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Afghanistan's Food Balance: Implications for the Regime and the Insurgents

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A Research Paper

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Afghanistan's Food Balance: Implications for the Regime and the Insurgents

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A Research Paper

This paper was prepared by [redacted]
Office of Global Issues, [redacted]
[redacted]. It was coordinated with the
Agency for International Development. [redacted]

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Comments and queries are welcome and may be
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**Afghanistan's Food Balance:
Implications for the Regime
and the Insurgents**

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Summary

*Information available
as of 1 December 1986
was used in this report.*

Since the Soviet invasion, Afghan farmers have generally been able to maintain adequate food supplies, but the task is becoming increasingly difficult. Only by drastically cutting production of cash crops—particularly cotton and sugar beets in the northern provinces—and replanting the land to wheat, have farmers been able to keep food output near prewar levels. While this is a natural adjustment in a wartime environment, most of the gains in food production that such actions can provide have already been achieved. Consequently, it will become increasingly difficult to offset losses in output from combat operations, or greater demand from population growth, through increased indigenous production.

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The war has had significant impacts on agricultural activities in Afghanistan, but our analysis indicates that direct losses from the fighting have been important only in localized areas. These are generally along the Pakistan border where much of the heavy fighting has occurred. Despite numerous human-source reports to the contrary, we have strong evidence that neither the Soviets nor the Afghan central government is engaged in a nationwide "scorched earth" policy. little intentional agricultural destruction of any kind even in areas where fighting has been intense. Land abandonment because of the fighting is much more extensive than intentional crop destruction. However, we believe that, in the worst case, less than 5 percent of previously cultivated land on a countrywide basis has been abandoned, and that the areas of greatest abandonment are confined primarily to the eastern regions bordering Pakistan.

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While overall food production seems adequate, war-driven urbanization and transportation difficulties are creating increasingly severe food supply problems in the cities. the transportation of food, especially from the eastern and southern provinces to Kabul, is becoming more difficult because of the fighting and destruction of the road system. While the rapidly growing populations of Kabul and other cities will most likely become more dependent on the Soviets for supplies, most subsistence farmers—about 70 to 80 percent of the Afghan population—should have sufficient food over the next few years, barring drought.

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To maintain urban supplies over the next few years, the Soviets will have to ship increasing amounts of food—primarily wheat—over roads from the north. This transportation network has been better maintained and secured

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than the routes to the south and east because it also is the lifeline for military supplies to the Kabul region. The economic burden of feeding the cities has been relatively light for the Soviets—in particular because wheat has been relatively cheap in the international marketplace in recent years. Moreover, supplying food rather than the agrotechnology to increase Afghan food output gives the government and the Soviets greater direct control over the urban population. [redacted]

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Although food supplies are generally more ample in rural areas than in the cities, the Afghan resistance also faces serious problems. Acquiring food from farmers and local bazaars is likely to become increasingly difficult, at least in the eastern provinces, because planted area there has been reduced, and manpower is insufficient to maintain irrigation systems and produce crop surpluses. Furthermore, in nearly all areas of the country, the insurgents can expect temporary shortages of perishable nongrain and livestock products—fresh vegetables and fruits for example—when the fighting disrupts their movement to local bazaars. [redacted]

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While insurgent groups outside the eastern provinces have better local sources of food, they face more difficult problems when the harvest is poor. Because of the great distance insurgents in these provinces must travel to friendly borders and supply sources, the transportation of perishable or bulky foods, such as vegetables, sugar, and cooking oil, is more difficult. In our judgment, periodic shortages of some of these foods are more likely to occur than grain shortages in these regions because they cannot be stored like grain in good years for use when the rains fail. [redacted]

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For all segments of the population, trends seem to point toward a deteriorating Afghan food situation. Substantial investments are needed in the agricultural sector in the next few years, but Soviet agrotechnological trade and aid is not sufficient to reverse the trend toward falling, or at best stagnating, agricultural output. Western experts believe that more extensive use of chemical fertilizer alone could nearly double wheat yields, but the Afghans have only one fertilizer plant, built with Soviet aid before the invasion, and we believe it is operating at near capacity. The inadequate road network and high transportation costs make countrywide distribution of substantial amounts of imported fertilizer nearly impossible. The effects of military operations on transportation and the lack of investment funds for new plants compound the problems. [redacted]

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Even if peace were restored, Afghanistan would probably require at least a decade of foreign aid—both food supplies and agrotechnology—to become nearly self-sufficient again in food production as it was in the 1970s. Land that was once productive will require extensive preparation before it will produce at previous levels. Irrigation systems that have fallen into disrepair will have to be rebuilt. Seed stocks and agricultural implements will have to be provided, and farm villages will have to be reestablished. Moreover, given the current rapidly growing population and stagnating agricultural yields, any future Afghan government—no matter how well disposed—will be unable to absorb the approximately 4 million refugees now living in Pakistan and Iran without substantial food assistance.

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Figure 1
Principal Crops and Cropland in Afghanistan



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**Afghanistan's Food Balance:
Implications for the Regime
and the Insurgents**

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Background

The adequate performance of its agricultural sector is critical to Afghanistan's economic well-being and to the provisioning of the urban population. Since the Soviet invasion in late 1979, population growth, the flight of farmers from combat areas, stagnating food production, and disruption of the internal transportation network have forced the regime to import substantial quantities of foodstuffs to cover shortfalls in food supplies, especially in the rapidly growing cities.

Although agriculture is the most important sector of Afghanistan's economy, supporting as much as 80 percent of the nation's population and accounting for about one-third of all exports, the country is largely unsuitable for farming. Mountains, deserts, and forest extend across most of the country and only about 12 percent of the total area is arable. Furthermore, less than half of the arable land is cultivated because of the limited availability of water.¹ Approximately 85 percent of Afghanistan's agricultural production is from irrigated crops, and approximately 90 percent of all cropland is sown to grains—wheat, corn, rice, barley, and millet. Fruits, vegetables, and cash crops including cotton, sugar beets, oilseeds, and poppies account for the remainder of the planted area.

Wheat, the staple of the Afghan diet, comprises 60 percent of the grain production. Wheat yields in Afghanistan are low by world standards and are only two-thirds those achieved in adjacent areas of the Soviet Union.² Despite low yields, Afghanistan's traditional wheat varieties tend to produce stable yields

¹ We estimate that some 3.3 million hectares of Afghanistan's agricultural area are irrigated. Dryland crops, mostly located in the foothills of the northern plains, are estimated at 900,000 hectares.

² In recent years irrigated wheat crops in Afghanistan have averaged about 1.6 to 1.7 metric tons per hectare and dryland crops 0.5 to 0.6 tons per hectare. By comparison, winter wheat in the area of the USSR adjacent to Afghanistan averaged 2.4 tons per irrigated hectare and 1 ton per hectare on dryland during 1976-80.

Increasing Opium Poppy Cultivation

The amount of land devoted to poppy cultivation has increased dramatically in recent years. However, in 1985 total planted area still amounted to only about 10,000 hectares, and the number of farmers involved in growing the plant was relatively small compared with the number growing food crops. Nonetheless, opium poppies are an ideal cash crop for subsistence farmers when wartime conditions disrupt commerce in traditional crops. Profits from poppies are as much as two to three times more than the next most profitable crop, yet cultivation costs are low. Poppies are a hearty, multipurpose crop that yield a variety of products besides opium gum. The seeds can be eaten whole or processed into poppyseed cake or edible oil, the seed pods can be used for medicines or liquor, the straw for fuel, and the resulting ash for soap. Because opium does not spoil, it can be stored or stockpiled indefinitely.

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because they are well adapted to the harsh environment. As a result, grain production does not show wide fluctuations from year to year.

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Two-thirds of the Afghan population rely on livestock raising for a major portion of their income and food requirements. Sheep and goats are the principal sources of red meat, and wool, hides, and pelts are important export items. Cattle (oxen) are the major source of draft power for agriculture. Milk and milk products from cows, sheep, and goats are the chief sources of animal protein and a significant portion of the diet of many families. Meat, however, is generally considered a luxury except among the nomads. UN statistics for the last 10 years indicate that on average livestock herds consist of about 80 percent sheep and goats, 13 percent cattle, and the remainder beasts of burden—such as camels, horses, and mules.

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Wheat and Livestock Outlook for 1986

Afghan farmers should harvest a slightly-above-average wheat crop in 1986. Analysis of meteorological data indicates precipitation during March 1986—a critical month for winter wheat in Afghanistan—averaged about 75 percent higher than during March 1985.

[redacted] We do not know [redacted] how much precipitation fell during the remainder of the year, but [redacted] rivers and streams flowing at normal levels all during the summer. Water in the Ghazni and Kabul reservoirs was also observed at normal levels [redacted] during the summer. [redacted] early-to-mid-May indicated vigorous crop growth throughout the country. [redacted]

In the border provinces of Nangarhar, Paktia, and Konarha, where fighting has been very heavy and abandonment of agricultural land the greatest, grain crops looked healthy [redacted] throughout the growing season. Fair to good yields—based on the number of grain shocks^a stacked in the fields this year compared with previous years—were observed at harvest time in these three provinces. Elsewhere yields at harvest time, on average, appeared equal to or better than last year:

- Good irrigated winter grain yields were observed in the eastern provinces of Parvan, Vardak, Ghazni, Lowgar, and Kabul.
- In the northern provinces near or along the border with the Soviet Union—Badakhshan, Takhar, Konduz, Baghlan, Balkh, Badghis, and Jowzjan—yields of dryland and irrigated winter grains

^a When grain is hand harvested it is placed upright in small piles—"shocks"—to dry. [redacted]

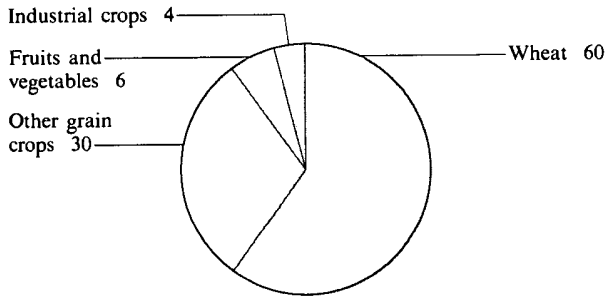
appeared to be good to excellent. Late season crops, principally corn, but to a lesser extent also rice, could have been damaged by a reported late summer drought.

- In the western provinces we observed good yields in Farah and excellent yields in Herat at harvest time. Light-to-heavy grain lodging—generally another indicator of excellent yields—was also seen throughout Herat before the harvest. 25X1
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 - We believe growing conditions in Bamian were representative of those in the central provinces of the country this year, and the yields observed in the province ranged from good to excellent. 25X1
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 - Good-to-excellent yields were observed in the southern provinces of Helmand and Qandahar. Continued fighting around Qandahar City has adversely affected agriculture near the city, but good yields were observed beyond the area of intensive fighting. [redacted] 25X1
- Although overall growing conditions in Afghanistan have been good this year—excluding the impact of the war—potential yields are limited nationwide by poor quality seed and a lack of agrochemicals. As a result, a crop exceeding the record production of 1976 by more than a few percent is highly unlikely. [redacted] 25X1
- Since the 1985/86 winter was not abnormally severe, and because we have received no information indicating above-average losses due to disease, we believe the size of the livestock herds is probably little changed from last year. [redacted] 25X1
- [redacted] 25X1

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Figure 2
Afghanistan: Share of Agricultural Land by Major Crops

Percent



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Trends in Agricultural Output

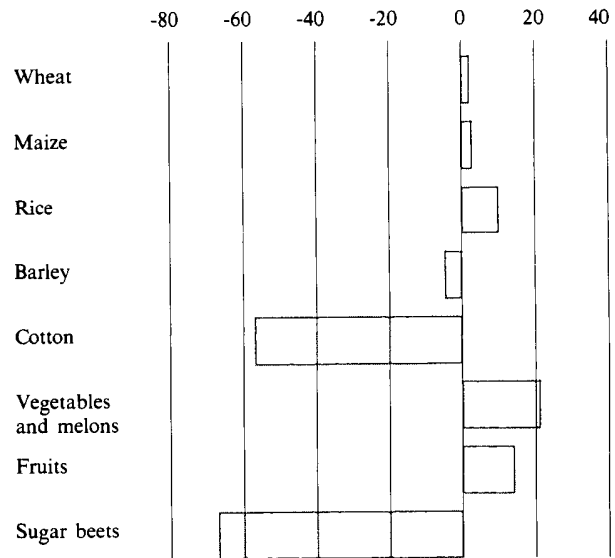
Our analysis indicates that production of food staples in Afghanistan has held up remarkably well since the Soviet invasion. Given a wartime environment, we attribute this performance primarily to the subsistence nature of Afghan agriculture: the Afghan farmer places a higher priority on food self-sufficiency than on the production of cash crops. The output of most cash crops has fallen well below prewar levels, despite the urgings of the central government to increase production.

Maintaining Wheat Production. Subsistence farmers in Afghanistan have maintained wheat output even though some traditional wheat-growing areas have been taken out of production by the fighting. They have done so by growing wheat in areas usually reserved for cash crops such as cotton and sugar beets.

this displacement is most pronounced in the northern provinces. This assessment is generally consistent with reports from visitors to the region and with published Afghan statistics that indicate that average annual wheat production increased slightly during 1980-84 while cotton and sugar beet production declined substantially.

Figure 3
Afghanistan: Changes in Major Crop Production, 1975-79 Versus 1980-84

Percent



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Wheat production has been maintained at the expense of these industrial crops because:

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- The first concern of Afghan subsistence farmers is to provide sufficient food—wheat—for their own families. Most of their other essential needs can be met by bartering food crops.
- Wheat production is less labor intensive than the production of industrial crops.³ Thus it has been less affected by men being conscripted for military duty, volunteering to fight with insurgents, or emigrating.

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³ For example, cotton production in the United States during 1960-64 required 16 times more man-hours per acre than wheat; moreover, US cotton agrotechnology during the period was much further advanced than cotton agrotechnology in Afghanistan today. Source: *Agricultural Statistics 1985*, United States Department of Agriculture.

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Table 1
Afghanistan: Selected Crop Production, 1975-84

Thousand metric tons

	1975	1976	1977	1978	1979	1975-79 Average	1980	1981	1982	1983	1984 ^a	1980-84 Average ^a
Wheat	2,850	2,936	2,652	2,813	2,663	2,782	2,750	2,850	2,862	2,900	2,860	2,844
Maize	780	800	760	780	760	776	797	798	800	806 ^a	790	798
Rice	435	448	400	428	439	430	461	475	473	480 ^a	479	473
Barley	384	400	300	325	318	345	321	330	329 ^a	336 ^a	332	329
Cotton (unginned)	160 ^a	159 ^a	137 ^a	132	105	139	65	60	55 ^a	50 ^a	68	59
Vegetables and melons	720 ^a	736	660 ^a	766 ^a	804 ^a	737	828 ^a	865 ^a	912 ^a	930 ^a	932	893
Fruits	880 ^a	795	692 ^a	824 ^a	836 ^a	805	891 ^a	913 ^a	920 ^a	930 ^a	940	918
Sugarcane	60 ^a	68	64	64	64	64	70	70	72 ^a	73	73	71
Sugar beets	100 ^a	91	97	73	70	86	35	20	45	16 ^a	26	28


^a Data provided by the Afghan Central Statistical Office to the International Monetary Fund or the World Bank.

^b Estimate provided by Afghan Government to UN FAO.

All other statistics were provided by Afghanistan to the UN Food and Agricultural Organization.




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- The price of wheat rose relative to cotton from 1979 to 1984, leading Afghan farmers to reduce the area planted to cotton in favor of wheat.
- Wheat price increases also have probably led Afghan farmers to shift some of the best cotton land to wheat production and the poorer wheat land to cotton. While this tactic leaves the amount of land devoted to both crops unchanged, it enhances wheat yields at the expense of cotton. 

Cash Crop Production Falls. Analysis of export/import statistics indicates that the production of other cash crops besides cotton and sugar beets is also down.⁴

- International Sugar Organization and FAO statistics show that Afghan sugar imports have increased about 20 percent between 1976-79 and 1980-83, indicating that cane production is probably dropping. The figures understate actual imports because they do not include Soviet grant aid, which the Afghans indicate amounted to 49,000 tons during the 1981-83 period alone. Cane is grown only in Nangarhar Province, which borders Pakistan in

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Higher wheat yields in northern Afghanistan also may have helped keep wheat production up because fields there may have received a disproportionately high amount of fertilizer. This is possible because the areas where cash crops are likely to have been replaced by wheat are relatively near Afghanistan's only fertilizer plant, the Mazar-e Sharif urea plant. The roads are also generally in good condition in the northern provinces, allowing relatively easy movement of agrochemicals and farm equipment. 

⁴ In some cases, we had to resort to the use of export/import statistics for indications of production trends because of the unreliability of official production statistics. For example, in some years official Afghan sugarcane statistics indicate the impossible situation of constant area planted, rising yields, and unchanged production. 

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Table 2
Afghanistan: Sugar Imports

Metric tons

	1976	1977	1978	1979	1976-79 Average	1980	1981	1982	1983	1980-83 Average
Imports ^a according to:										
International Sugar Organization	60,000	58,000	60,228	91,226	67,364	61,785	64,979	147,390	67,076	85,308
United Nations FAO	55,200 ^b	47,200	81,157	92,226	68,946	56,315	72,000	135,792	55,600	79,927

^a Not including grants.^b Provided to FAO by Afghanistan as an estimate.

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Table 3
Afghanistan: Export Statistics for Dried Fruit, 1977-84 ^a


	1977	1978	1979	1980	1981	1982	1983	1984
Value (million US \$)	84.2	100.3	175.4	169.5	171.4	154.0	192.0	NA
Quantity (thousand metric tons)	79.7	58.2	93.6	89.1	100.5	96.9	111.3	80.5
Price (US \$ per ton)	1,056.5	1,723.4	1,873.9	1,902.4	1,705.5	1,589.3	1,725.1	NA

Source: Central Statistical Office, Kabul. Data extracted from IMF reports.

^a Figures vary slightly from source report because of rounding procedures.

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east-central Afghanistan. We believe that the heavy fighting there has probably caused a significant decline in production.

year during 1976-79 to about 1,500 tons per year during 1980-84. Like sugarcane, citrus is grown primarily in Nangarhar Province. 

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- Exports of citrus fell sharply after 1979. Although reliable statistics on citrus output are not available, we believe, on the basis of declining export volumes, that production has dropped dramatically. According to official Afghan statistics, average annual exports of oranges fell from about 5,000 tons per

The only major success story in Afghan agriculture, excluding opium, is the upward trend in the production and export of dried fruits, mostly raisins, which have been a major export item for many years. Average annual exports of dried fruits increased from 77,200 tons during 1977-79 to 95,500 tons during 1980-82. Dried fruits have probably made a good

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Figure 4
Estimated Sheep Density by Province in Afghanistan, 1985

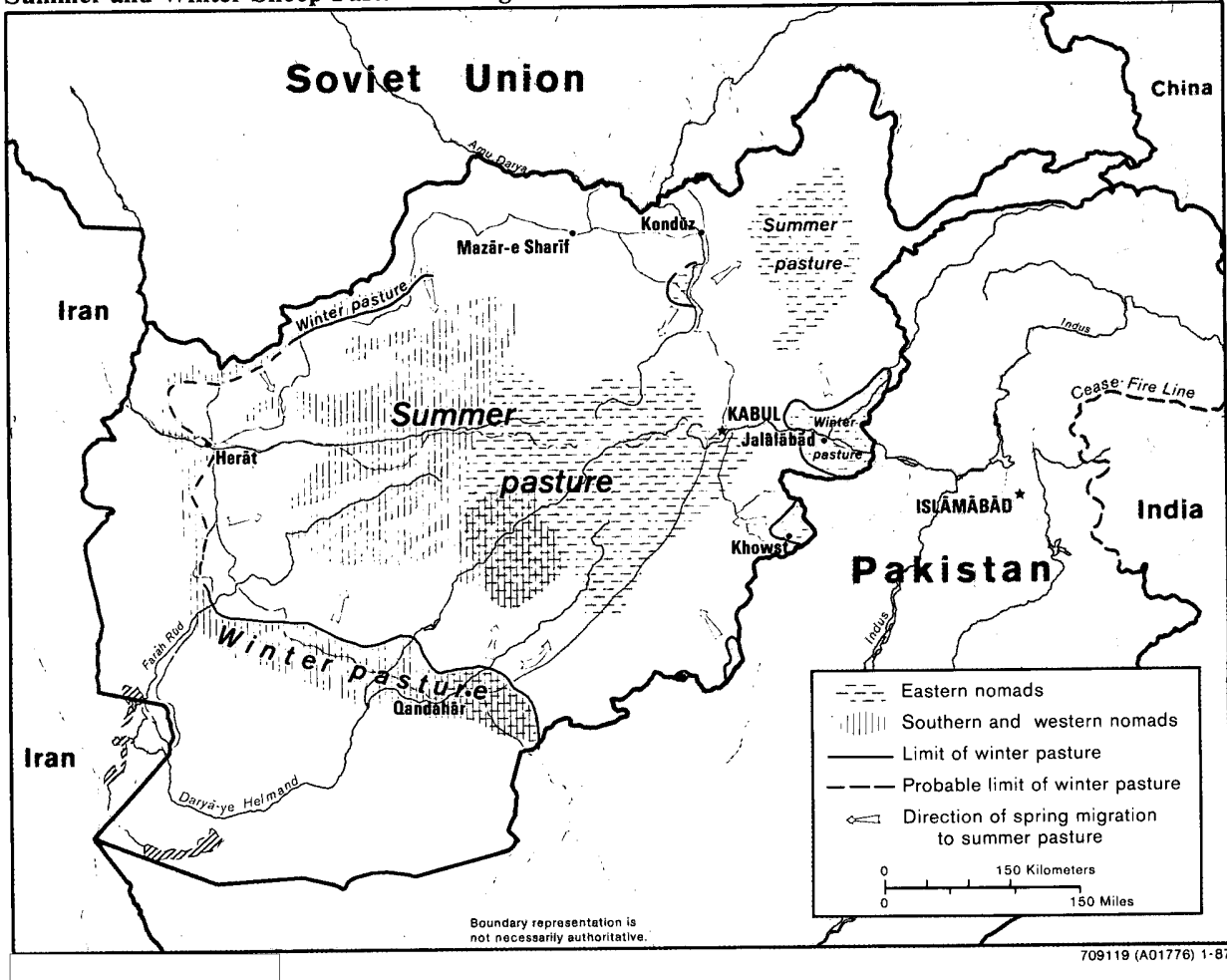


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Figure 5
Summer and Winter Sheep Pastures in Afghanistan



showing because they are easily stored, less susceptible to damage on poorly maintained roads, and suffer less spoilage when delayed en route to market—very important characteristics in a wartime environment.

Livestock Output Little Affected. We believe—in large part on the basis of official statistics and foreign trade data—that the size of sheep and goat flocks has remained relatively stable during the fighting. Sheep are raised in all of the Afghan provinces, with goats more prevalent in the rugged topography of the provinces east of Kabul. The most important breed of sheep, the Karakul, is raised almost exclusively in the

northern provinces. The Karakuls, which account for 30 percent of all Afghan sheep, are wintered in the lowlands and moved to mountain pastures for the summer. The breed is an important meat source. Karakul wool, moreover, is used in the village carpet industry, and Karakul pelts (Persian lamb) have been a major source of export earnings for decades. About 50 percent of the remaining sheep are owned by nomads and transhumants who also migrate with their flocks from lowlands to summer grazing lands in the mountains. Thus, 80 percent of the sheep are located in remote mountain pastures—for the most

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Table 4
Afghanistan: Livestock Numbers and Wool Exports

	1978	1979	1980	1981	1982	1983	1984
Sheep (<i>thousand head</i>) ^a	19,075	18,400	18,700	18,900	18,900*	18,900 *	18,950 *
Goats (<i>thousand head</i>) ^a	3,000	2,885	2,850	2,900	2,900	2,950 *	2,950 *
<i>Wool (metric tons)</i>							
Exports ^b to USSR	2,980	2,839	2,572	5,540	4,943	3,150	4,390
To all importers	3,900 *	4,800 *	5,600 *	9,900 *	9,000 *	9,000 *	8,300 *

^a Numbers with asterisks were provided by the Afghan Government to the IMF. They are based on the Islamic year that ends on 20 March. All other numbers for sheep and goats are taken from statistics provided to the UN by Afghanistan and are based on the Gregorian calendar year.

^b Statistics on Soviet wool imports from Afghanistan were extracted from the annual publication *Foreign Trade USSR* published by the USSR.

[Redacted]

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part safe from the combat during the summer months when the fighting is most intense. The rest are kept near owners' villages. [Redacted]

The most serious agricultural problem caused by the fighting is *land abandonment*.⁵ From the study of [Redacted] Afghan agricultural practices, it is evident that:

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Providing feed for sheep and goats has apparently not been a major problem. The country's 65 million hectares of rangeland provide as much as 80 percent of the feed. These lands are primarily natural pastures, and their continuing productivity is determined by the fertility of the soils, rainfall, and herd size. Crop residues, mostly from the wheat and barley harvests, are also an important part of animal diet during the winter, although they are only a small part of total feed. [Redacted]

- Abandonment of cropland has occurred primarily in irrigated regions where combat has been heavy, generally within 65 kilometers of the Pakistan border, such as the Konar Valley. We estimate as much as 50 percent of the arable land along this border has been abandoned.⁶

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⁵ We define abandonment as farmers leaving all farm fields unattended. When it occurs, land becomes weed covered, irrigation systems are not maintained, evidence of livestock can no longer be found on [Redacted] pastures, and villages fall into disrepair. [Redacted]

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⁶ It was not possible to measure precisely [Redacted] how much land has been abandoned in the border areas since the requisite coverage is not available. [Redacted]

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[Redacted] On the basis of published reports that indicate 12 percent of the country on average is arable, we estimate the 50-percent abandonment in the 65-kilometer strip would amount to only 2 to 3 percent of the country's arable land. [Redacted]

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- Abandonment of cropland has also occurred in a few other areas of heavy fighting, such as the Panjsher Valley, around Jalalabad Airfield, and near the cities of Herat and Qandahar. [redacted]

To a limited extent, some abandonment has been offset by the development of new land. We have identified newly developed farm fields in areas imaged near Herat, Towraghondi, and Mazar-e Sharif in the north, and Lashkar Gah in the south. We also see occasional references in open source literature to modest efforts to expand existing irrigation systems. Such expansion may be occurring, but we have not identified it [redacted] thus far. We estimate that about 2.5 million hectares of irrigated land were sown annually prior to the war. Assuming the worst case abandonment—no more than 5 percent—total sown area would be reduced by only about 100,000 hectares.⁷ [redacted]

In areas of heavy combat, irrigation systems are deteriorating as the result of a lack of maintenance. The deterioration is not currently having a dramatic impact on total national agricultural production because of its localized nature. For example, maintenance on the karez systems,⁸ at least in the eastern provinces, has been greatly reduced, but agriculture in these provinces is now supporting a much smaller population base. Moreover, open source literature indicates that the karez systems are used to irrigate less than 15 percent of the cultivated land country-wide. [redacted]

[redacted] while water in secondary canals continues to flow, the canals are weed choked in many areas. Manpower, however, is apparently sufficient to maintain primary canals, because on satellite imagery they appear to be clear of weeds and water can be seen flowing into secondary canals and fields. [redacted]

Our analysis indicates that the occurrence of crop destruction in Afghanistan—both intentional and nonintentional—is quite limited. We believe in many

⁷ Cultivable irrigated land in Afghanistan totals 3.3 million hectares, but each year approximately 25 percent of the cultivable land is left fallow. [redacted]

⁸ A karez system consists of a series of wells connected at the bottom by a tunnel, dug and maintained by hand labor. The system can extend over many kilometers. [redacted]

Indicators of a Scorched Earth Policy

[redacted] 2525X1
[redacted] We specifically 25X1

look for:

- *Wide-scale burning of crops—particularly at harvest time. This type of crop destruction cannot be mistaken on imagery because individual shocks must be torched to ensure destruction.*
- *Widespread destruction of irrigation systems with explosives or munitions.*
- *Destruction of crops and/or irrigation systems by tracked vehicles in areas where there is no evidence of intense combat.*
- *Establishment of bivouacs, vehicle parks, gun or other types of emplacements on active cropland when fallow or nonagricultural land could be used.*

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[redacted] war damage to Afghan farms decreases in direct proportion to their distance from the eastern borders, principal urban centers, and the primary roads. While heavy combat has devastated some agricultural areas and undoubtedly forced some farmers to abandon their land for the duration of the war, in many cases we observed farm activities resuming shortly after the fighting had ended.

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[redacted] cases that reports that the military intentionally destroy crops and irrigation canals are accurate descriptions of very localized events. There is no [redacted] evidence to indicate that either the Soviet army or the Afghan central government is conducting a nationwide “scorched earth” campaign.⁹ Our analysis of [redacted] at least 80 percent of all irrigated land and

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⁹ The term “scorched earth” refers to a military policy of devastating all land and buildings so as to leave nothing salvageable to the enemy. In the context of this paper the term refers not only to the destruction of crops, livestock, irrigation systems, farm equipment and supplies, but also to deliberate interference in normal agricultural activities—plowing, sowing, and harvesting. [redacted]

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about 30 percent of dryland agriculture revealed fewer than 200 fields that appeared to have been intentionally burned by the military. [redacted]

capita basis livestock numbers actually appear to be higher now than during 1977-79 because of the extensive emigration since then.¹¹ [redacted]

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Trends in Food Availability

We believe that per capita food supplies have been generally adequate since the Soviet invasion because of near stable domestic production of grains and continuing wheat imports, which have been used to offset localized changes in wheat production. There is, however, ample reporting from refugees indicating that disruption of the distribution system has led to localized shortages, some of which have been severe. Food prices have also risen steadily since the Soviet invasion—another indication of growing shortages or distribution problems (see appendix table B-1). [redacted]

[redacted] 10 to 20 percent of sheep flocks and 20 to 30 percent of the goat population were marketed each year in the 1970s. Assuming these marketing rates have not changed in the 1980s—and given the current stable size of herds coupled with the decreasing population since the Soviet invasion—per capita meat supplies should also have increased somewhat. [redacted]

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Rural Population Fares Better Than Urban. Our analysis indicates that the grain crops during the postinvasion years have been sufficient to feed most of the estimated 70 to 80 percent of the Afghan population living on farms or in farm villages. These farm families sell only that portion of their production that is surplus to their needs. In contrast, urban food supplies—particularly in Kabul—are heavily dependent on supplies shipped from the hinterland and abroad and are much more susceptible to interruption. On the basis of trends since 1979, we estimate that approximately 290,000 to 375,000 tons of grain—mostly wheat—was exported to Afghanistan in 1985. Approximately 150,000 to 200,000 tons arrived from the Soviet Union, of which 50,000 to 100,000 tons was purchased and approximately 100,000 tons was provided as grant aid. The remainder—about 140,000 to 175,000 tons—arrived through unofficial channels from Pakistan, primarily as supplies for the insurgents or the remaining population in the eastern provinces. [redacted]

Because the Soviets have provided grain to make up for most deficits, urban food supplies appear to have been adequate for most of the population in cities throughout 1985 and 1986, especially in Kabul. In March and again in November 1985, for example, the US Embassy reported that food supplies in Kabul were generally plentiful. As long as the Soviets are willing and able to send large amounts of wheat to the capital, food supplies should be adequate there. Wheat from the USSR, however, only supplements supplies from local sources, and, in times of drought or when the transportation system to the south and east is disrupted, the Soviets will have to ship increased amounts of wheat to Kabul. [redacted]

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Transportation: The Weak Link in the Food Supply Chain. The food supply chain remains fragile, and distribution of food could easily be disrupted by adverse weather or by the combatants. The vast majority of farms and farm villages are located great distances by foot from any road and are isolated from the principal cities, especially during the winter and spring. Although most agricultural products are consumed on the farm, the nearest village bazaar usually serves as the collection point for surplus production.

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On the basis of our estimate of the in-country population, per capita wheat and flour availability when combined with other foods—cereals, meats, vegetables, and fruit, for example¹⁰—should have been adequate to prevent serious malnutrition. On a per

¹¹ Unlike other breeds, most male Karakul lambs and up to one-third of the female lambs normally are slaughtered shortly after birth for their pelts. But, when the price of wool and/or mutton increases relative to pelts, the lambs are raised to maturity like other breeds. The price of mutton and wool has increased continuously relative to pelts since 1979, and the quantity of pelts sold has fallen. This implies that either more of the Karakuls are being raised for meat or the pelts are being smuggled out of the country. [redacted]

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¹⁰ According to USDA estimates, wheat makes up about 49 percent of the Afghan diet, rice about 7 percent, and corn about 16 percent. An annual supply of traditional foods of 230 to 240 kilograms per person would meet minimal nutritional standards. [redacted]

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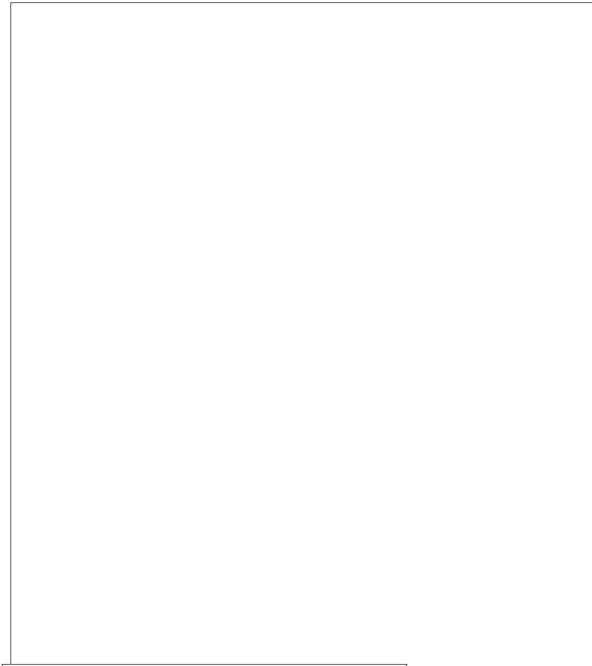
Produce is moved from the bazaar by animal to the closest road, and from there it is trucked to city markets. Collateral, open sources, [redacted] indicate that food shortages occurred in 1985 and 1986—primarily in some localized areas in the eastern and northern provinces—when combat operations broke this fragile supply chain. [redacted]

Afghanistan's poorly developed transportation network is among the most vulnerable links in the food distribution chain and a continuing source of problems. All food supplies must be moved by trail, road, or air because there is no rail system. The sparsity of all-weather roads makes it very difficult to move food from areas with surpluses to those with deficits and from border crossing points to the cities. Furthermore, with supplies channeled onto a few roads, they are more easily interdicted [redacted]

[redacted] we examined approximately 40 percent of the hard-surface (primary) road running from Sheberghan and Mazar-e Sharif in the north to Kabul and Qandahar in the east and southeast and to Herat in the west. [redacted]

[redacted] evidence of combat could be observed on nearly all segments, indicating that it is difficult at times to move farm produce to market, or from surplus-producing areas to deficit areas, even when the roads are serviceable. [redacted] conditions of the roads varied widely, but in general the roads from the northern provinces to Kabul are better maintained than the roads leading south from Kabul (see appendix A and figure 7). [redacted]

Food Prices Up. Changing food prices can suggest how well the distribution system is meeting the population's needs. Food prices in Kabul have increased steadily since the Soviet invasion, but somewhat less than in important provincial cities where smaller food surpluses are probably available for sale and food subsidies have less of an impact. The only price index for Afghanistan, provided by the Afghan Central Statistical Office to the World Bank, indicates that the rise in prices in Kabul averaged about 20 percent annually for the period 21 March 1979 to 20 March 1985 (see appendix B). It appears that the price increase is having a significant impact on food



availability for the poorest portion of Kabul's population. [redacted] in 1986 many of the poor, who have fled to Kabul to escape the fighting in the countryside, are malnourished. While food supplies are generally adequate in the city, these refugee families cannot afford balanced diets because wages are low and have not increased sufficiently in recent years to keep pace with rising prices. [redacted]

The Outlook

Agricultural output and food availability will be generally adequate for the majority of the population over the next two years—given favorable weather and no significant expansion of the fighting. The longer term outlook for Afghan agriculture is less favorable, indicating an increasing need for aid. [redacted]

The Next Two Years. The Kabul regime can maintain wheat production at the current level or even increase it slightly at the expense of other crops, providing the weather is favorable and fighting does not expand

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Shortfalls in Agrotechnology

Since the mid-1970s, with some Soviet assistance, Kabul claims to have taken several steps to improve Afghan agriculture through technology measures. Available evidence, however, indicates that these steps have had virtually no impact on agricultural productivity. The most important of the agrotechnology measures include: the setting up of agrochemical, soil science, and livestock insemination laboratories in Balkh, Kabul, and Nangarhar Provinces; the construction of the urea fertilizer plant at Mazar-e Sharif; and the establishment of mechanized farming and tractor stations in nine provinces. [redacted]

Thus far, there has been no improvement in crop or livestock output that we can attribute to the work of the laboratories, although in 1983 the Soviet newspaper Selskaya Zhizn reported that the Soviet veterinary service was shipping 2 million doses of cattle-plague vaccine to Afghanistan annually. Shortages of well-trained personnel have always been a problem, and it is unlikely that the laboratories will have an appreciable effect until this fundamental problem is solved. [redacted]

According to a mid-1970s World Bank study, the greatest improvements in agricultural production could be achieved by rapidly expanding the use of fertilizer. Grain yield increases of 50 to 100 percent would not be unreasonable according to the study. In spite of the fact that the Afghans need much more fertilizer than they produce, they continued to export large amounts of urea from their only plant at

Mazar-e Sharif to the USSR until 1983. The amount exported dropped dramatically in 1983 and 1984, and, at the same time, the Soviets, apparently realizing that it is cheaper and easier to ship fertilizer than food, began to ship limited amounts of phosphorous fertilizer to Afghanistan. However, Afghan fertilizer consumption as late as 1984 was still extremely low, even compared with that of its South Asian neighbors. In our judgment, the fertilizer situation cannot be improved substantially, except in the northernmost provinces, as long as the fighting continues because the bulky products could not safely be distributed over the poorly developed and partially destroyed road network. [redacted]

It also seems clear that little progress is being made in the mechanization of Afghan agriculture. On the basis of trade statistics, it appears that the Soviets have sold the Afghans less agricultural equipment since the invasion than they did before. According to Soviet Ministry of Foreign Trade statistics, during 1975-79 the USSR on the average annually exported \$484,000 worth of tractors to Afghanistan. During 1980 to 1984, tractor sales averaged only \$431,000 annually. The dollar figures represent relatively small numbers of tractors, on the basis of a 1976 transaction in which the Afghans paid \$322,000 for 109 tractors. Furthermore, we do not believe the Soviets are providing tractors to the Afghans as "fraternal aid," for such gifts would almost certainly be trumpeted in the press. [redacted]

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greatly. By adjusting the price paid for cotton, sugar beets, and other crops, the central government can induce farmers to change their crop mix to include more foodgrain. An increase in livestock production will be more difficult because of the lack of manpower, the limitations of unimproved natural pastures, and endemic diseases that tend to increase with herd size. [redacted]

[redacted] the greatest damage to agriculture has occurred in the eastern border provinces, difficulties caused by the reduction of food supplies has been lessened by the refugee exodus. The crop outlook is at least as good this year as last, but localized food shortages will probably continue to occur in these provinces because food stocks are limited and can be quickly depleted when farmers do

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Table 6 *Metric tons*
Afghan Fertilizer Exports to the USSR

	Granular Urea
1976	29,729
1977	18,281
1978	7,288
1979	20,700
1980	75,500
1981	51,600
1982	43,000
1983	21,400
1984	10,000

Source: *Foreign Trade USSR*, 1984.

not have access to their fields as a result of combat operations. Recent reporting from refugees continues to indicate that there are pockets of serious food shortages, especially in the eastern border areas where fighting is the heaviest. In Kabul, low wages and increasing prices can effectively prevent the poorest segment of the population from acquiring food even though supplies are generally plentiful. [redacted]

The End of the Decade and Beyond. We believe that the overall outlook for Afghan agriculture and food availability will generally worsen as time passes. Because of combat, lack of investment, and growing population (see appendix C), per capita agricultural output in Afghanistan is likely to fall slowly or at best stagnate during the next few years, compounding the problems of food availability:

- Large increases (more than a few percent) in wheat production are unlikely. Harvested area and yields have not increased appreciably since the mid-1970s when Afghanistan was self-sufficient in food production.¹²

¹² Yields averaged 1.22 tons per hectare during the three-year period 1974-76 and only 1.23 tons per hectare from 1982 to 1984.

Table 7 *Thousand US \$*
Soviet Agricultural Equipment Sales to Afghanistan, 1975-84

	Tractors	Plows	Small Agricultural Implements ^a
1975	298	11	32
1976	322	23	28
1977	973	51	92
1978	805	214	85
1979	20	0	55
1980	0	0	65
1981	282	0	14
1982	722	0	0
1983	0	0	17
1984	1,151	0	35

Source: *Foreign Trade USSR*, 1985

^a This category most likely covers a wide variety of nonmechanized farm equipment.

- While the population decreased during 1979-85 because of the refugee exodus, it is now increasing at a faster rate than grain production and could reach the preinvasion level in the early 1990s.
- Where the fighting has been most intense, the irrigation systems are deteriorating and the capacity of the land to produce food has been reduced. If the refugees should return, the land could not immediately support the population levels before the exodus.
- If irrigation systems are allowed to continue to deteriorate, repairs will become more difficult each year and the impact of periodic droughts will be exacerbated.
- In the absence of crop failure, Soviet food aid is adequate to maintain urban food supplies, but Soviet agrotechnological trade and aid is not sufficient to reverse the stagnation in total agricultural output.

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Urban food supplies depend on the Soviet/Afghan effort to keep the roads open from the USSR to Kabul, and the Soviets' determination to provide adequate food supplies for the city. For the most part, the rural farmers representing 70 to 80 percent of the total population, grow their own food and raise their own livestock. As a result, unless precipitation fails or the fighting prevents them from tending their fields and flocks, they should produce adequate food for their own use. This subsistence approach to farming, however, limits their ability to increase yields and produce surplus food for the rapidly increasing population of the cities, particularly Kabul. [redacted]

Implications

For the Soviets. The longer the war continues, the more food aid the Soviets will have to provide, because the urban population—particularly in Kabul—is increasing at a faster rate than agricultural output in the surrounding regions. Although the Soviets have provided the Afghans with substantial amounts of military aid, they have provided little agrotechnology to improve the agricultural outlook. [redacted]

There are, however, several reasons why the Soviets may prefer to provide food rather than technological aid:

- Grain and sugar, the most important foods provided by the Soviets, are relatively cheap in the world marketplace, whereas agricultural equipment and some agrochemicals are in short supply in the USSR.
- The application of agrotechnology requires an investment in infrastructure and personnel—for example, maintenance equipment, storage facilities, and instructors—and the costs/risks in providing these could be considered prohibitive in a wartime environment.
- Most of the countryside is accessible to or under the control of the insurgents and the Soviets may believe that any new technology introduced would be used to the insurgents' advantage, wasted, or destroyed.

- Supplying food rather than improved agrotechnology gives the Afghan Government and the Soviets at least limited control over the urban population. [redacted]

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For Western Aid Donors. Western nations attempting to provide humanitarian relief will find it increasingly difficult to identify food deficit areas and to determine the amount of food aid required. While crop production can be assessed [redacted], sizing localized food shortages is very difficult because of the lack of reliable provincial population statistics. We believe a combination of factors, including the partially destroyed road system, the inability of the farmers to perform field work in areas of intense combat, and periodic droughts, will create a continuing need for food aid in localized areas of Afghanistan—particularly in the eastern provinces—as long as the fighting continues. [redacted]

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Over the longer term, should a peace settlement be achieved and the refugees return, we believe humanitarian aid will be required at least until farm villages are rebuilt and abandoned land can be made productive again—probably for as long as a decade. The country has made little progress in improving yields over the last decade, has little unused arable land, and is faced with a high population growth rate. The backwardness of Afghan agriculture suggests that in a peacetime environment the interests of both Western nations and Afghanistan might best be served by supplying the country agrotechnology. For example, Western experts believe that wheat yields could be doubled by the appropriate application of fertilizer alone. [redacted]

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For the Insurgents. The insurgents are likely to find it increasingly difficult to acquire food from local farmers, particularly in the eastern provinces. Lack of manpower to maintain irrigation systems and to meet labor requirements during periods of peak demand—the sowing and harvesting seasons—will limit the ability of local farmers to produce even small surpluses. In addition, unless the insurgents can assure them that they will regularly purchase their crops, these

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farmers, in our judgment, will have less incentive to increase output because the fighting and the failure of the transportation system limit their access to other markets. [redacted]

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[redacted] reports from travelers indicate that the insurgents should have less difficulty acquiring food staples in the interior of the country and in the western and northern provinces. However, even there weather and the fighting can also be expected to create periodic agricultural and transportation problems. For example, dry conditions late this summer in the northern provinces did not reduce the 1986 wheat crop, but probably caused shortages of late season vegetables and fruits. In addition, some essential products are derived from secondary crops—for example, cooking oil from cotton, sesame, and sunflower seeds—and output from these crops has turned down since the invasion. Some of these products must be imported or transported long distances and, in many cases, are more likely to be in short supply than staples. [redacted]

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Appendix B

Developments in Food Prices

The central government attempts to limit price increases of consumer goods through subsidies and price controls. According to a 1985 IMF report, direct budgetary subsidies rose from 3.6 billion afghanis to 4.9 billion afghanis—a 36-percent increase—in the Islamic year ending 20 March 1985. Although 75 to 85 percent of all internal Afghan trade is still carried out in the private sector at the bazaar, government-controlled food procurement department stores sell a limited assortment of items at subsidized prices to the general public. Additional discounts on selected items are given to civil servants through a system of coupons distributed by their employers. This system applies to bank employees and most public enterprises; however, any public-sector employee excluded from this system is compensated in cash for the difference by the government.

The only available price index on Afghanistan is for the city of Kabul (table B-1). This index, supplied by the Afghan Central Statistical Office to the World Bank, is based on the prices of 50 commodities and uses weights based on a 1960 survey of household items. The index is biased downward because of special conditions in Kabul that do not exist in the rest of the country—special subsidies and stores for public employees. According to the index, Kabul's rate of inflation has increased steadily since the invasion with the exception of 1982 when it dropped to 16.6 percent from 22 percent the previous year. During the next two years, 1983 and 1984, it continued to climb, reaching 19.5 percent and 27 percent, respectively. For the five-year period 1980-84, inflation averaged nearly 20 percent.

Table B-1
Price Index for Kabul,
1979-84^a

Index: 1978=100

	1979	1980	1981	1982	1983	1984
Total index	109.9	123.7	150.3	175.2	209.5	266.9
Cereals	117.8	119.8	133.9	157.2	171.2	264.2
Meat	102.1	121.3	171.6	230.1	251.3	280.7
Fruits/nuts	106.6	103.9	123.5	163.3	190.9	243.4
Vegetables	110.1	107.7	169.2	195.4	244.4	278.4
Other food	100.1	100.7	108.0	120.2	190.9	195.0
Nonfood	111.8	139.2	161.5	176.2	206.7	269.6

^a Table is based on the Islamic year ending on 20 March; that is, 1979 covers the period 21 March 1979 to 20 March 1980.

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Appendix C

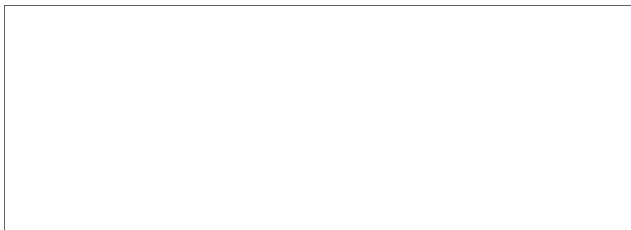
Population Trends

We estimate from the extrapolation of prewar census data that the current population of Afghanistan is in the range of 13.5 to 14 million, still well below the preinvasion level of approximately 15.5 reported in the 1979 census. We believe the current population consists of 11.5 million settled inhabitants and 2-2.5 million nomads. [redacted]

Our assessment indicates that the settled population fell from about 13 million in mid-1979 to about 11.5 million by mid-1985—a reduction of about 12 percent.¹³ The reduction would have been even greater except that during the refugee exodus Afghanistan was also experiencing a natural population growth rate of about 2.6 percent—according to United Nations reporting. [redacted]

[redacted] the greatest reductions have occurred in the eastern and western border areas. Our estimates indicate, for example, that the total settled population of the seven eastern border provinces¹⁴ and the three western border provinces¹⁵ fell 30 to 40 percent from mid-1979 to mid-1985. Most of the refugees have been from the agrarian and pastoral sectors, which made up 85 percent of the population prior to the Soviet occupation. [redacted]

Unless the exodus begins again on a large scale, the country's 2.6-percent growth rate will cause the population to reach the preinvasion level in the early



¹⁴ Badakhshan, Konarha, Nangarhar, Paktia, Zabol, Paktika, and Qandahar. [redacted]

¹⁵ Nimruz, Farah, and Herat. [redacted]

1990s. The movement of refugees within the country has also resulted in a large population increase in Kabul. According to the US Embassy, the population of the city reached about 2.5 million in 1985, whereas Afghan statistics indicate that the 1979 population of the city was only 919,000. We calculate that only slightly more than 230,000 of the approximate increase of 1.6 million persons was the result of natural population growth. [redacted]

The 1979 census also indicated that the nomadic population of 2.5 million given earlier by the government was "much exaggerated." With a nomadic population of 2-2.5 million, our calculations show that the total population of the country—settled and nomadic—is in the range of 13.5-14 million. [redacted]



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