to the OFFP cannot be reached. The data on mortality (only children under five years old were considered, for whom there are more data than for other ages) are the least consistent. A new realisation (for the Working Group) was that the child mortality rates by 1990 had remained high (about 85/1,000 live births) in Iraq during the 1980s (while declining almost everywhere else), so that by the 1990s the underlying rate—even without war and sanctions—is expected to have been at this level. This affects estimates of the “excess mortality” rates (above the pre-1991-war rate) in the 1990s. On balance, there are thought to be up to 68,000 additional deaths of children under five during 1991–1995.

No estimates considered reliable of under-five mortality were found for the period of the OFFP, and thus no estimates of lives possibly saved by the Programme can be made. The likelihood of reduced mortality is indicated by the improvement in child nutrition and from the increased availability (although still inadequate) of medicines.

### **Negative Aspects**

The short-term approach of the OFFP, essentially as a relief operation, led to many missed opportunities for greater impact, and indeed to some actual harm.

A more effective humanitarian approach would have aimed to restore productive capacity, repair infrastructure, generate employment, and use the extensive capabilities of the Iraqi people to support their own livelihood. The basis for the “relief” approach was presumably at first the perceived urgency of the deteriorating situation—food had to be supplied—but the opportunity to move towards support to livelihood was not taken, for reasons such as the policy of reducing the Government of Iraq’s access to hard currency. While it is well recognised in principle that in relief operations efforts are needed to move from handouts to employment and local production—and this does not need stressing from the Iraq experience—nonetheless, the results in Iraq from 1996 to 2003 do provide an example of the ineffectiveness of long-drawn-out relief: investment in people would undoubtedly have reduced deprivation more effectively, and with more dignity.

The centralised distribution operation (in the Centre/South) shifted more control into the hands of the central government. It is widely reported that in practice the effect of consigning control of the resources needed for people to stay alive (food rations) to a regime as intent on controlling its population as the Government of Iraq was leads predictably to increasing the degree of control; this in turn had negative effects on the population’s well-being, not least for nutrition and health.

The “relief” approach led to low priority for repairing infrastructure needed to protect health, even for repairs for which there was no arguable “dual use” constraint. However, the OFFP’s failure to do more to repair infrastructure was indeed constrained by the “holds” imposed by the 661 Committee, as well as other obstructions. It appears that the Programme was somewhat unresponsive to evolving needs deriving from possible changing disease patterns, at least in terms of equipment. For example, by 2000 WHO was formally highlighting reports of increases in cancers and birth defects and the absence of medicines and equipment to deal with these.

## **POLICY LESSONS PROPOSED**

### **Program Design and Implementation of Humanitarian Relief Programmes**

There are some lessons applicable to different relief situations, for example, for refugees and displaced populations. In particular, the use of resources to establish and restore livelihoods, using the skills and working capacity of the people themselves, should be stressed as soon as possible, recognising that in emergencies providing resources for immediate consumption may temporarily take priority.

The OFFP was designed for short-term relief but lasted eight years. Moreover, a key constraint was that it was intended that little or no hard currency should be introduced into Iraq. These two factors, among others, substantially reduced the impact of the Programme. Although they might be seen as seldom applying to other circumstances, the negative effects in Iraq stress their general importance. The alternatives are to focus on providing employment, local production, and supporting the local economy; and to give incentives, not disincentives, for these. The results in Iraq of simply providing supplies

(of food and medicine) were to ensure that unemployment went unchecked, and local production collapsed. Resources should be used to support the local economy, to build productive capacity, and to provide needed inputs to return the society to self-reliance as soon as feasible.

Local procurement of part of the required food supplies would have been feasible if the denial of hard currency constraint had been lifted, and would have had many benefits. The same applies to local production of many medicines, constrained by the 661 Committee's concern for "dual use" of supplies and manufacturing capacity. What the Government of Iraq would have done with hard currency beyond what it obtained from smuggling and corruption is unknown, but the Programme was designed to take no risks in that regard. The importance of fostering local production and procurement is recognised in other relief situations (although a reluctance to move from provision of external food aid sometimes exists on the part of donors); thus the experience in Iraq mainly confirms what is now accepted policy.

The situation in Iraq—especially the Iran–Iraq war of 1980–1988 and the war of 1991—led to an unusually high number of widows and single mothers. The design of the OFFP does not seem to have taken account of the particular need to reach women. This in turn is in part related to the failure to monitor the humanitarian situation, which should have highlighted this issue.

The system for distributing the food resources of the OFFP, rationing through the Public Distribution System (PDS), was in principle likely to have benefited the equity of access to these resources. It is uncertain how far individual households were discriminated against and excluded from the ration system. However, most reports suggest that the distribution of rations was efficient, in that food reached distribution points and those with ration cards (certainly the majority) had good and equitable access to whatever was available. A lesson here for the future is that a rationing system can be made to work where the administrative infrastructure and means of identifying families exist. From this point of view, the details of how this worked may be worth studying for application where food shortages or economic stress make direct food distribution temporarily necessary elsewhere, especially where there is already in place an equitable rationing system. (It should be borne in mind, however, that the procedures of providing public works employment and food through the market at affordable prices have been shown to be effective in coping with food crises under many circumstances.)

The OFFP resources for food and nutrition were designed to meet a substantial part of the food energy needs, and apparently did so with considerable success for a large (but unknown) portion of the population. The rations were not intended to meet all nutritional needs, specifically for micronutrients, so that the presumption must have been that locally produced and purchased commodities would provide for these. However, limited local food production and low purchasing power, because of unemployment and price inflation, made the diet monotonous and nutritionally quite inadequate. Any program providing food rations should take into account the needs for diet diversity and quality by supplying a more diverse diet and/or by explicitly determining how the population will

access an adequate balance. This is not a luxury or something only applicable in the long term. Micronutrient deficiencies will develop or worsen within weeks or months, undermining health as well as development, especially in pregnant women and young children.

Infant formula was promoted through the OFFP, despite representations concerning the risk from discouraging breastfeeding—especially important given the increases in exposure of infants to diarrhoeal disease pathogens. The guidelines for providing infant formula in humanitarian relief situations are clear and should be applied.

### **Overall Policy**

In Chapter 1 the context, including war damage to infrastructure and the prevention of repair by sanctions, was described with the understanding that the OFFP could only be reviewed in the light of the situation it was addressing. Moreover, this situation itself could have been different if decisions through the United Nations had been different. The overall conclusions relevant to policy are as follows.

The application of comprehensive sanctions led to deprivations of food and medicine, with consequences worsened by damage to infrastructure that was not quickly repaired. The mitigation of these effects by humanitarian relief was partially effective. However, it is considered likely that the combination of broad sanctions plus relief would always lead to some damage to health and nutrition, and to loss of life. Accordingly, the overall policy recommendation of the Working Group is simply that comprehensive sanctions plus relief should be avoided in the future, if at all possible, in favour of other types of interventions.

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<sup>15</sup> See Terms of Reference, reproduced in Chapter 1.

<sup>16</sup> Report of the Select Committee on International Development of the UK House of Commons, 27 January 2000. <http://www.publications.parliament.uk/pa/cm199900/cmselect/cmintdev/67/6707.htm>.

<sup>17</sup> Global Policy Forum/Save the Children, 2002. Iraq Sanctions: Humanitarian Implications and Options for the Future. <http://www.globalpolicy.org/security/sanction/iraq1/2002/paper.htm>.

## Chapter 6

Reliable information was lacking on the humanitarian situation in Iraq, and this contributed to the consequences. Information on the conditions of the population, including public health, nutrition, poverty, and mortality, should be regularly obtained and made available. Means must be found for making this information available in an authoritative and trustworthy manner, and the credibility of reporting sources must be established and protected. The Addendum which follows elaborates on these points.

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<sup>18</sup>Embargo Against Iraq: Crime and Punishment Sophie Boukhari, UNESCO Courier, July/August, 2000. UNESCO, Paris. [http://www.unesco.org/courier/2000\\_07/uk/ethique.htm](http://www.unesco.org/courier/2000_07/uk/ethique.htm).

<sup>19</sup>[http://www.fcni.org/issues/int/sup/ira\\_tropnpres\\_111997.htm](http://www.fcni.org/issues/int/sup/ira_tropnpres_111997.htm).

<sup>20</sup><http://www.fao.org/newsroom/en/news/2004/51653/>.

## **ADDENDUM: EVALUATION OF THE OFFP**

An evaluation plan should have been built into the original Memorandum of Understanding, both for ongoing monitoring and for periodic external review. Paragraphs 34 and 35 of the final Memorandum of Understanding deal with the "observation" process to ensure the "equitable distribution of humanitarian supplies." In a more technical programme, this might have been the justification for the OIP to use for assessing programme outputs, and humanitarian conditions more broadly. The failure to do so distinguished the OFFP as unique among large humanitarian supply activities as apart from routine technical oversight. It was an expression of the narrow space that hostile parties, the Security Council and the Government of Iraq, could agree on which helped define problems with the Programme throughout.

When the first Memorandum of Understanding governing oil sales and purchase of supplies was proposed, it was thought that sanctions would last only a few months, and thus the need for evaluation was not seen as priority. But even at that time, with the Aga Kahn report in 1991, there was the prospect of severe harm to living conditions, which was a major reason for establishing the OFFP. There thus was no legitimate reason not to have an evaluation as integral to the Programme from the start.

This was reinforced in a letter by the P-5 members of the Security Council to the President of the Security Council in 1995 (UN doc. S/1995/300), which identified the goal "To assess objectively the short and long-term humanitarian consequences of sanctions in the context of the overall sanctions regime. The more information the Security Council and sanctions committees have on the humanitarian situation at any stage in existing or potential target countries, the better. In this respect, a coordinating role for the Department of Humanitarian Affairs would be welcomed.". Instead, OIP took on the role of both running the Programme as well as any evaluations of the Programme that might occur.

Individual agencies engaged in their regular programme monitoring activities. FAO engaged in reviews every two years. FAO and WFP collaborated on a larger joint review in 2002. UNICEF did several assessments over the years on threats to child or maternal health. The largest Agency Evaluation was UNICEF's 10-year review. This comprehensive review of the past 10 years was necessary for both UNICEF and the Government of Iraq, focusing on extensive analysis of data and country-level documents, some special surveys, and participatory interagency workshops involving 300 Iraqis and 12 international consultants or facilitators.

Because of the strong engagement with UNICEF in humanitarian activities, its long presence in the country prior to the OFFP, and its small programmatic participation in the OFFP, UNICEF was able to coax the Government of Iraq to participate in this multisectoral extensive review of humanitarian conditions over a decade. Ostensibly for UNICEF organizational purposes, this review was the first opportunity for Iraq counterparts to discuss openly their successes and failures in addressing humanitarian

## Addendum

crisis though the 1990s. This process produced the influential document “The Situation of Children in Iraq” in 2002.

Rising concern among NGOs, international forums, and member states noted in 1997 that the OFFP was not rapidly reversing social decline. This led to an interest among some Security Council members in modifying the Iraqi sanctions regime, and establishment of a plan in the Security Council to establish three panels, among them a "humanitarian panel" to "assess the current humanitarian situation in Iraq and make recommendations to the Security Council regarding measures to improve the humanitarian situation in Iraq" (in a note by the President of the Security Council S/1999/100). The humanitarian panel was supposed to visit Iraq to observe and collect field data for this Programme review. The Government of Iraq declined to issue visas to make this possible, and in any case, the format of the plan and composition of the panel were not established until the report was nearly due. In the end, senior diplomats and OIP staff drew up a document in New York known as the Amorim report (S/1999/356, annex II). It fell far short of the mandated evaluation, but made several suggestions including cash component, local purchasing, and the goods review list. Some of these were instituted in the years that followed and did serve well to streamline the procurement of humanitarian goods. The experience suggests that a more comprehensive evaluation could have done far more.

The OIP office in Iraq and the Humanitarian Coordinator had intended to take part in the Amorim review. In preparation, 16 sector reports were developed by operative agencies of the United Nations in Iraq to address major sectors with impressions and personal experiences as much as data, to try to document social decline and dynamics of the Programme. These papers were received with some ambivalence, not having been requested from headquarters, and were not incorporated into the Amorim report.

Disappointed that the Amorim report did not go far enough, the Humanitarian Coordinator developed a more comprehensive assessment later in 1999 of the implementation of the OFFP from December 1996 to November 1998. Among their conclusions was that “The complexity of the humanitarian situation in Iraq poses major challenges, as there is little experience with the type of problems encountered when the whole spectrum of basic services starts to fail, as is happening in Iraq. The slow collapse of the electricity infrastructure has consequences which are rippling through every aspect of life in Iraq, and provides a good example of how weaknesses in one sector can affect all other sectors.”

The French Government in particular was dissatisfied that the Amorim report was prepared by Security Council members and OIP senior staff. It led an effort to pass Security Council resolution 1302 in 2000 to appoint *independent* experts to analyze the humanitarian situation. A team was headed by Norwegian Foreign Minister Thorvald Stoltenberg. The Government of Iraq was displeased that the mandate was to assess humanitarian conditions overall rather than the impact of sanctions alone and, as with the Amorim panel, refused to cooperate. The Stoltenberg group never convened or made a report, and no further attempts to create an understanding between the Security Council and the Government of Iraq to create an evaluation of the Programme occurred.



## Addendum

Even technical organizations of the United Nations were unable to establish normal monitoring and programme evaluation activities in their sectors in the general politicized environment of the OFFP. The World Health Organization sent a team of radiation and cancer specialists to Iraq to investigate claims of cancers caused by depleted uranium. The team was suspicious, as the Government of Iraq limited their access to key data and affected areas. The Government of Iraq was suspicious that the team was sent to deny any link between depleted uranium and cancer. The team left after a week without any plan for research or cooperation. To this date there is almost no useful information on the status of possible health effects related to depleted uranium. Operating in the Centre and South required the cooperation of the Government of Iraq for visas, security, and staff participation. The Government of Iraq frequently denied visas of staff proposed by UN organizations, and sometimes denied access to the original data sets of surveys. As a result, some commonly used sources are not trusted, and some original data sets have been lost.

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**Abbreviations and acronyms used:** ACC/SCN, Administrative Coordinating Committee/Subcommittee on Nutrition; CIA, Central Intelligence Agency; CSOI, Central Statistical Organizations, Iraq; EIA, Energy Information Administration; EMRO, Eastern Mediterranean Regional Office; FAO, Food and Agriculture Organisation; GOI, Government of Iraq; IIC, Independent Inquiry Committee; IST, International Study Team; MOH, Ministry of Health; MOP, Ministry of Planning; UN, United Nations; UNDP, United Nations Development Programme; UNOIP, United Nations Office of the Iraq Programme; WFP, World Food Programme; WHO, World Health Organisation

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