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OILSEED PROCESSING ASSESSMENT

PROSPECTS, POTENTIAL & CONSTRAINTS TO PRODUCTION OF OILSEED CROPS IN KANDAHAR AND HELMAND PROVINCES OF AFGHANISTAN

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I. INTRODUCTION

Afghanistan's history as a country spans over little more than two centuries. As with much of the region, the rise and fall of political power has been inextricably tied to the rise and fall of dynasties accompanied by extensive carnage and destruction.

The Achaemedian King Darius The Great annexed territories of Aria (Herat), Bacteria (Balkh), Magiana (Marv), Ghandhara (Kabul), Jalalabad and Peshawar), Sattagydis (present day Ghazni to the Indus river). Arachorea Kandahar and Quetta) and Drangiana (Sistan). The present D. I. Khan Region of Pakistan's North-West Frontier Province (NWFP) still carries names of locality like Drazinda and Zindani. These are Persian words, meaning door to place of exile and prison. These betray the fact that the Persians used the far-flung area of their empire to banish dissidents.

Between 329-329 BC, Alexander the Great of Macedonia conquered the area of suzerainty of the Persians. Between 323-160 BC, Bactrian Greeks and Parthians ruled this area. During the 50 BC and 200 AD, Kushans ruled and Budhism flourished. Around 400 AD, White Huns invaded and destroyed Buddhist culture as well as the "country". Around 550 AD, the Persians re-asserted their control. In 652 AD, Islamic invasions ensued and Islam was introduced.

Between 962-1370 AD, Ghaznavids and Ghorids controlled Afghanistan, also for short periods Mongols (1219-1221), Timerlane (1370-1404) followed. In 1451 came Afghans, captured Delhi and established Afghan dynasty. Between the years1504-1519 AD, the Moghuls captured Kabul, invaded India and established Moghul dynasty. Afghanistan became divided between the Moghuls (north and east) and Safavids of Iran (northwest and west) Kandahar was contested by these two powers.

Mir Wais in Kandahar started first indigenous revolt, the forerunner of independent Afghanistan. Kandahar was wrested from Safavid Iran in 1708. Mir Wais made a foray into Iran and captured Isphahan in 1722. The Abdali tribes, also at the same time, revolted and terminated Persian occupation of Herat. In 1738, Persians, under Nadir Shah, recaptured Kandahar. In 1747, Ahmad Shah Abdali, assuming the title of Durrani, defeated the Moghuls in Peshawar Valley, captured Herat and extended his rule to Delhi. During the period 1747-73, his domain became the second great empire, after the Ottomans, from Central Asia to India. During the period 1773-1826, continued internal conflicts and Persian attacks on the western frontiers weakened this great Afghan Empire.

In 1834, Sikhs wrested control of Peshawar. In 1836, British invaded Afghanistan and the First Afghan War ensured (1839-42). The British expeditionary force was decimated in 1842. In 1854, the British took over control of Balochistan, making Afghanistan a landlocked country. In 1873, Russians fixed boundaries with Afghanistan. In 1879, the British again invaded Afghanistan to counter Russian influence. Afghanistan lost Kurram, Khyber, Michni, Pishin and Sibi to the British under an agreement and agreed to let the British handle the foreign affairs. In 1893, the British established the formal border with Afghanistan, the Durand Line.

In 1929, the Third Afghan War resulted in Treaty of Rawalpindi and recognition of Afghan sovereignty. King Amanullah ushered in an era of social and political reforms. In 1929, King Amanullah was deposed in a revolt. After the short reign of Habibullah Kalakani (Bacha Saqa), a new dynasty under Nadir Khan took over and abolished all reforms set forth by King Amanullah. Zahir Shah was the last king of this dynasty who was deposed by his cousin and brother in law in 1973. The country was declared a Republic.

In 1978, a bloody coup brought the Communist Party, the Peoples Democratic Party of Afghanistan (PDPA) to power, which introduced, besides others, the very unpalatable land reforms under Decree No.8, 1979, fixing maximum landholding of 12 *jeribs* (about 2.4 hectares). This decree broke the "back of thefiercely independent camel" of the Afghan society. Almost, the entire rural population of 11.5 million or 84 per cent rose in revolt.

An Islamic *Jihad* (holy war) was called and seven Mujahideen factions emerged. The Soviets soon found themselves mired in what later became known as `Russia's Vietnam'. The war ground o, through the 1980s. Afghan tribal warriors remained disorganized but determined, brave and increasingly well equipped; the CIA pumped millions of dollars annually in the largest covert operations in history. Soon the Soviet regime held only the cities, which were cut off as road convoys were ambushed and aircraft brought down with surface-to-air missiles. In the late 1989 Gorbachev finally pulled the Russians out.

The war had cost the Soviets over 15,000 men, galvanized Central Asian nationalism and contributed to the collapse of the USSR. More than a million Afghans lay dead and 6.2 million people, over half the world's refugee population had fled the country. Afghanistan, once again, was reduced to rubble. The Soviet withdrawal in 1989 weakened the government of President Najibullah, who proposed a government of national unity. The Mujahideen declined. In April 1992, Najibullah was ousted; a week later fighting erupted between rival Mujahideen factions in Kabul. An interim president was installed and replaced two months later by Burhanuddin Rabbani, a founder of the country's Islamic political movement. The fighting continued, doing more damage than the Soviet occupation.

Military successes of a group of fighters called the Taliban, a group of ethnic Pashtuns (Talib means student or seeker of knowledge Taliban is the plural) who took Kandahar in 1994 and in September 1996, entered Kabul unopposed forcing – Rabbani and Hekmatyar's to flee to the north. In 1998, the US bombed the southeast in an attempt to flush out terrorist kingpin Osama bin Laden. In retaliation, a UN official was murdered in Kabul and all UN staff and aid agencies temporarily pulled out of the country. That same year tensions with Iran almost spilled over into war. The Taliban also made themselves infamous by their sadistic repression of women and dissidents as well as their destruction of the country's cultural heritage.

Following terrorist attacks in the USA in September 2001, the USA and its allies began military operations in Afghanistan and quash the Al-Qaeda terrorist network, allied to the Taliban. The Taliban were defeated and disbanded, thus ending one of the world's most repressive regimes, although they have since resumed guerrilla operations. Since December 2001, an UN-appointed interim government has brought a semblance of stability to the government. The Loya Jirgas (Assembly f tribal/ethnic leaders) convened in Kabul have since elected a president and elections for representing a parliament are in the offing in September 2005.

Afghanistan continues to receive massive international aid for reconstruction of its war damaged infrastructure and institutions.

II. THE SETTING

Afghanistan, predominantly, is a rural society, living in the countryside as farmers, pastorals, traders and artisans serving its rural population. About 85 per cent of the population lives in the rural areas, eking a living from 7.9 million hectares of arable land and about 54.7 million hectares of rangeland.

Despite some studies, suggesting the contrary, Afghan agriculture was strong in the Seventies and self-reliant. Afghan psyche developed over centuries of tumultuous strife-ridden history has learnt to cope with extremes of adversity. Even during the darkest days of war, agricultural activities continued though at a diminished level.

During the reign of Amir Abdur Rehman (1880-1901), workshops were established mainly to cater to the needs of the armed forces. The first hydro-electrical plant was built under Habibullah (1901-19) at Jablus Siraj, north of Kabul, and machinery including a cement factory was imported, but was never assembled. Attempts were also made to encourage the formation of joint stock companies. This effort also failed. Thus, no important industrial projects were completed in Afghanistan in the 1920s. The pace of development remained extremely slow until mid-Fifties.

In the early Thirties, the Government granted monopolies on certain imports and exports to a group of merchants. This trade was undertaken through joint stock companies. These merchants established Afghan's first bank, the Bank-e-Milli, in collaboration with the Government. Apart from credits for trading companies, the Bank-e-Milli also extended credits during the Thirties, which funded the developing of lands for cotton, cultivation in Kunduz province and the establishment of textile units.

During Daud's decade as Prime Minister (1953-63), the state assumed a more active role in the economic development of the country. In 1956, the first of the series of Five-Year Development Plans was launched. The priority of both the first (1956-61) and the second plan (1962-67) was to provide the basic infrastructure, such as roads, and power plants that were necessary for the overall development.

Within the agricultural sector, the bulk of the resources were used for a number of large-scale irrigation projects, whereas measures to increase farm production received less emphasis. Health and education services, which had been rudimentary till then, were also expanded considerably during this period.

During the third Five-Year Plan (1967-72), the emphasis shifted from infrastructure and energy to industrial development. Large-scale irrigation program also continued. The goal was to promote agricultural productivity and the production of consumer and export goods. A new law was passed to encourage private enterprise. In 1967, an Industrial Development Bank was established. The fourth Five-Year Plan (1972-77) contained similar goals but was disrupted due to the coup by Daud in July 1973. Daud's own Seven-Year Plan, launched in 1976, likewise met the same fate by the Communist coup of April 1978.

The development efforts of the Plans resulted in a considerable expansion of the road communication system. This stimulated both foreign and domestic trade and laid the foundation for the emergence of a national market, which contributed to reduce regional price differences of commodities. Approximately 2,500 km of unpaved roads, which Afghanistan possessed at the beginning of the Forties increased to 17,000 km in the seventies, of which 2,700 km were paved. The electricity supply was increased to an estimated 408 MW, of which 256 MW were generated by hydroelectric power stations. Table gives a brief description of the economic profile before the conflict.

PRE-CONFLICT ECONOMIC PROFILE

Area		**Population (1976/77)**	
Total	65 million hectares	Total	14 million
Arable	8 million hectares	Urban	02.5 million
Pasture	40 million hectares	Rural	10.0 million
		Rate of growth 2.2%	
Education		**Health (1976-77)**	
Adult Literacy 8-10%	Population Per:		
Enrolment ratio:	Physician	12,000	
Primary school	29.8%	Hospital Bed	05,200
High Education	06.7%		
GNP Per Capita (1976/77): $ 160.0			
Rate of growth:	3.1%		
Labor Force (1975-76)		**Thousands**	**% of Total**
Agriculture and Livestock		2,492.8	52.9
Industry and Mining		40.7	00.9
Handicrafts		843.6	17.9
Construction		44.7	00.9
Transport and Communications		56.6	01.2
Commerce		257.3	05.5
Services		691.6	14.7
Others		282.7	06.0
Total		4,710.0	100.0

Source: Afghan Demographic Survey, Central Statistics Office (CSO) of the Ministry of Planning, GOA, and the World Bank Atlas, 1977.

Pre-conflict agriculture despite its low level of technology had reached a level when the country was almost self sufficient in grain production.

GEOGRAPHIC REGIONS AND AGRICULTURE

Afghanistan has been witnessing increasing number of provinces (*Walayats*) over the years. During the last 70 years, as the central authority in Kabul started extending its administrative writ over the country, the need for increasing the number of administrative regions was felt. Up until 1934 there were fourteen provinces. The number increased to 26 in 1964. Since 1977, three more provinces were added to make a total of 29 provinces when the Democratic Republic of Afghanistan (DPR) created three new provinces. These are Kunar from within Nangarhar, Kapisa from adjoining districts of Laghman and Parwan; and Paktika by merging some 10 southern districts from Paktia into the new province. As of 2005 there are 34 provinces and 364 districts called *Woluswalis*.

Several attempts have been made to divide Afghanistan into natural regions and zones. Humbug (1959) made first attempt when he divided Afghanistan into ten natural zones as:

East, South, Central, West, North Nuristan, Badakhshan, Wakhan and monsoonal Afghanistan.

Crassey (1960) proposed seven geographic regions disregarding provincial boundaries:

Badakhshan, Hazarajats, Bactria, Afghan Khurasan, Helmand Valley, Sistan and Eastern Afghanistan.

Arez (1972) suggested six zones on the basis of bio-climatic regimes of natural vegetation, as:
Tundra, Alpine Tundra, Steppe, Monsoonal, Semi-Arid and Desert Zones.

Dupree (1973) proposed eleven geographic zones and based these on communication and accessibility within a zone as an important over-riding aspect, besides geographic consideration as:
Wakhan Corridor, The Pamir Knot, Badakhshan, Central Mountains, Eastern Mountains Foothills, Northern Mountains & Foothills, Turkistan Plains, Herat-Farah Lowlands, Helmand Valley – Sistan Basin, Western Stony Desert, and South-Western Stony Desert.

Afghan Ministry of planning (1978) divided Afghanistan into five zones on the basis of agricultural production and planning:

Eastern Provinces	Kabul, Laghman, Logar, Nangarhar and Parwan.
Southern Provinces	Helmand, Kandahar, Nimroz & Zabul.
North- Eastern Provinces	Faryab and Jowzjan.
Northern Provinces	Badakhshan, Baghlan, Balkh, Kunduz, Samangan and Takhar.
Central Provinces	Bamiyan, Ghor and Uruzgan.

FAO (1978) used climate and length of growing period to establish agro climatic zones for South-West Asia for rain fed wheat production. The study, excepting Takhar and Badakhshan, classified Afghanistan unsuitable for rain fed wheat production. The conclusions drawn had a major technical flaw and seem not aware of the age-old practice of crop production, using moisture conservation techniques. "Rabi" crops of wheat, barley and linseed and sesame are grown on large tract of "*barani*" (rain fed) land in most of the provinces. Depending on precipitation "*rabi*" crops are grown after a fallow period of one, two or three year cycles.

The National Atlas of Afghanistan (1984) does not, as such, delineate geographic zones but has mapped information on geology, geo-morphology, natural landscapes, physiographic features, vegetation, temperatures and rainfall regimes, soils and land use, etc.

The Swedish Committee on Agriculture (SCA) in their Agricultural Surveys of Afghanistan (ASA) reports prepared for the assessment of war damage to agriculture used six zones as:

North-Eastern	Badakhshan, Baghlan, Kunduz, and Takhar.
Eastern	Kunar, Laghman, Nangarhar, Paktia and Paktika.
Central	Bamiyan, Ghazni, Kabul, Kapisa, Logar, Parwan and Wardak.
Southern	Helmand, Kandahar, Nimroz, Uruzgan and Zabul
Western	Badghis, Farah, Ghor and Herat
Northern	Balkh, Faryab, Jowzjan and Samanagan.

The UNDP (1993) created "Rehabilitation Regions", grouping the provinces into 8 regions. Data on regional problems in these regions was taken from SCA's Agricultural Survey of Afghanistan (1989-91).

North-East	Badakhshan, Baghlan, Kunduz, and Takhar.
North	Balkh, Faryab, Jowzjan and Samanagan
West	Badghis, Farah and Herat
East-Central	Bamiyan
East	Kunar, Laghman and Nangarhar
South	Ghazni, Khost, Paktia and Paktika
North-West	Helmand, Kandahar, Nimroz, Uruzgan and Zabul

Klemm (1996) classified Afghanistan on hydrological characteristics based on three major river basins (Amu Darya, Helmand and Kabul) and five other smaller basins.

Berding (1997), in his report on land management for FAO's Afghan Agricultural Strategy, redefined and re-delineated Dupree's eleven geographic zones using additional information from Swedish Committee for Afghanistan (SCA) reports, GOA's statistics and FAO's land cover statistics (1972) and estimated the land use (Annex 2 and 3).

In these eleven agro-ecological zones, Berding delineated and estimated the area under irrigation, rain fed, orchards, and total cropped and unclassified land use. The total cropped area was assessed

at 8.124 million hectares. Of this, 3.21 million hectares was irrigated and 4.84 million-hectares rain fed. The area assessed under orchards stood at 0.80 million hectares.

The following table gives comparative, provincial land area statistics for Geo-Data and DAI/Earth Sat and FAO (1999) statistics. FAO Project AFG/90/002 (1999) published a more refined Provincial Landcover Atlas. The project used more recent Thematic Mapper (TM) Satellite data as well as previous data from 1972 landcover, aerial photographs and KFA-1, 000 space images. The FAO Atlas, apparently, also made use of maps prepared by the Russians and Polish Geokart Atlas as spellings of the names like Badakhshan, as Badaxan and inclusion of new provinces Nuristan, Khost and Sar-e-Pul would betray.

COMPARITIVE LAND AREA STATISTICS (HECTARES)

Province	1983 GeoData	1993 DAI/Earth Sat	1999 FAO*
Badakhshan	4,362,596	4,376,867	4,407,362
Badghis	2,471,896	2,158,837	2,058,316
Baghlan	1,351,721	1,739,454	2,112,903
Balkh	1,514,891	1,235,990	1,725,358
Bamiyan	2,900,023	1,768,730	1,417,359
Farah	5,777,254	5,874,013	4,844,201
Faryab	2,039,366	2,110,274	2,029,627
Ghazni	3,260,033	2,155,023	2,290,457
Ghor	3,476,233	3,929,017	3,646,982
Helmand	**5,156,431**	**6,249,968**	**5,853,108**
Heart	4,044,544	4,246,587	5,476,313
Jowzjan	2,106,188	2,656,974	1,180,224
Kabul	318,052	442,583	446,086
Kapisa	451,696	542,914	184,202
Kunar	939,652	1,018,330	494,105
Kunduz	783,734	810,614	804,215
Laghman	808,080	701,818	384,215
Logar	420,098	449,885	387,872
Nangarhar	695,674	753,296	772,545
Nimroz	5,267,801	4,181,185	4,097,189
Uruzgan	3,154,361	2,851,892	3,077,150
Paktia	1,700,076	951,892	628,094
Paktika		1,917,018	1,947,009
Parwan	867,909	596,421	958,418
Kandahar	**4,443,404**	**4,945,437**	**5,397,121**
Samanagan	1,529,136	1,744,514	1,126,354
Takhar	2,080,029	1,228,320	1,233,672
Wardak	1,034,964	987,645	893,623
Zabul	2,003,883	1,756,494	1,733,194
Khost			414,949
Nuristan			922,506
Sar-e-Pul			1,600,075
Total	64,959,725	64,382,012	64,544,799

Source: *Geo-Data: Third World Almanac Gazetteer, 1983.*
DAI, Afghanistan land cover and land use, 1993 and FAO (AFG/90/002)
Note: *Differences of land area in FAO data of 1994 are apparently due to re-carving of three new provinces and addition and sub-station of districts in others.*

Table gives comparative, provincial land area statistics for Geo-Data and DAI/Earth Sat and FAO (1999) statistics. FAO Project AFG/90/002 (1999) published a more refined Provincial Landcover Atlas. The project used more recent Thematic Mapper (TM) Satellite data as well as previous data from 1972 Landcover, aerial photographs and KFA-1, 000 space images. The FAO Atlas, apparently, also made use of maps prepared by the Russians and Polish Geokart Atlas as spellings of the names like Badakhshan, as Badaxan and inclusion of new provinces Nuristan, Khost and Sar-e- Pul would betray.

The following two maps adapted from Geokart Atlas of Afghanistan show Agricultural sketch map and land use; irrigated arable land, dry farming i.e. *lalmi* land, irrigated orchards, woodland, rough grazing and non agricultural land and non agricultural land.

CLIMATE

Afghanistan has a very heterogeneous climate. This is due to rugged mountain relief characterized by snow-covered peaks of high altitude (up to 7,500 meters), deeply incised fertile valleys, sloping piedmont plains and large deserts.

The climate of Afghanistan varies according to elevation and its geographic location. Kabul, for example, at 1795 meters, has cold winters and pleasant summers. Jalalabad at about 550 meters is sub-tropical. Kandahar at 1,006 meters is mild year-round. Overall, daytime temperatures may range from freezing at dawn to almost 38 degree C at noon. In summers, temperatures as high as 49 degree C have been recorded in the northern valleys and in the southwest. Mid-winter temperatures as low as 9 degree C are common at the 2,000-meter level in the Hindukush.

Afghanistan is a relatively dry country. Average annual precipitation is about 300 mm, with most of it occurring between the months of October and April. Sandstorms are frequent in the deserts and plains. Annex 4 gives historical rainfall and meteorological data.

The typical continental climate varies from arid in the south and southwest to semi-arid in other parts. The high mountain ranges of Hindukush and Pamir are moderately humid. The northern slopes of Hindukush receive spring rains. A very small area in the east in Nangarhar and Paktia receive some residual monsoon showers in the summers.

Afghanistan is a land of extremes. Locked in between the harsh and uncompromising mountain and desert areas are fertile and productive river valleys. Three quarter of the land supports only sparse extensive grazing in mountains or deserts, while about 5 per cent of land area, which is the irrigated valley floors, produces 85 per cent of all crop-based agriculture.

LAND RESOURCES

The World Bank (1978) quoting Afghan Central Statistics Office reported the following land use.

(Million ha)

Type of land	
Arable	7.910
Uncultivated	*3.900*
Cultivated	*4.010*
Permanent Crops	0.372
Permanent Pastures	54.700
Forests	1.900
Mountain and Deserts	0.381
The report further classified land use area as:	
Cultivated	3.900
Irrigated	2.586
Rain fed	1.424
Tree Crops	0.372
Grazing	54.700
Forests	1.900
Summer Grazing	*22.460*
Winter Grazing	*16.210*
Non-Agricultural	*00.381*

Afghanistan's total landmass as per Geokart Atlas (1984) is 653,000 sq. km and an area of 7.9 million hectares was reported as farmland. This included 5.3 million hectares requiring irrigation. Pastures, rangelands, barren, deserts and mountains accounted for the remaining, using data from the Ministry of Planning, estimate GDP/GNP for the year 1975-76.

WATER RESOURCES

The three major rivers in Afghanistan are Helmand, Kabul and the border river Amu Darya (Oxus). The sources of most rivers lie in the mountains. The level of water in the river fluctuates widely, depending on the seasons. In some seasons, flow of water gets greatly reduced, becoming into a stream or dry. Over 80

per cent of the country's water resources have their origin in the Hindukush mountain ranges, which are a natural storage of water in the form of snow, and support flow in major rivers and streams by snow melt during summer.

Geokart (1984) Atlas of Afghanistan, prepared during the socialist regime, divided Afghanistan on the basis of three river basins as:

- Indus river drainage basin, rivers running towards Indus river;
- Amu Darya basin, rivers running to or towards Amu Darya; and
- Basin with interior basins, rivers running within, to southwest.

Klemm (1997) estimated that the country receives a total of 180,000 million cubic meter precipitations annually. Of this, 150,000 million cubic meters comes from the Hindukush ranges. The rest 30,000 million cubic meters comes through rainfall in other parts of the country. Klemm (1997) further refined the three large river basins into constituting sub basins and christened them as: Amu Darya basins, Desert basins, and Indus basins.

Part of Amu Darya Basin		
1. North-eastern river basins comprising of:		
River/Stream	Drainage area (Sq. km)	Mean Annual Vol. Mi. Cubic Meter
Panj*	27,800	36,420
Kokcha	21,100	5,700
Kunduz	37,100	6,000
Total	86,000	48,120
2. Northern river basins comprising of:		
Marghab, Kashan, Kuchk, Gulaan	26,200	1,350
Samangan (Khulm)	12,200	110
Balkhab	8,300	60
Saripul	19,300	1,650
Shirin Taghab	10,800	40
Amu Darya Dests	27,100	30
Total	116,000	3,340
3. Hari Rud Basin	39,000	1,600
Part of Desert Basins		
4. South-Western River Basins comprising of		
Faryab	27,800	1,250
Harut	23,800	210
Gulistan	9,100	40
Khash	10,500	170
Kaj Rud	20,800	60
Total	92,00	1,730
5. Helmand River Basins comprising of		
Ghazni	19,200	350
Helmand at Kajaki	42,200	6,000
Musa Gala	3,700	220
Arghandab	53,000	820
Other Loras	47,900	110
Total	166,000	7,500
6. Southern River Basin	70,000	70
Part of Indus Basins		
7 South-Eastern River Basins comprising of		
Gomal	10,700	450
Margo, Shamal and Kurram	8,300	400
Total	19,000	750
8. Kabul River Basins comprising of		
Panjshir	11,000	3,130
Kunar	27,000	15,250
Kabul*	30,000	2,540
Total	68,000	20,920

* *Panj River includes 20,000 sq. km of watershed in Tajikistan.*
Kabul River includes 14,000 sq. km of watershed in Pakistan

Amu Darya basin in the north is separated by the Hindukush mountain ranges from the desert basin in the south and Indus basin in the east. Within these three principal watersheds, most in Afghanistan and some outside the country, provide country's water resources. A total of eight basins form part of the three major river basins.

IRRIGATED AGRICULTURE

Ancient ruins of settlements near Kandahar and Boost near Lashkargah point to irrigated agriculture dating back to more than 4,500 years. Settlements and irrigation development went hand in hand. With the exception of certain areas suitable for rain fed agriculture, climatic conditions prevailing in Afghanistan do not allow crop cultivation. The allocation of water and land is closely related to customs and traditions of the settled population. Maintenance of

traditional irrigation schemes has always been a well-defined tradition in the communities benefiting from the scheme.

There are wide discrepancies among the various estimates of area under irrigation. Amin and Schiltz (1976) made the first attempt. Later estimates were made by FAO (1978), DAI Earth Sat (1993), Klemm (1997) and FAO 1999.

Amin & Shiltz (1079)	2,387,228 ha
DAI/Earth Sat (1993)	2,349,188 ha
FAO Land Cover Survey (1978)	3,400,000 ha
FAO Afghan Agriculture Strategy (1997)	2,630,000 ha
FAO (1999)	3,207,796 ha

Notwithstanding the marked discrepancies in various estimates, in pre-conflict year 1978, the irrigated land produced nearly 80 per cent of all wheat and 85 per cent of all crops. The total irrigated area in 1978 was in the order of some 2.63 million hectares (corresponding to the 1992 Landcover Survey) but reduced from 3.4 million hectares as surveyed in 1972. Irrigation using different sources was estimated as: Table 14.

- 0.98 million hectares by ephemeral streams (traditional), *Karez* and *arhads*;
- 1.32 million hectares by perennial rivers (traditional); and
- 0.33 million hectares by perennial rivers (modern).

PRODUCTION AND MANAGEMENT

Crops in Afghanistan are relatively diversified and this gives its agriculture the ability to adjust to changed socio-economic and political environment. Six major categories of crops are produced in Afghanistan to natural or man-made contingencies.

- Cereal Crops: Irrigated wheat, maize, and rice rain fed wheat, barley and millets.
- Industrial Crops: Cotton, linseed, sesame, sugarcane, sugar beet and sunflower.
- Pulses: Mung bean, beans, and chickpeas.
- Forage Crops: Clover, alfalfa and rapeseed
- Horticultural Crops: Apples, pomegranates, grapes, almonds, and apricots.
- Vegetables: Potatoes, onion, tomatoes and melons. (Melons are sometimes considered a horticultural crop).
- Cash Crops: Poppy and miscellaneous condiments.

A number of other minor crops are also produced all over the country. Crop seasons vary, depending on elevation and availability of moisture.

LAND USE PATTERN

Of Afghanistan's total surface area, only 7.9 million are estimated to be arable, the remainder being high mountain land and arid wasteland. The arable land is scattered throughout the country, primarily in valleys along rivers and other water sources. The total irrigable area is about 5.3 million hectares of which half is irrigated annually while the other half remains fallow. Only 1.4 million hectares of the land irrigated in sequence has sufficient water throughout the year to allow double cropping.

Before 1978, the irrigated land area provided Afghanistan with 85% of all food and industrial crops produced. Another 1.4 million hectares of cultivated rain-fed land supplemented the irrigated areas. Thus, about 4 million hectares of land were cultivated annually before 1978 by 1.2 million farm families.

The CSO of the DRA, in its publication of the year 1362 Afghan calendar (March 1983 to March 1984) gave the following land use estimates and statistics.

LAND USE ESTIMATES 1984 (IN MILLION HA)

Total Farmlands	Area
Arable	7.900
Irrigated	2.600
Rain fed (Barani)	5.300

Source: CSO, GOA

LAND USE STATISTICS 1983-84

Category	Area (ha)
Agricultural area	37,910,000*
Arable land	7,910,000
Area under temporary crops	3,683,500
Area under permanent crops	143,500
Uncultivated area	4,083,000
Pastures and meadows	30,000,000
Non-Agricultural area including mountains	25,412,500
Forests	1,900,000*
Total	65,222,500*

Source: CSO

Area under various classes is mutually inclusive. The figure 65,222,500 includes agricultural area (37,910,000) and non-agricultural area inclusive of mountains (25,412,500) and forests (1,900,000)

IRRIGATED AREA PER PROVINCE IN 1978

Province	Area (ha)	Province	Area (ha)
Kabul	73,261	Paktika	39,648
Ghazni	101,241	Wardak	29,127
Badghis	66,596	**Kandahar**	**121,662**
Ghor	57,726	Nangarhar	85,707
Logar	40,631	Takhar	150,788
Bamiyan	28,103	Parwan and Kapisa	100,094
Laghman	34,742	Badakhshan	96,907
Paktia	49,919	Baghlan	145,344
Balkh	162,921	Kunar	17,04
Jowzjan	100,089	Samanagan	80,899
Kunduz	195,324	Farah	49,091
Kabul	64,260	**Helmand**	**111,906**
Faryab	82,439	Nimroz	76,475
Uruzgan	98,667	Herat	259,552

Source: FAO (1978)

The world is going through a changed scenario. Prices of mineral oil have soared to a new level. They are most likely, going to adjust to around 50 dollar a barrel. Price of synthetic fiber will rise and demand for cotton, already in high, will further increase.

Both Helmand and Kandahar have the potential for increasing production of oilseed crops. Which of the oilseed crops will depend on demand and political environment? If a ban on poppy cultivation could be enforced, land thus spared could go to production of oilseeds including cotton. Further a policy decision has to taken to raise market price of imported edible oil. If these pre-requisites are affected the writer assesses that following oilseed crops would enter the cropping system.

Kandahar: Canola type rapeseed and sunflower for use as edible oil.
Production of sesame crop would increase not for crushing into edible oil but high value produce for export.
Groundnut production may increase again not for expelling of edible oil but as a nut crop.

Helmand : Production of cotton will go up; private ginneries will revive or new will come up. Lint cotton for export and seed will contribute to national production of edible oil.
Production of Canola type rapeseed and sunflower will enter the cropping for crushing as edible oil crops.
Production of sesame crop would increase, not for oil but a high value crop for export.
Production of groundnut may receive a spurt but again as a high value nut crop.

CURRENT STATE OF ECONOMY

Afghanistan's economic outlook has improved since the fall of the Taliban regime in 2001 because of the infusion of billions of dollars in international assistance for the recovery of its agricultural sector, and the re-establishment of market institutions. Agriculture boomed in 2003 with the end of a 4-year drought, but

drought conditions returned for the southern half of the country in 2004. However, heavy snow and rains during autumn and spring (1994-95) since has improved prospects of agriculture.

Despite the progress of the past few years, Afghanistan remains extremely poor, landlocked, and highly dependent on foreign aid, farming and trade with neighboring countries. It will probably take the remainder of the decade and continuing donor aid and attention to raise Afghanistan's living standards up from its current status among the lowest in the world. Much of the population continues to suffer from shortages of housing, clean water, electricity, medical care, and jobs.

Continuing large scale poppy cultivation and opium trade may account for one-third of GDP and looms as one of the most serious challenges to the country and international partners engaged in reconstruction.

GDP Purchasing Power Parity	$ 21.5 billion (2003 est.)
GDP – Real Growth Rate:	7.5% (2004 est.)
GDP – Composition by sector:	Agriculture: 60% Industry: 20% Services: 20% (1990 est.)
Investment void (gross fixed):	
Poverty below poverty line:	53% (2003)
Household income or consumption by percentage share:	Lowest10%: NA Highest 10%: NA
Distribution of family income	-
Inflation rate (consumer prices):	10.3% (2003)
Labor Force:	11.8 million (2001 est.)
Labor Force – by occupation:	Agriculture: 80% Industry: 10% Services: 10% (2004 est.)
Unemployment Rate:	NA
Budget:	Revenues: $ 300 million Expenditure: $ 609 million including capital expenditure of NA (FY 04-05 budget)
Public Debt:	Void
Industries:	Small-scale production of textiles, soap, furniture, shoes, fertilizer, cement, hand-woven carpets; natural gas, coal, copper
Industrial Production Growth Rate:	NA
Electricity – Production:	540 million kWh (2002)
Electricity Production by Source:	Fossil Fuel: 36.3% Hydro: 63.7% Other: 0% (2001)
Electricity Consumption:	652.2 million kWh (2002)
Electricity Consumption, Per Capita:	22 Kilowatt-hours (2002)
Electricity – Exports:	0 kWh (2002)
Electricity – Imports:	150 million kWh (2002)
Oil Production:	0 bbl/day (201 est.)
Oil – Consumption:	3500 bbl/day (2001 est.)
Oil – Consumption Per Capita:	0.12 bbl/day per 1,000 capita (2001 est.)
Oil – Exports:	NA
Oil Imports:	NA
Oil Proved Reserves:	0 bbl (1 Jan. 2002)
Natural Gas – Production	220 million cu m (2001 est.)
Natural Gas – Consumption	7 cu m per capita (2001 est.)
Natural Gas – Exports:	0 cu m (2001 est.)
Natural Gas – Exports:	0 cu m (2001 est.)
Natural Gas – Proved Reserves:	49.98 billion cu m (1 Jan. 2002)
Agriculture – Products:	Opium, wheat, fruits, nuts, wool, mutton, sheepskins, lambskins
Current Account Balance	Void
Current Account Balance – Per Capita:	Void
Exports:	$ 446 million (not including illicit exports or re-exports (FY 2003-04)
Exports – Commodities:	Opium, fruits and nuts, hand-woven carpets, wool, cotton, hides and pelts, precious and semi-precious gems
Export – Partners:	India 23.1% Pakistan 20.5% US 12.9% Germany 6% (2004)
Imports:	$ 3.759 billion (FY 2003-04)
Imports – Commodities	Capital goods, food, textiles, petroleum products
Imports – Partners:	Pakistan 25.2% US 8.7% South Korea 7.7% India 7.6% Turkmenistan 4.5% Turkey 4.1% (2004)
Reserves of foreign exchange and gold:	Void

Reserves of foreign exchange and gold – per capita:	Void
Debt – External	$ 8 billion in bilateral debt, mostly to Russia; Afghanistan has $ 500 million in debt to Multilateral Development Banks (2004)
Debt – External per capita:	$ 267 per capita (2004)
Economic Aid – Recipient:	Internal pledges made by more than 60 countries and international financial institutions at the Berlin Donors Conference for Afghan reconstruction in March 2004 reached $ 8.9 billion for 2004-09.
Currency (Code):	Afghani (Afg)
Exchange Rates:	In 2002, the Afghani was revalued and the currency stabilized at about 50 Afghanis to the dollar; before 2002, the market rate varied widely from the official rate.
Fiscal Year	21 March – 20 March

Comparative Statistics Year 1357 (1978-79) and 1383 (2004-05)

	1357	**1383**
Total Geographic Area	652,626 sq. km	
Estimated Population	15.108 million	
Average Population Growth Rate	2.51%	
Total Arable Area	Approximately 8 million hectares	
Total yearly Cultivated Area	About 50% of Total Arable land	
Administrative units	325 minor civil divisions	364
	27 provinces	34
	5 sub-provinces (Loy Woluswalis) 175 districts (Woluswalis) 118 sub-districts (Alaqadaris) 15,310 villages	 364
Average annual precipitation	50-400 mms	50-400 mms
Contribution of agriculture to national product	50%	60%
Labor force directly or indirectly engaged in agriculture	71.6% of total labor force	-
Yearly irrigated area	87% of total cultivated area	-
Area under grains	87% of the total cultivated area	-
Use of chemical fertilizer	12% of the cultivated area	-

POPULATION

There has never been a formal census of population in Afghanistan. There was a census planned in 1979 but could not be completed. However, a fair estimate of population was arrived despite incomplete survey. It is now considered a base for subsequent estimates. As population data is considered crucial for any development planning, under the presidential decree a task team from CSO, Government of Afghanistan, UNAMA and UNFPA was given the task of preparing population estimates using household listing data from incomplete population census of 1979. *Current estimate of 23.3 million is being questioned by independent social scientists as being on the low side. Similarly they show suspicion of estimate of urban population.*

In Million

Description	**1355 (1976-77)**	**1356 (1977-78)**	**1357 (1978-79)**	**1383 (2004-05)**
Total Population	14.377	14.738	15.108	23.3
Male	7.476	7.664	7.856	11.1
Female	6.901	7.074	7.252	10.6
Rural Population	10.991	11.255	11.525	17.0
Urban Population	2.004	2.068	2.134	4.7
Settled Population	12.995	13.323	13.659	21.7
Nomad Population	1.382	1.415	1.449	1.5

Source: Central Statistical office, Ministry of Planning, GOA, 1978, 2004.

AGRICULTURE

Agriculture remains the foundation of the economy not only because of its large contribution to GDP and national employment but also because it provided many of the materials, upon which much of the country's industry and trade depended.

Cotton was the critical raw material for the textile industries and a valuable export; wool was the main input for the important carpet industry and was also an important export commodity. Cottonseed was the key input for the important carpet industry and was also an important export commodity. Cottonseed was the key input for the extraction, refining and soap industries.

The sugar beet crop was refined domestically, and there was also fruit and nut processing and packaging for export. Hides and skins, such as, karakul, were key inputs for much of the local handicrafts industry and were also major export items.

Despite the low level of technical development and the slow growth rate of its output, agriculture dominated the economy throughout the 1970s, 1980s and 1990s. The share of agricultural output in GDP is variously assessed between 60-70%. These figures were probably too low, for a great deal of agricultural output remained on the farms as subsistence production. The economy's overall growth, therefore, depended largely on this sector.

A joint World Bank/UNDP study (1999) estimated that decline in value added agriculture, except raisins, continued for flour, textile, sugar and edible oil. All indicators are that this situation has not changed much since 1999.

During the last fifteen years the food and agricultural production system of the eastern and southern provinces has developed informal linkages with the NWFP and Baluchistan provinces of Pakistan. Afghan provinces, especially the Nangarhar, Paktia, Paktika, Zabul, Kandahar and Helmand, receive informal support for their needs of crop chemicals (pesticides and fertilizer) from adjoining regions on this side of the Durand Line.

Besides chemical inputs and agricultural machinery for production, informal trade in food and consumer goods abound. Processed edible oil, rice, sugars and flour of Pakistan origin and markings are freely available in Kabul, Helmand and Kandahar. The food and food production economy of the eastern provinces appears to have merged with adjoining provinces in Pakistan. In a similar manner, though not as extensive as in the east and south, informal trade linkages with Iran and Turkmenistan have come to fore for the western and northern provinces.

Before the conflict Afghanistan exported modest quantities of edible oilseeds. These included sesame, rapeseed and poppy seed to neighboring countries. Official statistics of the CSO department show an export of 3900 tons of poppy seed during 2004.

VOLUME OF OILSEEDS EXPORTED FROM AFGHANISTAN BEFORE 1979 (TONS)

1353 (1974-75)	1354 (1975-76)	1355 (1976-77)	1356 (1977-78)	1383 (2004-05)
9,985	15,837	19,314	9,516	3,900*

** Poppy Seed*
Source: CSO, Government of Afghanistan, Ministry of Planning, and GOA, 1978, 2004.

VALUE OF EDIBLE OILS IMPORTED BEFORE 1979 (MIL. US $) AND CURRENT IMPORTS

1353 (1974-75)	1354 (1975-76	1355 (1976-77)	1356 (1977-78)	1383(2004-05)
8.57	8.62	13.93	10.93	66.27*

** From Pakistan alone, documented figures only. CSO, Government of Afghanistan, Ministry of Commerce, GOP, 2005.*
Source: CSO, Government of Afghanistan, Ministry of Planning, and GOA, 1978, 2004.
Import is mentioned only in terms of value. Quantities are not given.

LOCAL PRODUCTION OF PROCESSED EDIBLE OILS (TONS)

1354 (1975-76	1355 (1976-77)	1356 (1977-78)	1383(2004-05)
10,600	10,100	13,000	15,000*

Estimate provided by private sector importers of edible oil.

III. CURRENT STATE OF AGRICULTURE AND AGRI-PROCESSING

The current development trends of various sectors in Afghanistan and their growth prospects are mixed at best. The economy is primarily agriculture-based (crop production, horticulture, and livestock), supporting about 85% of the total population and accounting for about 50% of gross domestic product (GDP) in 1993; 67% of the total labor force in 2000; and 65% and 38%, respectively, of total merchandize exports and imports in 1999.2 In recent years both agricultural and non-agricultural production declined, the latter at a much faster rate. Agricultural production has been adversely affected by four years of drought, land loss through mines, degradation of irrigation systems and natural resources (cultivation of steep hillsides, stripping of brushwood for fuel, and reduced productivity due to the use of animal dung for fuel rather than fertilizer), population displacement, and war.

The total land area of Afghanistan is 64.75 million hectares. Only 12.13% of the land or 7.91 is arable. The area under permanent crops is 0.225. The availability of water, which is unreliable, and the length of the growing season determine cropping intensity. There are seven farming systems5 based on landholding, agro-ecological zone, irrigation availability, and integration with livestock. About 30% of total arable and permanent cropland was irrigated in 1999 (80%t of wheat and 85% of all crops), much of it through community-based small and medium-scale irrigation (river valley) schemes. Large-scale irrigation systems have been built along the Hari Rud, Helmand, Qunduz, and other rivers. The bulk of the irrigation facilities are now in serious disrepair, and significant parts are inaccessible due to mines. In addition, large-scale facilities suffer from management problems.

Wheat is the main crop, comprising 80% of total grain production. Its production declined by over 50% between 1998 and 2000, from a relative high of 2.83 million metric tons (t) to 1.49 million t. Over the same period the food production index (1989-91=100) declined from 161 to 118, and per capita food production index from 107 to 75.7 It is estimated that cereal production as the main component of the food supply has fallen by 40% since 1999.8 According to the World Food Program (WFP), low irrigation reserves and low soil moisture from the lack of recent rain have affected 2001-2002 crop production. WFP places the current food production gap at 50% and the cereal deficit at 2.2 million tons. To Afghanistan's good fortune, there was above average precipitation during the previous year and resulted in bumper production of wheat and other *Rabi* crops.

Horticultural production and exports have followed a similar cycle. Although its predominant role in exports in the 1970s (40%) declined over the years, in 1999 it still accounted for about 30%. Cultivation of poppy, a traditional crop, is on the rise again and will continue to do so unless viable alternatives are provided. Poppy provides food security for poor farmers (owners, tenants, and sharecroppers) and was cultivated on about 82,000 ha in 2005 producing 3,276 tons of opium.

Land and water policies are critical for Afghanistan. Ownership and access to land and water resources is highly skewed, giving rise to disputes and conflicts. Land reform programs of the 1960s and1970s were not successful in ensuring equitable access. On the contrary, they interfered with customary patron-client relationships, cutting off valuable sources of support and credit. Currently land can be accessed through various customary practices such as sharecropping, leasing, renting, moneylenders' lease, and mortgage. Systems in place are complex, and there are wide variations across the country. It seems that the land tenure system could be a constraint to long-term investment in agriculture. Access to land and water needs to be streamlined, but this has to be achieved with due respect for the traditional relationships and cultural heritage of the people of Afghanistan. Land policy is very complex.

Afghanistan, for its agro-ecological norms, farm size, climatic conditions, availability of inputs and special socio-economic conditions, which vie for food and cash, present a formidable challenge to agronomists and planners defining farming system.

Before the conflict, fairly stable agricultural production systems were evolved for different agro-ecological conditions. All through the turmoil of the past 26 years, the first 10 years saw massive disruption of agricultural activities through destruction of irrigation structures and mass exodus of rural farming communities.

Since 1988, return of the refugees began, less in the beginning and more in the nineties and since fall of the Taliban. Re-possession of abandoned farms and villages started the international community assisting. FAO and NGOs began helping farmers to innate phoenix-like strength of character has almost revived agricultural activities. Material and institutional inputs required, however, continue to bedevil the return to complete rehabilitation.

At places, traditional farming systems have been re-estimated. Conforming to changed socio-economic realities, cropping patterns adjusted at other places. Emphasis on food grain increased; and industrial crops like cotton, sugar beet and sugarcane decreased.

Poppy crop is now an entrenched crop within all the seven defined Farming Systems. This was the consequence as the cash-starved Afghan peasants, indebted to drug lords and moneylenders, resorted to large-scale production of poppy crop. In areas where there was no poppy crop in the past, large-scale cultivation of poppy is being noticed. The UN agency (UNODC) has reported spread of poppy crop for the past 10 years as:

1994	09	Provinces grew poppy crop
1995	11	Provinces grew poppy crop
1996	12	Provinces grew poppy crop
1997	12	Provinces grew poppy crop
1998	15	Provinces grew poppy crop
1999	18	Provinces grew poppy crop
2005	29	Provinces grew poppy crop

Source: UNODC.

The present study is for assessing state of oilseed processing in the two southern provinces of Kandahar and Helmand. All the information and data are on the basis of existing sources and surveys.

KANDAHAR PROVINCE

Kandahar is the second largest province of Afghanistan. It is a semi-arid southern province with an international border in the southeast with Pakistan and north eastern, northern and western borders with Zabul, Uruzgan and Helmand provinces respectively. The southern half of the province is desert. Starting from the center, north and east, topography becomes mountainous. The tri-river basin, of Arghandab, Tarnak and Arghistan rivers, and all tributaries of Helmand River, around the capital city is the most fertile agricultural region. The districts of Arghandab, Kandahar, Dand and Daman are mostly irrigated and called the fruit basket of Southern Afghanistan.

There are 17 administrative districts in the province. Population estimate was 567,000 per census 1979 and current estimate is 971,000.

Total land area is 4,945 million hectares, of which 271,431 hectares are irrigated and 66,110 hectares rain fed. There is a US built dam called Dhala on Arghandab River that is the major source of irrigation water to modern canals and distributaries. Karezes numbering about 631 are the second major source of irrigation. Irrigation from springs is the third source of irrigation.

CLIMATE

Kandahar with its natural endowments of semi-arid climate and irrigation facilities was a prosperous and surplus producer of food. Strategically located on the land route of Pakistan, it was a crossroad of trade

and commerce for the Southern, central and western regions of Afghanistan and an outlet to the sea via Karachi in Pakistan.

CLIMATIC DATA OF KANDAHAR

Months	Mean Monthly Temperature (C)	Mean Monthly Relative Humidity (%)	Mean Monthly Precipitation (mm)
January	6.7	61	50.8
February	10.0	58	35.8
March	15.0	49	37.1
April	20.6	43	23.4
May	25.0	37	7.6
June	28.4	33	0.0
July	31.1	30	2.3
August	27.1	20	-
September	21.1	20	-
October	18.2	28	1
November	12.6	38	4
December	9.4	49	24

Source: The Bioclimate of Afghanistan, Kabul University, 1972 (Translated from Dari

ECONOMIC INFRASTRUCTURE

The economy of Kandahar depends upon agriculture with animal husbandry and commercial business playing a secondary role. The geographical location of Kandahar and the presence of important transportation links such as the Kandahar/Kabul, Kandahar/Heart and Kandahar/Spin Boldak highways are basic factors contributing to the development of this province in addition to HAVA, which provided a sophisticated irrigation system.

Arghandab, Dand, Panjwai and Maiwand are the most productive districts adjacent to Kandahar city. There districts were also the most heavily damaged in the war. Many orchards and vineyards were destroyed either in the fighting or through neglect. The fighting has largely eliminated Kandahar's commercial agricultural economy, which was based on the agricultural production of these districts.

A modest industrial base was founded in 1934 with the establishment of the Pushtun Company. Kandahar Fruit Exporting Company was established in 1959 and activated as a factory in 1963. Sorting, storing and drying fruits or making syrups and compotes were the main activities of this factory. The factory has disappeared more, destroyed or looted. Two textile and clothing plants, fur coat, jeweler, metal work and embroidery centers existed in Kandahar city (Polish Atlas of Afghanistan, 1987).

The agricultural belt of Kandahar follows a triangular road stretching in a single line from Maiwand district through Panjwai to Dand district. From Dand this single road communication breaks in two and goes south to Spin Boldak and also from Dand directly to Kandahar city, the capital of the province.

Kandahar is located in the southwest agricultural zone. The total agricultural land under cultivation is estimated to be 687 thousand *jeribs* (1 jerib = 0.2 hectare) or around 158 thousand hectares. Of this close to 590 thousand *jeribs*, 118 thousand hectares or almost 75 per cent of all cultivated land is dependent on irrigation, the average annual rainfall being 50 – 150 mm. Canals are the main source of irrigation followed by karezes, springs and wells in that order. Canals were supplying irrigated water for 81.5 per cent of the total irrigated land in Kandahar.

Soils of the province range from sandy to silty loams or silty clay loams. Depth ranges from shallow to deep. Although some salt efflorescence was observed along river areas, salinity does not appear to be a serious problem in crop production.

Prior to war, Kandahar could rightly boast of strong and flourishing agriculture based on cereals, pulses, and vegetable and fruit crops. While the tri-river basin (Arghandab, Tarnak and Arghistan rivers) basin is the hub of fruit growing and a variety of field crops. The districts of Daman and Arghistan were the breadbaskets of the province. Kandahar is also a main producer of poppy crop. In 1999 UNDCP estimated an area f about 6 thousand hectares made poppy crop.

Kandahar supplied maize, potato, onion, pomegranate, grapes, raisins and dry apricots in provinces in the north and northeast within Afghanistan and to Pakistan and India via Baluchistan and NWFP. Raisins were also exported to Europe and USA.

There is no official record of shipment from Kandahar to other provinces and for cross border export, prior in 1978. A UNDCP (1997) report estimated the following commodities exported from Kandahar in 1978.

Commodity	Quantity (tones)
Maize	8,000
Potato	15,000
Onion	10,000
Grapes	10,000
Dry apricots	1,000
Raisins	9,000

In Kandahar the measure of weight is different from the rest of Afghanistan. The basic measure is "Kandahar maund" which equals 4.5 kg. One hundred Kandahari maunds equal to 450 kg.

An FAO publication (1999) estimated a total of 26,929 hectares under orchards, 251,029 hectares under irrigated and 53,524 under rain fed agriculture in the province. Poppy has become an endemic part of the farming system in the province.

Arghandab, Dand, Panjwai and Maiwand are the most productive districts adjacent to Kandahar city. These districts were also the most heavily damaged in the war. Many orchards and vineyards were destroyed either in the fighting or through neglect.

ECONOMIC PROFILE OF KANDAHAR

Area:	49,371 square kilometer
Altitude:	900 – 1750 meters
Capital:	Kandahar City
Number of Districts:	16 – Arghandab, Arghistan, Daman, Dand, Khakrez, Maiwand, Maruf, Panjwai, Shahwalikot, Shegah, Shorabak, Nesh, Reg and Zeri
Planning Region:	Southern
Bordering Provinces:	Zabul, Uruzgan, Helmand
Population (1979) Estimated (2004)	567,200 971,400
Population Density (2004)	19
Urban Population:	32% of total
Urban Base: Agriculture and horticulture Livestock	 Grain and fruit surplus Cattle, Sheep and Goats

ADMINISTRATIVE DIVISIONS AND PHYSICAL CHARACTERISTICS

District	Area Sq. Km.	Altitude Meters
Arghandab	586.60	1,000
Arghistan	4,308.30	1,300
Daman	1,373.50	1,040
Dand	531.30	1,000
Ghorak	1,617.50	1,175
Kandahar City	38.80	1,000
Khakrez	1,129.10	1,625
Maiwand	10,424.70	942
Maruf	3,245.30	1,750
Nesh	1,744.00	1,500
Panjwai	3,989.30	950
Reg	5,134.80	900
Shahwalikot	2,931.30	1,100
Shegah	2,961.50	950
Shorabak	4,964.40	1,075
Spin Boldak	4,391.20	1,210
Zeri*		

*Source:CSO *Newly created distric in 2004t, not yet delineated.*

MARKETING INFRASTRUCTURE

Districts	Nature of Market		Districts	Nature of Market	
	Bazaar	Serai		Bazaar	Serai
Arghandab	3	0	Arghistan	2	0

Daman	0	0	Dand	0	0
Ghorak	0	0	Khakrez	2	0
Maiwand	1	0	Maruf	1	1
Nesh	0	0	Panjwai	4	0
Reg	0	0	Shahwalikot	0	0
Shegah	0	0	Shorabak	0	0
Spin Boldak	3	5			

Source:UNIDATA, 1990

There are 15 *bazaars* and 5 *Serais* in Kandahar province. A *serai,* shortened from *`caravan serai'*, is a marketing-center. Six of the *bazaars* are large and active bazaars selling all sorts of commodities like food staples, cloth, plastic products, agricultural inputs and tools and cooking or eating utensils. These bazaars are two in Arghandab, one each at Khwajamulk and Hadirah, one in Panjwai at Panjwai center, two in Spin Boldak (Weish and Loy Karez) and one in Maiwand district in Kuskkinakhud.

HELMAND PROVINCE

Helmand is located among the southern provinces of Afghanistan bordering Kandahar, Farah, Uruzgan and Zabul. Until 1940, the province was part of Kandahar but, after the Helmand-Argandab Irrigation project, it became a separate province with capital Grishk. In 1957, the capital changed to the newly built city of Lashkargah (ancient Bost). Lashkargah became the center of industry in southern Afghanistan. The cotton processing factory, cooking oil production and refinery, stone polishing and processing factory, wood processing factory, Boghra Electric production Plant, and other small-scale businesses were established.

The city of Grishk was the capital of this province until 1957 and is 45 km to the north of Lashkargah. Grishk is located on western bank of the Poshta Rud River, adjacent to the Heart-Kandahar highway.Other townships are Musa-Qala, Nowzad and Sang in the north, Chah-Anjir and Darwaishan, Khalag are other townships, which had absorbed many businesses in the area.

Unfortunately, as consequence of war, opium has become the major agricultural output of the province and mainstay of the economy of this once agriculturally rich province.

CLIMATE

Climate of the province is hot in summer and mild in winter, which allows multiple cropping under irrigation. The province is sub-divided into 12 districts (now 13) and sub-district and had a population of 518,000 in 1979.

Helmand suffered severe war-effects and, as a result, 16,630 families have to migrate to Pakistan and Iran as refugees (UNHCR 1990). However, since 1990s, most of them reportedly have returned.

Helmand province is located in southern Afghanistan, between Kandahar and Uruzgan provinces to the east and northeast and Nimroz and Farah to the west and northwest. With an area of 62,337 sq km, it is the largest province in Afghanistan. Topographically, the province is a rocky foothill in the north blending in the center to relatively flat, clay desert, becoming sandier to the south and east.

The principal physical feature is the Helmand River, which roughly bisects the province diagonally from northeast to southwest. It rises ion a western extension of the Hindukush just west of Kabul and runs south-west for 536 km where lit joins the Arghandab River just below Lashkargah. The combined rivers continue for another 430 km to the marshes of the Sistan basin.

Geographically, the province is part of the larger Helmand Valley-Sistan Basin region, which includes parts of Kandahar, most of Helmand and part of Nimroz provinces. In this region, mean annual precipitation is less than 100 mm, rising to 200-300 mm in the northern foothills of the central mountain above 1000 m. The number of dry months varies from 12 in the southwest to 9 months in the foothills. A local phenomenon is the wind of 120 days (*Bad-i-Sad-o-Bist-Roz*) with winds of gradually increasing

strength from July and blowing through until September (mean maximum September wind is 173 km/day). Seasonal dust storms (Khabad or dust wind) also occur.

With most of the province as desert, the river flood plain is the major focus of the population. Average population density of Helmand province is around 7 persons/sq km. In fact, the settled population is concentrated along the river either in the foothill regions with irrigation fed by streams springs or karezes, or on the large-scale irrigation development of the central plain. In 1975, total cultivable land in the province was estimated at 2.846 sq km (4.5% of area) and total irrigable land at 1,589 sq km (2.5% of area).

SOCIO-ECONOMIC STATISTICS OF HELMAND 1357 (1978-79) AND 1383 (2004-05)

Items	1357 (1978-79)	1383 (2004-05)
Minor Civil Divisions	13	03
Districts/Towns (Woluswalis)	08	08
Sub-Districts (Alaqadari)	04	-
Villages	606	600
Population	51,800	76,300
Cultivated Area:		
Irrigated	162,720	-
Non-Irrigated	2,200	-
Source of Irrigation:		
Streams and Canals (227)	135,005	-
Springs (135)	4,320	-
Karezes (276)	22,830	-
Persian Wells (60	500	-
Crops Cultivated:		
Irrigated Wheat	119,180	-
Dry land Wheat	500	-
Vegetables	4,660	-
Industrial crops (cotton mostly)	5,530	-
Nation-wise area, cotton and oil-seed = 178,000 hectares		
Miscellaneous crops	9.090	-
Livestock:		
Goats	78,820	-
Sheep	339,000	-
Cattle	61,000	-
Horses, camels and donkeys	49,000	-
Poultry	242,000	-

POPULATION STATISTICS OF KANDAHAR AND HELMAND

Central Statistics Office (CSO, Government of Afghanistan) of the Ministry of Economic has published population estimates for 34 provinces and 364 districts. Total population for the year 1383 (2004-2005) is estimated as 23.2 million comprising of 1.5 million nomads and 4.7 million urban and 17 million rural populations. Of the total settled population of 21.7 million 11.1 million are male and 10.6 million female. Population data for the year 1383 (2004-05) for Kandahar and Helmand and their constituting districts are given below:

Kandahar Population Statistics		Helmand Population Statistics	
Kandahar city	432,300	Lashkargah	85,800
Daman	29,500	Nahr-e-Saraj	99,400
Arghandab	52,700	Kajaki	60,700
Shah Wali Kot	36,900	Moosa Qalah	50,300
Khakrez	19,400	Bhugran	69,400
Ghorak	8,200	Nowzad	43,300
Maiwand	49,900	Washier	13,300

Panjwai	74,100	Nad Ali	100,500
Reg	7,600	Nawa-i-Barakzai	79,100
Shorabak	9,800	Reg-i-Khanishin	22,400
Spin Boldak	96,400	Dishu	17,400
Arghistan	29,000	Garmser	74,800
Maruf	28,100	Sangin Qala	59,900
Zeri	73,100		
Myanesheen	12,800		
Nesh	11,400		

MONTHLY MAXIMUM AND MINIMUM AVERAGE TEMPERATURE AND RELATIVE HUMIDITY, LASHKARGAH-HELMAND (MAY, 2003 – MAY 2004)

Months	Average temperature (ºC)		Average relative humidity (%)	
	Maximum	Minimum	Maximum	Maximum
January	19.5	6.7	80.9	60.1
February	23.1	7.2	70.3	46.6
March	29.3	12.5	49.8	30.4
April	34.5	17.4	38.3	24.3
May	37.5	10.2	30.4	20.1
June	45.0	25.4	31.1	17.7
July	48.8	29.7	38.4	20.5
August	44.0	25.2	33.4	19.0
September	36.5	19.1	33.3	20.1
October	31.0	12.3	36.0	21.4
November	22.7	6.4	51.6	32.9
December	19.2	3.7	70.2	46.6

IHELMAND AND KANDAHAR, POTENTIAL FOR PROCESSING OF OILSEED CROPS

In 1952 a dam on Helmand River at Kajaki for hydroelectric power generation, storage of irrigation water and flood protection was constructed. The dam had a storage capacity of 1,500,000 acre-feet of water.

In 1953 a dam on Arghandab River in Kandahar was completed and christened Dahla. Based on its storage two canals were dug up for irrigation.

During the period 1,328-1,332 (1959-1963) construction of Boghra dam on river Helmand at Grishk was completed with a 70 km long irrigation canal. Boghra canal was designed for a 2,800 cubic meter/second carrying capacity.

With the construction of these dams modern irrigation that that developed in these two contiguous provinces an era of agriculture development followed. Both these province became not only surplus in production of cereals, horticultural and industrial crops but exporters to other provinces and abroad.

Beginning of the misfortune began in 1979 when the populace revolted against the communist regime in Kabul for its socialist programs, production of oilseed crops was on the rise at national and well in the two provinces under study.

In the year 1979 **nationwide** area under production of different oilseed crops was estimated as follows:

- Cotton 84,000 hectares
- Sesame 47,200 hectares
- Sunflower 11,800 hectares
- Linseed 55,700 hectares

Of these oilseed crops cotton seed was the main producer of edible oil. Some quantities of sesame, sunflower and linseed were crushed in the Northern provinces for edible oils but sesame as seed gave better returns than oil. Similarly, linseed was sometime crushed for edible oil but had good export market for non edible industrial oil. From these oilseed crops the maximum edible oil that was produced in any one year, before the conflict was 15,000 tons mostly from cottonseed.

Old records of GOA mention that in the year 1978, a quantity of 19,506, processed edible oil worth US $ 15.71 million was imported (CSO Statistics prepared by Islamic Republic of Afghanistan, 1994). This is the only record of quantity and cost. All subsequent data reported by the government, including the last two CSO's Annual Reports, mention only the value of imported edible oil and not the quantity.

The post-war era followed internecine conflict resulted in further damage to already ruined infrastructure and then a long extended drought did not allow these oilseed crops to revive to their pre-conflict level of production. Production of cotton as an industrial crop virtually collapsed with its conjunct production of edible oil collapsed.

The following table gives post-conflict nationwide production oilseed crops

(Hectares)

Crop	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Sunflower	11500	11500	11500	10000	10000	11500	11500	11500	11500	11500	11500	15750
Sesame	36000	36000	36000	36000	36000	35000	35000	35000	35000	35000	35000	18900
Seed cotton	60000	60000	60000	60000	60000	60000	60000	60000	60000	60000	60000	30000
Linseed	36000	38000	39000	39000	39000	39000	39000	39000	39000	39000	39000	18900

Source: FAO and Ministry of Agriculture; FAO and Ministry of Agriculture statistics on area of production of oilseed crops in Afghanistan

Before the conflict Kandahar was not of any significant producer of oilseed crops. Helmand was in the same league except that official policies had encouraged production of cotton to feed its two state-run ginneries at Grishk and Lashkargah. One of these ginneries had a cottonseed oil expelling and refinery unit, attached to it.

There is irrigated as well as rain-fed (mainly in Kandahar) land in both the provinces that can be brought under high value oilseed crops to sustain medium size oilseed processing venture. However, prevailing socio-economic milieu and political environment preclude this alternative to illicit culture of drug crops.

Kandahar and Helmand have similar socio-economic and agricultural base with minor differences. Land tenure, cropping, irrigation, marketing and management systems, and I tribal norms are the same. Unfortunately, for their people and the nation its political volatility is also their common concord. According to the Government of Afghanistan's Planning Ministry, both Kandahar and Helmand come under the same zone for Agriculture Development. Helmand was part of Kandahar province not far back. It is for these analogous norms and consideration that this exposition discusses together, the requirement of the Scope of Work (SOW) of this consultancy. Wherever there is any difference it is duly discussed.

Requirement of recommendations under each head are also discussed collectively in detail as strategic and policy measures required for promotion of oilseed crops and processing in the two contiguous provinces, Kandahar and Helmand.

IV. PAST AND CURRENT STATE OF OILSEED PROCESSING

In Kunduz a factory for extraction of cotton seed oil was established in the year 1335 (1956) with production capacity of 4800 tons per year. Also in the same year a soap manufacturing unit with a production capacity of 700 tons per year was built in the same province. These two factories were upgraded in the year 1339 (1960) raising there capacities to 8,000 tons and 1,800 tons respectively.

During the Sixties two oil extraction units with capacities of 2,000 tons and 2555 tons were built in Mazar and Lashkargah respectively. Unit at Lashkargah was established with assistance from UK. A similar unit was replicated later at Herat.

Kandahar and Helmand stand among the top 5 agriculturally progressive provinces in Afghanistan despite massive damage they suffered during the conflict. Both Helmand and Kandahar were surplus producers of agricultural commodities. Horticultural produce of Kandahar as fresh and as value-added processed commodities were exported within and outside the country. Moong and mash beans and sesame produced in Kandahar and Helmand had a very lucrative market in Pakistan. The province of Helmand was dubbed the highest per hectare yield producer in the country. Their traditional and modern irrigation system was functioning quite efficiently. Helmand exported wheat to central mountain regions and to the provinces in the west.

Kandahar and Helmand were not significant producers of oilseed crops per se. Helmand by virtue of its cotton crop was, however, producing cotton seed oil as a by-product of its two state run cotton processing plants located in Lashkargah and Grishk. The plant at Grishk got destroyed during the conflict.

Prior to conflict official record of import of edible is as follows:

Year	Value of Import in million US $	Quantity 000 tons
1353 (1974-75)	8.57	NA
1354 (1975-76)	8.62	NA
1355 (1976-77)	13.93	NA
1356 (1977-78)	10.93	NA
1357 (1978-79)	15.71	19.56

Source: CSO, Ministry of Planning, 1978 and SCO Ministry of planning, Islamic Republic of Afghanistan, 1994

Presently there is no solvent plant in the country and no livestock feed industry to most efficiently exploit oil extraction and support production of dairy and poultry.

There was little oilseed processing in Kandahar. Its proximity to one of the major international trading route and easy availability of edible oil did not warrant production of oilseed crops in place of more profitable crops. Unfortunately it is poppy as a *Rabi* crop and marijuana as *Kharif* crop. However, in Helmand, not as a need but consequential to cotton plantations a fledgling private sector low-tech business of cotton ginning, cottonseed crushing and expelling came into being. This was in addition to two public sector ginneries that were established in Grishk and

Lashkargah. The ginnery at Lashkargah was also equipped to extract oil from cottonseed, refine and hydrogenate into semi liquid edible oil.

The ginnery at Grishk was destroyed in 2001 but the one in Lashkargah is operational minus its hydrogenation unit. It produces refined cottonseed oil and cottonseed cake which are marketed locally. Please see the two recent photographs of the products of this state operated plant.

INDUSTRY

Afghanistan's industrial sector was still at an infant stage at the time of the Soviet invasion. The bitter fighting that ensued disrupted the emerging industrial structure and hurt many industries. In comparison with agriculture, industry made relatively small contributions to GDP and employment-about 21 and 10 percent, respectively, in 1982. These figures were up slightly from the 1966 levels of 20 percent and 6 percent. The public sector dominated the industrial scene, but private enterprise still flourished in handicrafts and small-scale concerns. Afghan industry was primarily concerned with processing local agricultural raw materials and mining local mineral resources. Unlike many other less developed countries, there were few import-substitution industries, and before 1978 there was considerable freedom to import industrial goods, especially consumer goods.

In the pre-conflict era most of the private sector oilseed crushing was done with simple expelling units that were located near areas of production of oilseed crops. Before 1979 there were four state run cotton ginning units and six privately owned plants located in the main cotton growing areas.

Cottonseed has been the major source of edible oil and was processed in two factories located in Kunduz and Mazar. Both these edible oil mills of pre-war era have ceased to operate. Cotton Ginning units were operating in Kunduz, Takhar, Baghlan, Samangan and Helmand. The first three major producers of cotton Kunduz, Takhar and Baghlan were dubbed as “Spinzar” area. *Spinzar* in Pushto means white gold.

POST-CONFLICT SCENARIO

Aside from the difficult security situation currently prevailing in parts of the country, the economy faces substantial constraints impeding industrial growth and revival. These relate to the country's very poor income level, poor investment infrastructure, and geography. Transport remains costly and slow, and the domestic market was still fractionated and traditional. There is little experience in management and a serious shortage of technical skills. Outside observers, however, feet that Afghanistan still has some comparative industrial advantages because of its low labor costs and the potential supplies of agricultural raw materials. The Afghan government places high priority on industry. Industrialization is perceived as a means of improving the physical and social quality of life.

Most ginning units and oil expelling establishment have closed or are destroyed. There are a few units that are still intact but have antiquated, almost redundant machinery. Operating efficiencies are very low.

Present efficiencies of the ginning and crushing/expelling units are assessed as follows:

Cotton ginning: Efficiency is one-third lint to seed cotton: can be 40%
Cotton seed: Oil to seed is 11%; can be 15%

Sesame: Efficiency is 35% oil to seed; can be 42%; presently, no operating establishments
Rapeseed/Mustard: Efficiency is 33%, can be 40%; presently, no operating establishments

CURRENT PRODUCTION OF EDIBLE OIL

Currently there are no functional oil expellers in Kandahar. There is a minuscule groundnut oil expelling plant established by the CADG located in Zeri district of Kandahar. This is not of any commercial or economic significance as its sole objective is to provide jobs to internally displaced, destitute Afghans.

In the two southern provinces of Kandahar there is currently no private sector edible oil production of any significance. Only in Helmand province the state run ginnery-cum-cotton seed expelling unit is producing semi-processed cotton seed oil to the tune of 250 to 600 ton depending on availability of cotton crop. Private sector mini gins are discouraged to process cotton. Nevertheless a few surviving units are ginning cotton and produce 40 to 45 tons of raw cotton seed oil.

Presently Afghan is awash with imported processed edible oils from Dubai, Pakistan, Singapore and some from Iran. Afghans were not big consumer of vegetable oils before the conflict. They did however, consumed animal fat in quantity from fat-tailed sheep and some dairy fats. Large scale exodus of Afghan as refugees to neighboring countries during the conflict years and a whole generation in exile when returned had acquired changed food habits.

A September 2004 special report by the FAO and WFP on food supply assessment quotes official figures of GOA of 20% of population as urban. The document mentions of an alarming rate of increase of urbanization and fertility rate of 6.8%. This urban population has a food habit of consuming more fats than their rural or nomadic compatriots. This quantum shift to urban areas is yet another factor for increasing demand for edible oil.

EDIBLE OIL IMPORTS

There are no official records of quantities of imported edible oil in the country. When it comes through formal channels only the amount levied as custom duty is recorded; no quantity. There are probably equal quantities which enter the country undocumented.

Movement of edible oils and other goods takes place across Afghan border at a number of points; some formal and many informal. Almost all edible oil crossing points are either from Pakistan or Iran. There is very little if any edible oil enters from the North.

Official trade with Pakistan is either from Torkham in the east or Weish in the South though some crossing points are Nowpass, Marawara and Barikot in tribal agencies of Northwest Frontier Province (NWFP). There are at least 7 unofficial trade routes. Major unofficial routes are Kotki, Shhrinow, Banrak Thana, Angoor Ada, Goroko and Dorbaba, all south of Tokham. North of Torkham unofficial trade routes are Lalpoura, Goshta, Mangwal, Gangall and Dangam. Very close to Torkham there are two other unauthorized crossing points, Shamshad and Shalman.

In the South Weish in Spin Boldak district of Kandahr is the major and fast growing crossing point for edible oil imports from Pakistan and Malasia/Singapore.

Iran and Afghanistan share a 900 km border. Cross border trade is entirely concentrated at the official crossing point, Doghran on the Iranian side and Islam Qila on the Afghan side. Iran has allowed border trade at a number of small towns across from Herat and Farah provinces and two across Nimroz province. There is little unofficial trade across Iran-Afghanistan border.

Discussions with major importers of edible oils in Kabul and Kandahar allowed the writer to make estimates of imports through various formal and informal channels as follows:

From Pakistan, both formal and informal import of processed edible oil	= 85,000 tons
From Dubai, Malaysia, Singapore and Iran, documented and undocumented	= 75,000 tons

Afghan government's liberal import policy is still another factor contributing to demand for edible oils. Edible oils are classified as food item and custom duty is very low on imports. An anomaly in custom levy is that processed packed edible oil has 2.5% custom duty and unprocessed 5%. Lukewarm enforcement of Custom duty allows substantial quantities of imports enter the country without payment of custom duties. This is apparently the reason for not documenting quantities of imported edible in government statistics.

NEW EDIBLE OIL PROCESSING PLANTS

During the current year a local edible oil refinery (Spinghar Vegetable Ghee Mill) has come into operation in Kabul Industrial area. A smaller one in Herat is nearing completion. Still another *Ghee* mill is under construction in Kandahar. An edible oil processing unit is being planned in Mazar in the North by a consortium of traders from Northern Afghanistan and Turkey. All these *Ghee* mills are banking on imported palm oil.

A local trader Haji Atiqullah was met by the writer in Kandahar. He is in negotiation with Chinese counterparts for establishing a number of industrial units in Kandahar Industrial Estate.The propsed units are a biscuit factory, a soft drink unit, a mineral water bottling plant and in partnership with a Pakistani industrialist is considering importing an old oil hydrogenation

plant from Switzerland for making margrines and *Ghee.* If this comes about it will be the second oilseed processing unit in the South.

ADB is considering possible investment in an approximately $30 million project, a 350–500 tpd Greenfield edible oil Refinery in Mazar-e-Sharif, which is being promoted by a Dubai-based Afghan company (Naseeb Group of Companies), a major importer of edible oils into the country. The plant would process locally grown linseed, sesame, cotton, and other seed crops into cooking **oil**, with animal feed as a side product. The plant will be built on a turnkey basis with De Smet, a Belgian company that is one of the largest international companies in this industry, providing operational support and co-investment. The project has support from central and local governments and has the potential of providing a market for growers of legitimate crops in Afghanistan, employing some 200 people directly.

Afghans are now seeking about 100,000 ton of duty-free edible oil import under transit facility. In Pakistan, the total impact of duty and tariff on edible oil is 95 per cent. Government charge Rs.10, 800 fixed duties on a ton of edible oil import in Pakistan. Add to this 20 per cent sales tax and other charges. The total impact is almost 95 per cent. Afghanistan has hardly any storage facility. Obviously, bulk of this oil will come back in Pakistan as neither Afghan government nor Pakistan is capable of stopping this traffic. It will give such a blow to the Pakistan's ghee industry that it would hardly recover.

In a recent meeting between Afghan and Pakistan officials it was agreed to allow import of palm oil to Afghan manufacturers if they set up processing plants. The first such case was that of a plant in Kabul that come in operation with first consignment of palm oil under Afghan Transit Trade agreement.

OILSEED PROCESSING AND EXTRACTION METHODS

Fats and oils are an essential part of our diet, supplying nutrients, improving flavor, aiding in the absorption of vitamins, and providing concentrated sources of energy for our bodies. Food fats and oils are derived from oilseed and animal sources. In order to get high quality edible oil, various techniques are used in the processing. The Process of obtaining oil from seeds involves the separation of oil from oil-bearing material by mechanical means, chemical means, etc.

TYPICAL OIL EXTRACTION PROCESSES

There are three basic processes of extracting oil from oilseeds. These are:

- Extraction by age-old conventional devices called *kohlus*.
- Extraction by high and low pressure expellers.
- Extraction with solvent such as hexane

TRADITIONAL *GHAN*I OR *KOHLU* TECHNOLOGY

The oilseeds and subsequently the expressed oil are held in a scooped circular pit in the exact centre of a circular mortar made of stone or wood. In it works a stout, upright pestle which

descends from a top curved or angled piece, in which the pestle rests in a scooped-out hollow that permits the pestle to rotate, eased by some soapy or oily lubricant. Today the single angled piece takes the form of two shorter pieces pinioned or chained together. The bottom of the lower angled piece is attached to a load-beam; one end of the load-beam rides around the outside of the barrel, while the other is yoked to the animal. The load-beam is weighted down with either heavy stones or even the seated operator. As the animal moves in a circular ambit, the pestle rotates, exerting lateral pressure on the upper chest of the pit, first pulverizing the oilseed and then crushing out its oil.

There are variations in *ghani* design, which probably arose from the nature of the oilseeds that were regionally available for crushing. The wooden *ghani* used in parts of Afghanistan has a capacity of 8 to 15 kg, has an oil outlet at the base of the pit which is kept plugged during crushing and frequently has the operator seated on the load-beam.

For the mortar, the trunks of hard woods have been utilized regionally, all these being very large trees. Pit designs also vary with region, and could even take the form of a wooden sleeve that sits snugly in the cavity and is less expensive to replace. Even wooden strips laid radially in the pit cavity are in use. The pestle a bulbous tip sometimes clad with lengthwise metal strips. The strong load-beam has to be designed so that lateral pressure on the animal does not force it to lean from a comfortable upright stance during ambulation. Trained male animals, cattle or mule or donkey, are generally used, usually blindfolded to avoid dizziness and distraction.

A surviving *ghani* or *Kouhlu* in North-Western Afghanistan crushing oilseed

CRUSHING OILSEEDS

In the crushing of 10 kg of sesame seed in a *ghani*, about three-fourths of the material is placed in the pit and the rest is evenly laid out all around the flat rim. The animal is prodded and allowed to perambulate for a few minutes until pulverized seed is found to climb the walls of the pit. The animal is halted, and 180 ml of water is sprinkled around the chest and 120 ml poured into the pit. A further 5 minutes of pestle rotation will cause about three-fourths of the seed to be pulverized, after which another 300 ml of water is poured evenly around the pithead. The material built up in the chest is raked using a crowbar, and the pieces are broken up by hand and cast into the pit.

After the animal has resumed movement, the rest of the seed is evenly pushed in all around. The operator now tests the solid material by balling it in his palm; if it crumbles too easily, more water is needed. The layer of built-up material is again broken up, and brisk ambulation is

resumed. After about 45 minutes, a sudden release of frothy oil floods the surface. Another 100 ml of water is sprinkled over the oil, the animal is stopped and the oil is allowed to settle.

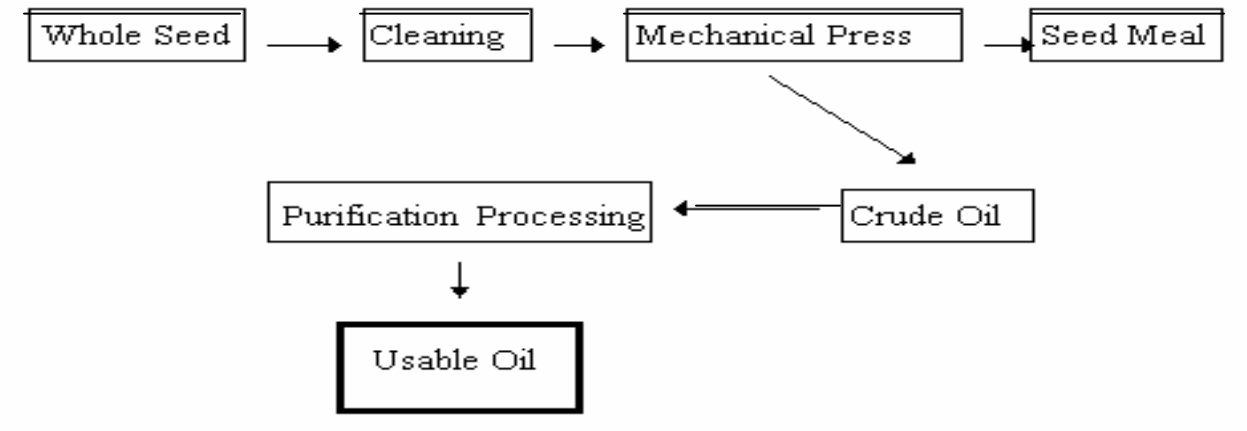
A final quantity of about 20 ml of water is now brushed over the compacted cake surface using the edge of the palm, after which the animal makes a few more rounds. The operation is stopped and the pestle is lifted out and laid aside. If the *ghani* has a drainpipe, it is unplugged and the oil is drawn into a vessel.

Rape and mustard seeds need more water during crushing than sesame. The oilcake is not raked during linseed crushing, but only at the very end. During crushing of groundnuts at least part of the shells are retained in the *ghani* so as to ensure formation of a granular and compact cake.

At the point of maximum contact, the pressure in a *ghani* is about 10 kg/cm2 about one-third of that in a small screw-press and about one-tenth to one-hundredth of that in a large modern expeller. The pressure in the *ghani* is largely determined by the weight placed on the load-beam, usually 115 to 160 kg, which is transmitted by way of the curved piece to the top of the pestle.

An oil-rich seed yields about 4% less oil in a *ghani* than in a modern expeller, mainly because of insufficient pressure. *Ghani* oilcake carries twice the quantity of oil as that of screw-press oilcake

MECHANICAL METAL EXPELLERS

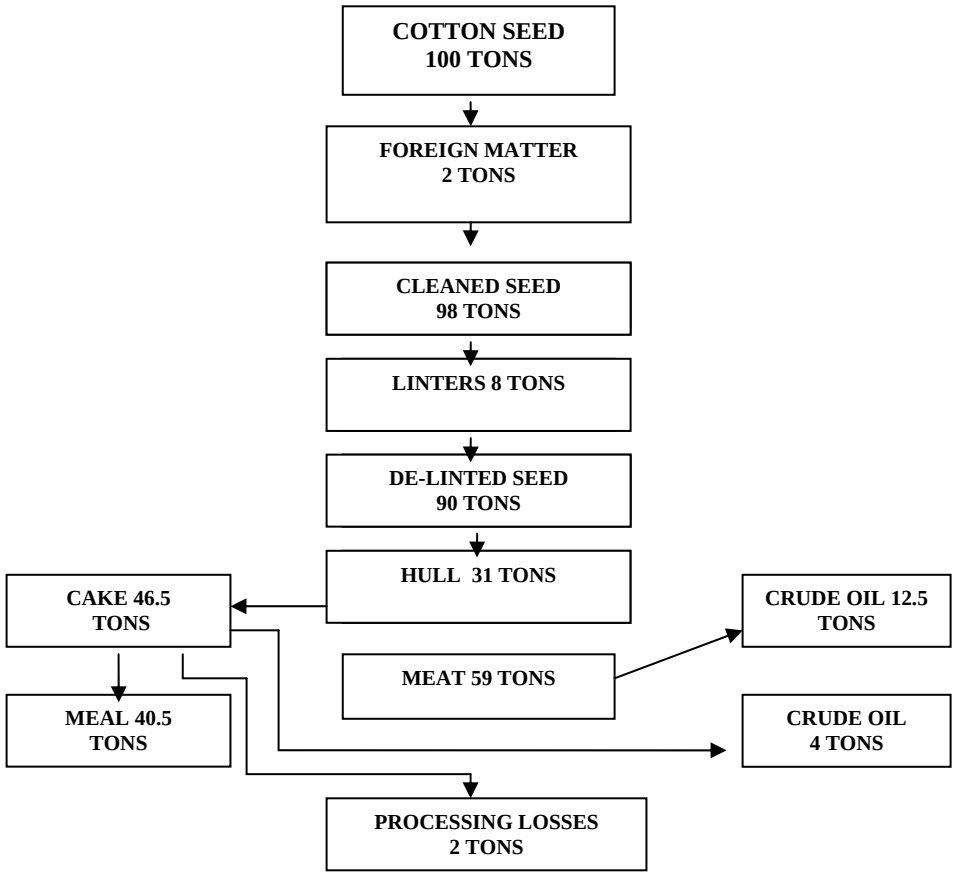


Various types of mechanical presses are used to squeeze oil from oil seeds. In large industrial units oil seeds are first cooked slightly in order to partially break down the cell culture for easier release of oil. In expellers the heat generated during pressing and friction does this job. The oil-bearing material is squeezed through a tapering outlet in the mechanical pressing and filtered to get oil. In Afghanistan this has been the main process of extraction of oil from oil bearing seeds.

SOLVENT EXTRACTION

It is very common in large-scale operations to remove the oil from cracked seeds at low temperature with a non-toxic fat solvent such as hexane. The solvent is percolated through the plant material in order to produce concentrate. The seed constituents, fatty acids and waxes are dissolved by a solvent, usually hexane. After the solvent is distilled off, the remaining constituents make up the concentrate.

Schematic Diagram of Processing and Balance of Cotton Seed in a Solvent Extraction Plant



OIL EXTRACTION FROM CANOLA/RAPESEED AND OTHER OILSEEDS

Rapeseed oil has been used for centuries as a crop for a variety of uses. It was initially burned as oil in lamps by our ancestors in Asia and Europe, and later was discovered as a cooking oil. From these earlier times use of the rapeseed oil has recently become very widespread, including end products which range from cooking to bio-diesel fuel and. Rapeseed including its genetically improved variety called Canola or double zero or 00 varieties, is the third largest source of vegetable oil in the world. In the following section oils extraction processes and purification methods focusing on rapeseed and canola crops are discussed. As pointed out in previous study that although Canola is one of the two most suitable oilseed crops for promotion in Kandahar and Helmand, the socio-economic and political environment prevailing, prevents its production.

To get a successful extraction the complexity of harvesting seed should be foremost. It is recommended that rapeseed be harvested at a moisture content of eight percent in seed. Any less moisture poses the possibility of shattering. Although the harvesting is critical there is no principle difference in the extraction of oil rapeseed from other oil seeds. All extraction processes have certain objectives in common; to obtain the oil undamaged, maximum yield as economically possible, and to produce byproducts of high value.

Canola/rapeseed oil is extracted by several methods. These methods included mechanical, solvent, enzymes and high pressure CO2 extraction. Mechanical is the oldest known extraction method. Hydraulic extraction used to involve pressing batches between two plates, but this is very slow and inefficient and in the amount of oil removed from the seed low. Screw presses or expellers are now used in a continuous extraction process. The mechanical screw press has five essential elements: the main worm shaft, the drainage barrel the choke mechanism, the motor transmission and thrust bearings.

Solvent extraction is the most efficient method of extracting oil. It may take place either in the batch or continuous process. The rate of extraction depends on thickness and area of flake, the temperature, the solvent and the moisture content. There many types of extractors, but basically it involve mixing hexane with the pre-pressed seed. Canola/rapeseed oil is than separated from the solvent by indirect heating and direct steam injection, the hexane being recovered for reuse.

The oil intended for edible use and meal, must be de-solventized and de-gummed; whereas the oil intended for crude oil use is only de-gummed. Crude oil is de-gummed to remove the phosphoric compounds. For de-gumming of crude oil two qualities of oil result from the initial extraction, crude de-gummed oil and super de-gummed oil. Crude de-gummed oil is a result of de-gumming through the use of steam hydration. Super de-gummed oil is attained through a chemical de-gumming process. For example the phosphorus level of super de-gummed oil ranges between 10-30 ppm where as crude de-gummed oil has levels of 200 ppm. The following is an example of a typical purification process for edible canola oil and product.

Refining is used to remove free fatty acids. The oil is combined with an alkaline material, usually sodium hydroxide (NaOH). This mixture creates soap. The soap and oil then pass through a continuous centrifuge machine separating the oil from the soap. The oil is then mixed with water and passed through another centrifuge to remove any traces of soap. The oil is now refined.

Bleaching of the oil is done to remove the beta-carotene and other colors and color producing substances. This is done to give the oil a light color so that the product produced from it does not have unwanted pigments. The common method of removing the pigments is absorbing them into an absorbent material such as fullers earth. Fullers earth is made up of hydrated aluminum silicate.

Deodorizing is done to remove any aromatic oils and any free fatty acids that might be remaining in the oil. The purpose of doing this is so that the oil will not give food products any unwanted flavors.
Oilseed crops have been used worldwide for centuries as cooking agents and also provide a rich source of protein for human and livestock. The major oilseeds of the world include soybean, cottonseed, palm oil, Canola/rapeseed, sunflower and groundnut.

Brassica campestris (Polish rape or toria) and Brassica napus (Argentine rape, Swedish rape or Colza) may still exist in the wild are the two other most important oilseed rapes. From these two oilseed rapes along with others, numerous hybrid varieties have been developed through breeding programs. The objective of testing and finding new hybrid varieties mainly relates to the selection of desired traits for specific end products. The two biggest traits considered are the erucic acid content and the glucosinolate content in the oil product.

Erucic acid is a 22-carbon fatty acid desired in high concentrations for many of the industrial uses for rape oil and desired in very low or nil concentrations for edible oils and meal for livestock. Erucic acid concentrations may range from essentially 0% in some Canola varieties to over 45% for the industrial rapeseed. Low concentrations of glucosinolates are preferred for all uses of rapeseed. When glucosinolates are present, during the crushing of seeds they may hydrolyze in the presence of moisture and translate into sulfur in the oil which is undesirable Canola is low glucosinolate and low erucic acid rapeseed.

Rapeseed and its related oils are the backbone of the vegetable oil world. Edible uses for the oils with low erucic acid (less than 2%) are in cooking shortening and margarine. Oils with higher erucic acid content are used in different venues. They have besides, their use in Asia, North America, Africa and Eastern Europe as edible oil, industrial applications such as lubricants, rubber additives, commercial waxes, nylon, diesel fuels and pesticides.

Canola/rapeseed oil has long shelf life as long as it is handled and packaged properly. The crude de-gummed oil may be stored for a longer or shorter time before refining.

Solvent extraction allows extraction of maximum amount of oil, besides the meal is of higher protein and longer storage life.

SEQUENCIAL METHOD OF OIL PURIFICATION

The purification processing can be divided into six types:
Degumming
Refining
Bleaching
Deodorization
Fractionation
Hydrogenation.

DEGUMMING

Some oils such as Canola/rapesedd oil have a treatment known as de-gumming. The bulk of certain phosphatides such as lecithin are separated through this operation. The processing consists of mixing the oil at 50 to 60 degree C with water or steam for 30 min. The gummy residue is dehydrated and the oil is then passed through centrifugal separators.

REFINING

The process of refining reduces the free fatty acid, phospholipids, carbohydrates, or proteins. The most widely practiced form of refining method is an alkali treatment. By treatment of the fats and oils with an alkali solution, the free fatty acid converts into water soluble soaps. Phospholipids carbohydrates and proteins also can be changed to water soluble substances with hydration. After the alkali treatment, the fats and oils are washed with water to remove residual water soluble soaps.

BLEACHING

The bleaching process is removing coloring materials, such as chlorophyll and carotene and purifying the fats and oils. The method is by adsorption of the color producing substances on an adsorbent material. Bentonite, silica gel and activated carbon are used as bleaching adsorbents.
Deodorization
Deodorization is a vacuum steam distillation process for the purpose of removing undesirable flavors and odors, mostly arising from oxidation, in fats and oils. Using steam under reduced pressure the volatile compounds are removed from fats and oils. Typical conditions approximate at 2.0 mm absolute pressure for 1-4 hr with strong steam sparging. The deodorization utilizes the differences in volatility between off-flavor and off-odor substances and the triglycerides.

FRACTIONATION

Fractionation is the removal of solids at a given temperature. There are three kinds of fractionation process such as crystallization, winterization, and pressing. Crystallization is the widespread technique. A mixture of trigrycerides is separated into different melting points based on solubility at selected temperature. Next, a small quantity of material is crystallized to avoid hazes of liquid fractions at refrigeration temperatures, this process is called winterization. Many oils, including cottonseed and hydrogenated soybean oils, are winterized. Finally, pressing process is used to separate of liquid oil from solid fat. The process squeezes or presses the liquid oil. This process is used to produce hard butter.

HYDROGENATION

In hydrogenation, hydrogen is added directly to react with unsaturated (double bonds) oil in the presence of nickel catalyst. The need for the hydrogenation is based on (1) converting liquid oils to the semi-solid forms and increasing the oxidation and thermal stability of fats and oils. This process greatly influences the desired stability and properties of many edible oil products. The hydrogenation process is easily controlled and can be stopped at any point. A gradual increase in the melting point of fat and oil is one of the advantages. If the double bonds are eliminated entirely with hydrogenation, the product is a hard brittle solid at room temperature. Shortening and margarine are typical examples.

V. OILSEED CRUSHERS, VOLUME OF BUSINESS FOR EACH OILSEED

NUMBER OF OILSEED CRUSHERS, VOLUME OF BUSINESS

There is no oilseed crushing operation in Kandahar. Exception is the CADG's small groundnut crushing unit in Zeri district of Kandahar. It is more of a job providing venture than a viable commercial activity.

In Helmand, there is State owned ginnery and a conjunct cottonseed oil expelling and processing unit. Besides, there were 81 small ginneries located in four different *Woluwswalis* as follows:

Nad Ali	18		Now 3 are operational seasonally
Marja	16	Now	3 are operational seasonally
Garmser	8	Now	1 is operational seasonally
Babaji (Central district) near Lashkargah	6		Now 1 is operational seasonally

Source: Lashkargah market and confirmation by DG. Agriculture Helmand

According to Alhaj Shirin Khan the GM of the State run ginnery and oil processing plant the two ginneries at Lashkargah and Grishk during pre-conflict era processed 32,000 tons of cotton. After the conflict the surviving ginnery at Lashkargah processed 8,600 tons in 2004 and 3,500 tons in 2003. As an incentive to cotton growers the plant gives 2 bags of Urea for every ton of cotton supplied to the plant. Price paid ranged between 14 to 17 Afghanis per kg.

It has been the official policy of the government to discourage private sector gins to operate. In fact during last year and this year a campaign was launched to make private gins non operational. The campaign was partly successful for another reason of short crop from declining area under cotton.

The ginnery and oil mill at Laskargah was established in 1966-67 with an installed capacity of 25,000 m tons. Machinery detail follows:

Ginnery: Platt and Lumus	UK/USA
Delinting: Gust Herbman	W. Germany
Crushing: Rose-Downe	UK
Expellers: Rose-Downe	UK
Refinery: Rose-Downe	UK

During the year 2004-05 the State run plant processed 8,600 m tons of cotton which was about 70% of the total produce estimated a little over 12,000 tons. The remaining 3,400 tons were partly picked up by traders for export as seed cotton and an estimated 600 tons was ginned by private ginneries.

ESTIMATED PRODUCTION OF COTTON SEED OIL AND COTTON SEED CAKE

State enterprise extracted about 4,800 tons of seed and produced 575 tons of cottonseed oil, including production losses and 4,400 to of cotton seed cake.

Private expellers produced an estimated 43 m tons of oil and 300 m tons of cotton seed cake.

Reportedly, there was no other oilseed crushed for oil extraction.

PRICES

State produced cotton seed oil is marked in Lashkargah shop of the plant at 40 Afghanis per kg. Oil produced by private expellers is not marketed in Lashkargah. It is reportedly sold at 35 Afg. per kg near the areas of production.

Cottonseed cake from state enterprise sells at 50 Afg. per *maund* (4.5 kg) and that of private expellers at 40 Afg. per *maund.*

CRUSHING COSTS, REVENUES AND PROFITABILITY OVER TWELVE MONTH PERIOD

Despite restrictive policy of the government towards private ginneries and crushing machines, there are still a number of gins and expellers that are operational in Nad Ali, Marja, Garmser and Babaji area within the central district of Lashkargah. Local market sources who keep their produce, mainly the lint and cotton seed cake and the Department of Agriculture officials confirmed presence of 8 operational gins with conjunct production of cotton seed oil and cake as follows:

Nad Ali	3
Marja	3
Garmser	1
Babaji (Central District) Near Lashkargah	1

Source: Lashkargah market and confirmation by DG. Agriculture Helmand

During the year 2004-05 production from private ginneries and expellers was estimated as 43 ton of cotton seed oil and about 300 ton of cotton seed cake.

Oilseed crushing is not a year long, continuing activity in the province. The private sector entrepreneur has combined their operations with ginning and milling of wheat and maize. Helmand for its tractor population probably is the highest mechanized province in Afghanistan. Tractors are used besides, tillage and threshing operations, for transport, providing power to water pumps and to cotton gins, oil expellers and milling at times.

In the mini cosmos of cotton ginning, oil expelling and wheat, maize and pulses milling cost of labor, capital investment, power usage and miscellaneous expenses have to be distributed proportionately. In the following sections with intelligent assumptions *cost of crushing oilseed (cotton) and revenue and profitability is estimated.*

Cost of production and profit on oilseed expelling with a 2 ton per day capacity, Lahori type expeller: 80,000 Afg. working life 15 years

Cost of power, Diesel engine or tractor, 300 Afg./ hr.x16		4,800 Afg.
Managerial and labor cost per two ton operation:		500
(Manager/Supervisor 1, Labor 2; 300+200)		
Cost of premises rental and miscellaneous costs, per day		250
Cost of two ton of cotton seed at 6 Afg//kg*		12,000
Cost on capital investment at say 15% , for 24 hour		343
(12,000/365= say 343 Afg.)		
Depreciation on expeller and other tools, average 10%		
8,000/365		220
Repair maintenance costs		500
Total expenses 1+2+3+4+5+6	=	18,613
Returns		
Oil at 11% recovery, 220 kg at 35 Afg./kg*		7,700
Cake at 85% recovery, 1,700 kg at 7.5 Afg/kg*		12,750
Total income		20,450
Net return per two tons of oilseed crushing operation		**1837**

* Wholesale market prices

RELATIONSHIP BETWEEN OILSEED PRODUCER AND CRUSHER

Only the cotton crop contributes to edible oil in the two provinces, Kandahar and Helmand, barring the mini groundnut crushing plant run by CADG in Zeri district of Kandahar. No other oilseed crop is grown on large areas to warrant oil extraction. Sesame crop on a few hundred hectares fetches much higher price as seed. Besides, very lucrative plantations of poppy in these two provinces, is the biggest deterrent to growing oilseed crops. Not to mention cheap and ubiquitous presence of processed palm oil.

Cotton growers would prefer selling seed cotton to traders who could pay higher prices than the state run factory. Prices paid by the state are advised from Kabul and apparently do not consider open market prices. That is why despite ban on private gins a considerable quantity is sold to traders and left over are ginned and processed in about 8 private ginneries and expellers.

OILSEED CAKE USE, AVAILBILITY AND SALE PRICE BY COMMODITY

Presently only in Helmand, oilseed cake from crushing of cottonseed is available. There are two types in the market; one type of high protein value comes from the state run factory at Lashkargah and the second type from a few clandestinely surviving cotton seed crushing units in Nad Ali, Marja, Garmser and Babaji area adjoining Lashkargah. Nutritional quality of the later is poor as it comes from corticated seed with linters in it. Cotton seed cake is used as concentrate feed for livestock especially for lactating cows.

Cottonseed cake from the state-run factory is preferred by the livestock owners. It sells at premium at 50 Afghani per *maund* i.e. for 4.5 kg. The other type having lower percentage of protein but more oil in it and containing seed coat and linter is sold at 35 to 40 Afg. per *maund.* Keeping quality of this oilseed cake is short as higher percentage of oil in it can turn rancid early.

Marketable quantities of oilseed cake fluctuate from year to year depending on area under cotton crop from year to year. During this past crushing year there was an estimated 4,400 tons of cottonseed cake put in the market by the state-run factory and private mini crushers produced another estimated quantity of 300 tons.

CONSTRAINTS ON EXPANDING OILSEED CRUSHING

There are several constraints to expanding oilseed crushing. To start with there is very little area under oilseed crops. Cotton belongs to second tier of oilseed crops. It is mainly a fiber crop. A ton of cotton could, at best, give 78 kg of crude oil compared with rapeseed/Canola which can produce as much as 450 kg of oil per ton of produce. Secondly monopolistic policies of the government on cotton encourage farmers to sell cotton to traders who export it. And then this official policy to let unhindered import of processed palm oil; and, not to mention the ever-present drug crops.

VI. PROCESSING CAPACITY

Edible Oil Processing Capacity in Helmand and Kandahar

Oilseed processing equipment and machinery at the state run factory are 43 year old and during the past26 years have never been upgraded. Machinery is worn out and runs at a very low efficiency with retrievable losses. In the early days after the Soviet with-draw the then government in Kabul planned to convert state owned enterprises into corporations with 51% share of the government. The government got embroiled in civil war and the plan could not be implemented. The Interim Government in 2003announced plan for complete disinvestment. Most

recent consideration is to review and evaluate each of the eighty or so surviving State owned enterprises and make a case to case decision on privatization.

Processing capacity of the state operated factory, now after 43 years, with little or no reconditioning or replacement of worn out parts, had initial installed capacity of processing 25,000 tons of seed cotton and 15,000 tons cotton seed crushing and processing. It is estimated that presently the capacity has dwindled to half of its original installed capacity

Cotton ginning and cotton seed oil equipment installed at the Laskargah factory were of the state of art of its time. For example ginnery equipment was of Platt and Lumus of UK/USA, De-linting machinery was from Gust Herbman and crusher, expellers and refining machines were from Rose Downe in UK.

Private sector industrial units have a similar fate as that of the state run industries. In the case of oilseed processing there were no medium or large units. There were small cottage scale plants which survived the conflict are also antiquated. Oilseed crushers in Helmand are of 1970s vintage and inefficient. These are expellers of screw type and are called Lahori crushers, made in Lahore, Pakistan.

There were an estimated 48 ginneries and about as many crushing units in the province. With drop in cotton production and private discouraging policies of the government, presently only 8 ginneries and oil expellers are reportedly operational. *These Lahori type expellers are low pressure screw type machines*. Most of these are now worn out and some junked and about a dozen idle. Comparing original private sector crushing capacity with the present, an estimated current and functional capacity is; ginning 5000 tons and crushing 3000 tons. Even this capacity is partially utilized.

TYPE OF PROCESSING EQUIPMENT

For thousands of years, fats and oils have been important in food preparation. Metal frying pans that are remarkably similar in design to those used today have been found in archaeological excavations of the Harappan civilization of circa 2000 BC. A number of oleaginous materials such as sesame, rape and mustard seeds and coconut were known sources of oil. In addition, a variety of animal fats were used. However, the exact way that oil was obtained from oilseeds is uncertain.

In Sanskrit literature of about 500 BC there is a specific reference to an oil-press, although it was never described. Juices were extracted from vegetable materials as early as 1500 BC using either a mortar and pestle or a grinding stone working on a flat stone. It is from crushing systems that presses for oilseeds in the form of a mortar-and-pestle arrangement powered by animals. This system is commonly called the *ghani* or the *kolhu*.

ghani operation has been noted in Afghanistan, which has long cultural ties with the Indo-Pakistan sub-continent. The device is widely used in the Sudan to crush sesame seeds, though its antiquity there has not been documented. *ghani* operation has declined in Afghanistan in recent years.

EVOLUTION OF OILSEED PROCESSING EQUIPMENT IN AFGHANISTAN

As at the middle of 1950s most of the oilseeds were crushed in *ghanis* when they started getting replaced with screw type expellers called Lahori expellers. These are small screw type expellers with 1 to 2 ton capacity per two shifts of eight hour each and can be operated with small diesel engines, an electric motor and with tractor. There are still some old *ghani* crushersers in the north-western provinces of Afghanistan. There is none in Kandahar and Helmand.

In Kunduz a factory for extraction of cotton seed oil was established in the year 1335 (1956) with production capacity of 4800 tons per year. Also in the same year a soap manufacturing unit with a production capacity of 700 tons per year was built in the same province. These two factories were upgraded in the year 1339 (1960) raising there capacities to 8,000 tons and 1,800 tons respectively.

During the Sixties two modern oil extraction units with capacities of 2,000 tons and 2555 tons were built in Mazar and Lashkargah respectively. Unit at Lashkargah was established with assistance from UK. A similar unit was replicated later at Herat.

PRICES OF OILSEED CRUSHING AND EXTRACTION EQUIPMENT

Traditional *Kouhlu* or *Ghani* that are now used and upgraded in rural India to process a ton of seed and operated by tractor basic cost is equivalent to 60,000 Afg. (source Indian Agricultural Research Institute).

Screw type expeller called Lahori Expellers, upgraded and improved, is also available in Pakistan and India and cost between 200,000 Afg. to 250,000 Afg. equivalents. These can be powered by an electrical motor, 30 hp or are tractor belt and pulley. These units can crush between 10 to 20 ton per day; depending on the variety of oilseed. Please see annexure.

Equipment for a medium size plant for crushing, refining, hydrogenation and packing could cost anywhere from 2 to 3 million US $ with crushing capacity of 20,000 tons of oilseed. Chinese have established a few units in central Punjab province of Pakistan. Machinery and equipment of Spinghar Ghee Industry at Pule Khumri in Kabul was fabricated and installed by a Pakistan engineering company of Lahore at an estimated cost of US $ 4.5 million. Its 20 ton steam boiler is from a ship breaking establishment close to Karachi.

DIFFERENT PROCESSES OF CRUDE OIL REFINEMENT

Expression, also known as cold pressing, is done exclusively extracting citrus oil. Various types of mechanical presses are used to squeeze oil from oil seeds. Oil seeds are first cooked slightly in order to partially break down the cell culture for easier release of oil. The oil-bearing material is squeezed through a tapering outlet in the mechanical pressing and filtered to get pure oil. This process is not economical for extracting edible oil from bulk materials like cottonseed, Canola/rapeseed, sunflower, groundnut, soybean and other oils used foe edible purposes.

It is very common in large-scale operations to remove the oil from cracked seeds at low temperature with a non-toxic fat solvent such as hexane. The solvent is percolated through the plant material in order to produce concentrate. The seed constituents, fatty acids and waxes are dissolved by a solvent. After the solvent is distilled off, the remaining constituents make up the concentrate

Crude fats and oils are obtained directly from the extraction of the oilseed. Crude fats and oils contain varying substances that may influence undesirable flavor, color, or keeping quality. These substances are removed through a series of processing steps.

Some oils such as those of rapeseeds and Canola have to be de-gummed. The bulk of phosphatides such as lecithin are separated through this operation. The processing consists of mixing the oil at 50 to 55 degree centigrade with water or steam for 30 min. The gummy residue is dehydrated and the oil is then passed through centrifugal separators. .

The process of refining reduces the free fatty acid, phospholipids, carbohydrates, or proteins. The most widely practiced form of refining method is an alkali treatment. By treatment of the fats and oils with an alkali solution, the free fatty acid converts into water soluble soaps. Phospholipids carbohydrates and proteins also can be changed to water soluble substances with hydration. After the alkali treatment, the fats and oils are washed with water to remove residual water soluble soaps.

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Fractionation is the removal of solids at a given temperature. There are three kinds of fractionation process such as crystallization, winterization, and pressing. Crystallization is the widespread technique. A mixture of trigrycerides is separated into different melting points based on solubility at selected temperature. Next, a small quantity of material is crystallized to avoid hazes of liquid fractions at refrigeration temperatures, this process is called winterization. Many oils, including cottonseed and hydrogenated soybean oils, are winterized. Finally, pressing process is used to separate liquid oil from solid fat. The process squeezes or presses the liquid oil. This process is used to produce hard bakery use fat.
In hydrogenation, hydrogen is added directly to react with unsaturated (double bonds) oil in the presence of nickel catalyst. The need for the hydrogenation is based on:

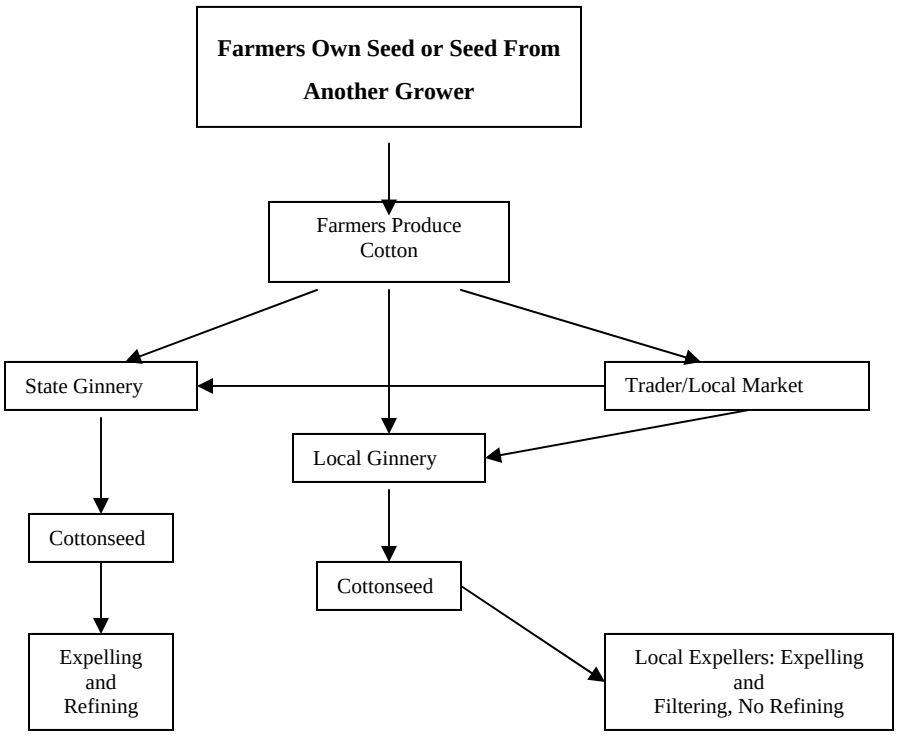
- Converting liquid oils to the semi-solid forms.
- Lowering oxidation and increasing thermal stability of oils.

The hydrogenation process is easily controlled and can be stopped at any point. A gradual increase in the melting point of fat and oil is one of the advantages. If the double bonds are eliminated entirely with hydrogenation, the product is a hard brittle solid at room temperature. Shortening and margarine are typical examples.

In the presence of cheap and easily available imported oil in the market, expelling of any oilseed in the two provinces has long ceased. It is not an economically feasible proposition. In Helmand production of cotton crop continues at level dictated by prices farmers received the previous year and speculative demand of poppy which the drug barons convey and contract with the peasants.

SUPPLY NETWORK OF COTTON FOR GINNING AND CRUSHING

Cotton



PROCESSING COSTS, REVENUES AND PROFITABILITY OVER 12 MONTH PERIOD

Oilseed crushing is not a year long, continuing activity in the province. The private sector entrepreneur has combined their operations with ginning and milling of wheat and maize. Helmand for its tractor population probably is the highest mechanized province in Afghanistan. Tractors are used besides, tillage and threshing operations, for transport, providing power to water pumps and to cotton gins, oil expellers and milling at times.

In the mini cosmos of cotton ginning, oil expelling and wheat, maize and pulse milling cost of labor, capital investment, power usage and miscellaneous expenses have to be distributed proportionately. In the following sections with intelligent assumptions *cost of crushing oilseed (cotton) and revenue and profitability is estimated.*

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Cost of power, Diesel engine or tractor, 300 Afg./ hr.x16		4,800
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Depreciation on expeller and other tools, average 10% 8,000/365		220
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Total expenses 1+2+3+4+5+6	=	18,613
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Total income		20,450
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* Wholesale market prices

CONSTRAINTS ON EXPANDING EDIBLE OIL PROCESSING

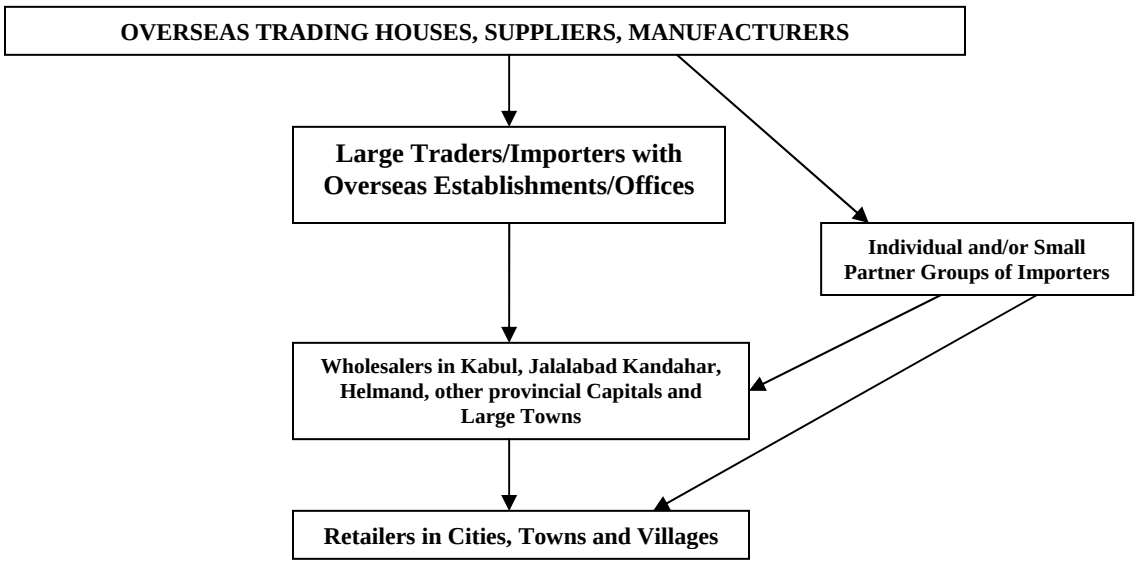
There are several constraints to expanding oilseed crushing. To start with there is very little area under oilseed crops. Cotton belongs to second tier of oilseed crops. It is mainly a fiber crop. A ton of cotton could, at best, give 78 kg of crude oil compared with rapeseed/Canola which can produce as much as 450 kg of oil per ton of produce. Secondly monopolistic policies of the government on cotton encourage farmers to sell cotton to traders who export it. And then this official policy to let unhindered import of processed palm oil; and, not to mention the ever-present drug crops, poppy and marijuana.

VII. MARKETING STRUCTURE

WHOLESALE AND RETAIL MARKETING STRUCTURE AND DISTRIBUTION

In Kandahar and Helmand, imported edible oil comes via two main routes. One is via Weish border in Spin Boldak order town and the other is via Herat. There is a small entry point opened in Nimroz province between Afghanistan and Iran and though cuts short 500 km from Bandar Abbas to Herat, it is not popular for its poor roads. In the following a diagram schematic channels of marketing is explained:

SUPPLY CHAIN OF IMPORTED EDIBLE OIL



GHEE MARKET IN KANDAHAR

BRANDS

Alpha Malaysia the cheapest in the market
Hayat from Dubai
Itihad from Dubai

PACKING

18 and 20 kg in tin pecking
18, 16, 10 kg individual plastic containers
5, 3 kg in plastic container, 5kg 4 in a cardboard box
3 kg 6 in a card board box

PRICES

Wholesale
20 kg. 710 Afg.
18 kg. 666 Afg.
16 kg 576 Afg.
10 kg. 380 Afg.
5 kg. 177 Afg..
3 kg 133 Afg.

People from rural area prefer 20, 18, and 16 kg packing, as it is cheaper then smaller packs. People in the south generally prefer liquid or semi liquid edible oil over solid oils.

According to market sources there is very little custom duty on food items. On edible oil a blanket duty of 10,000 Afg. is levied. This duty too is often avoided by importers in collusion with the custom authorities.
Surprisingly Custom Houses are not at the points of entry of goods but well inside. Levy of duty is assessed and paid in Kandahar for the goods coming from Pakistan via Chaman/Weish border. Importers say corruption is very rife at the Gumrak (Custom House) and Chaman/Weish where transfer of goods from Pakistani trucks into Afghan trucks takes place.

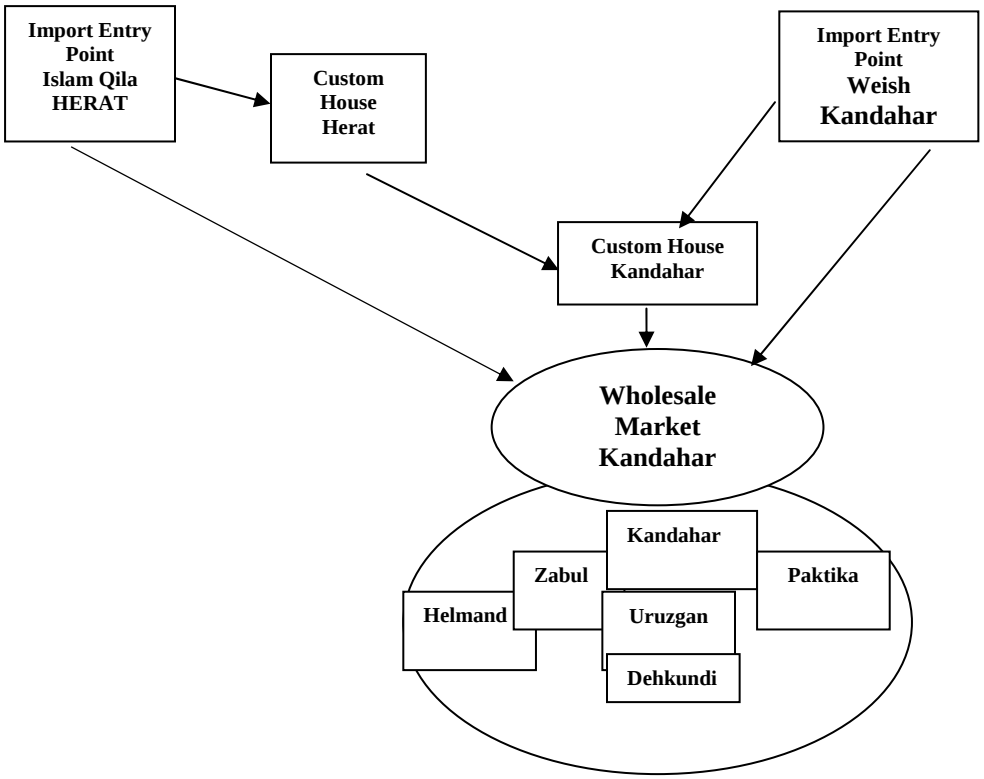
The assessment was that as much as 60 percent of imports are not documented. So the record maintained by the Custom House is not reliable. Estimates given by the wholesalers were that as many as 1200 trucks of 10 ton load and 800 trucks of 20 ton load come annually from Pakistan and Herat sides respectively. Considering these estimates more reliable then the record kept at the Gumrak this estimated import coming into Kandar or passing onnwards to north east, would come to:

1,200x10= 12,000 tons+800x20=16,000 or 28,000 tons annually

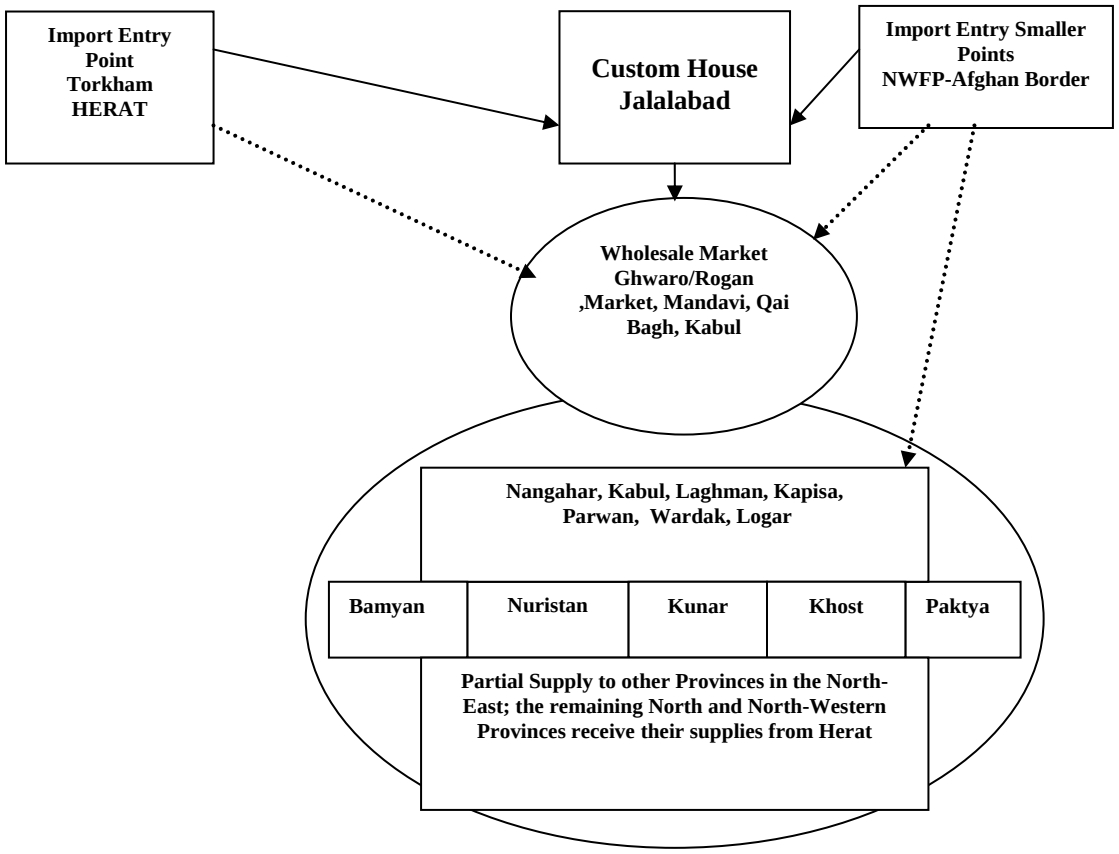
Wholesale edible oil market at Kandahar caters to needs of the populace:

Kandahar	100%
Uruzgan	100%
Dehkundi	100%
Zabul	70%
Pktika	40%

CHANNELS OF IMPORTED EDIBLE OIL TO & FROM KANDAHAR MARKET



CHANNELS OF IMPORTED EDIBLE OIL TO & FROM KABUL MARKET



Solid Lines Denote Formal Imports

Dotted Lines Denote Informal undocumented Imports

LIST OF WHOLESALERS (AND RETAILERS ?) OF EDIBLE OILS

There is no official regulation in Afghanistan that would control Import of edible oil, considered a food item. Anyone and any body can import processed edible oil paying a duty of 2.5% if formal channel is used. On raw unprocessed oil duty is 5%. No formal Letter of Credit needs to be opened. All transactions are in cash and *Hundi* or *Hawala* system of transfer of money is used for imports from Pakistan.

Major traders and importers of edible oil have overseas offices in Dubai, Jabel Ali (Dubai), Peshawar, Singapore and London. Besides, hundreds of small traders/importers there are four major companies called *Shirkats.*

MAJOR IMPORTERS OF EDIBLE OILS

Name of the Company	Persons Met	Contact
Barakat Co. Ltd.	Mohammad Kasim Dirctor, Kabul Office	Najib Zorab Market, Kabul Bahruddin Market Mazar Mob: +93(0)79.325425 and +93(0)70.500620
	Mohammad Jamil Vice President	Mob:079.325425 Mob:070.500620
	Mohammad Yaqub Tughra Sales and Marketing Manager	Mob: 079.021252
Najib Zorab Group of Companies.	Peshawar Office Niamat Ullah	+92(0)300.859.0606 Pule Chakhi, Kabul
Spinghar Vegetable Ghee Industries, Kabul	Director, Kabul Office	Tel:+93.75.202.0697 +93(0)79.333560
	Safiullah Nosher General Manager	+93(0)79333560
Momin Group of Companies, (Shirkat Ali Baba)	-	Shash Darak Kabul Tel: 2100746 Mob: 079.203000
Shirkat Special	-	Kabul Mandavi, Kabul
Shirkat Faqir Wahab	-	Jalalabad Mob: 079.331578 Mob: 079.331577
Qadri Group of Companies	Hamid Qadri	3rd Karte-e, No.336 Kabul Tel: +93.202.500250 Mob: 070.275352
Amin Haroon Company Ltd.	Amin Karim Zada	122 Serai Shazada Market, Kabul Mob: 070.2277845 Mob: 070274461
Shirkat Sher Baba Co. Ltd.	Saadullah Khan General Manager	Seari Trasang Kandahar. Tel:0088.21651.15109 Mob:079.414900 Mob:079.000160
Ghulam Rahmanzada Ltd.	-	Amanzada Market Halalabad Mob:079313.810

MAJOR WHOLESALERS IN KABUL, JALALABAD, KANDAHAR AND LASHKARGAH

As mentioned in the previous section anybody and anyone can import processed edible oils into the country. For import of edible oil no import or Letter of Credits (LC) needs to be opened. All transactions are on advance cash payment in Pakistani Rupee or US Dollar. There are at least nine major importers; list of which is given in the previous table. Considering that even a small trader can import processed edible oil the list can go into hundreds. Further retailers are in thousands.

In the following table list of major wholesalers in Kabul, Kandahar and Lashkargah is given.

Wholesaler	Address	Contact
Haji Nizam/Mohammad Rafiq	Mandavi Bagh Qazi, Kabul	Mob:0793.25190
	Jalalabag Office	Mob:079.325188
Haji Sharif	Mandavi Bagh Qazi, Kabul	Mob:079.337777
	Jalalabad Office	……do……..
Awal Khan	Mandavi Bagh Qazi, Kabul	Tel:202100672
Shazad Khan	Mandavi Bagh Qazi, Kabul	Mob:079.322.695
Haji Rehmatulla	Mandavi Bagh Qazi, Kabul	Mob:079.331233
Haji Sabir Khan	Mandavi Bagh Qazi, Kabul	Mob:079.333.641
Fazalur Rehman	Mandavi Bagh Qazi, Kabul	Mob:079.004540
	Jalalabad Office	-
Umar Khel	Jalalabad	Tel: +88.21688854719
Dil Agha/Gul Amir	Mandavi Bagh Qazi, Kabul	Tel: 2100931
Shirkat Itihad Aftab	Mandavi Bagh Qazi, Kabul	Tel:2100630
	Jalalabad Office	079.325.188
Shirkat Tijarty Shahzad Ilham Ltd.	Mandavi Bagh Qazi, Kabul	Mob;079.445.795
		Mob:292592
Sadaqat Umda Froshi	Mandi Haji, Haji Agha Nani	Tel:3001874 and 3001475
	Kandahar	Mob:070.402372 and 070.309654
		Mob:079.414920
Sole Distributor Kandahar Province	Kandahar Market	Mob:079.107205
	opposit Nwab Market Mandavi, Kandahar	Mob:079.105752
Daud Shah, Haq Nazar and Brothers	Lashkargah Mahkma Chowk	Tel: 075.3910548
	between Stae Offices and Daud Shah Godown	Mob:079.150958

IMPORTED EDIBLE OILS, TYPES, ORIGIN, PACKING AND PRICES, WHOLESALE AND RETAIL

Afghan Market is flooded with edible oils of numerous brands, different origins, in various types of packing, hydrogenated, liquid, Semi solid and prices. One thing, however, is common to all

non Pakistan origin oils. All are palm oil based. Imports from Pakistan have blends with varying proportion of cotton seed oil and palm oil.

BRANDS

Momin Brands

Packing: 1,3,5,10,16 and 20 kg
1 kg in plastic pouch, 3, 5, 10, 16, and 18 kg in plastic canes and buckets

Origin: Dubai (Jable Ali)

Base: Oil:Palm oil

Momin Group is the largest importer of palm oil based brands from Dubai. Apart from their own brand name Momin, they also import brands named Shaista, Hayat, Asli, Safi, Alpha, Itihad, Bahari, Laila, Wahta and Qudrat.

Marco Polo Brands

Packing: 10 and 20 kg

Origin; Dubai

Base: Palm oil

Barakat Brands

Packing: 5, 10, 20 kg

Origin: Malaysia/Singapor

Base: Palm oil

Different brands are Barkat,

Pakistani Brands

Packing: 2.5, 5, 10, 16, 18, 20 kg, mostly in tins; some brands in buckets.

Origin: Pakistan, from factories in the NWFP, Punjab, Sindh and Baluchistan; blend of cotton seed oil and Palm oil with varying mix; hydrogenated, semi-solid ghee. Brands: Gul, Shama, Farooq, Kohinoor and Sohail

Base: Palm oil and cotton seed oil.

Iranian Brands

Packing: 1 and 2 liter

Origin: Palm oil, oleine processed in Iran
Naser, Sitara, Bita and Waramin

Base: Malaysian Palm oil

Prices

(in Afg.)

Packing	Wholesale Price	Retail Price Major Towns	Retail Price Rural Areas
20 kg	710	732	740
18 kg	666	686	692
16 kg	576	594	600
10 kg	380	392	396
05 kg	177	182	185
03 kg	133	137	140

WHOLESALE AND RETAIL MARKETING STRUCTURE FOR LOCALLY PRODUCED EDIBLE OIL

LOCALLY PRODUCED EDIBLE OIL

At this point in time there are two sources of production of indigenously processed edible oil. One in the public sector and the other a recently established Vegetable Ghee Factory in Pule Khumri area of Kabul and the other is a public sector unit in Helmand Province.

The public sector unit is part of a state enterprise in Lashkargah and processes cotton seed.. It had a capacity to gin 25,000 tons of cotton and crush cotton seed from its own ginnery and also from another state ginnery of similar capacity at Grishk. The plant at Lashkargah had a refinery and hydrogenation unit also. Ginnery at Grishk is no more, Hydrogenation plant is dysfunctional and production of cotton crop has sharply declined in the province.

The plant has been producing varying quantities of cotton seed oil over the past few years depending on availabilty of cotton. Last year the estimated production of cotton seed oil was 575 tons. In the previous year production was around 200 tons.

Cotton seed oil produce is sold in Lashkargah city in the shop run by the plant. It is not exported to other towns but buyers can take it to any place they want.

The privately established vegetable ghee mill is owned and operated by Najib Dorab Group of Companies. It is a modern plant with installed capacity of processing 40,000 tons of oil per annum. The plant is based on 100% import of raw oil and has been given special permission under Afghanistan Transit Trade Agreement with Pakistan to Import its requirement. This year

they imported 17,000 tons of RBD palm oil. They have started an aggressive marketing campaign for its Spinghar brand of vegetable ghee. They have established 20 sole distributors in most eastern and southeastern provinces and towns.

During the past five years, cotton seed oil from the ginnery at Lashkargah has produced between 200 to 575 m tons of oil. This being a small quantity, is market only in Lashkargah at the official shop of the the state enterprise.

Cotton seed crushing by the surviving, about eight units in Babji, Nad Ali, Marja and Garmser produced about 43 m tons of raw oil during this past season for local consumption.

There is no domestic production of edible oil in Kandahar province except the small, of no commercial significance, groundnut crushing unit in Zeri district. The unit is located thee to provide employment to destitute internally displaced refugees.

CONSTRAINTS ON EXPANSION OF EDIBLE OIL MARKETING IN AFGHANISTAN AND REGIONALLY

There is no constraint or restrictive regulations on import, distribution and marketing of edible oil. On bulk and wholesale trade there are minor price differences depending on distance from the point of entry and wholesale location. The same principal applies to retail marketing. Prices are higher if the retailing end is far from the wholesale market.

VIII. GENERAL AND SPECIFIC RECOMMENDATIONS

Afghanistan has a long tradition of entrepreneurship and a vibrant private sector despite adversities. In fact one of the basic causes of resistance to socialist government during the Soviet intervention was against so-called land reforms. Afghans have this fiercely independent agricultural, trading and commercial acumen going back over the centuries.

INTRODUCE BANKING SYSTEM

In present day Afghanistan, basic pre-requisites to revive private sector are, to consolidate political stability and security. Equally important is to establish a strong judicial system and a fair equitable taxation and banking system.

Total or partial disinvestment of functional, partially destroyed or fully destroyed public sector is also an area to be critically analyzed. During the socialist regime there were 173 State Owned Enterprises functional and contributed about one-third of the revenue budget. Of these, only 80 have survived to a functional level of 0 to 30%. Only a few of these, SOE are viable. Official thinking is to privatize non functional and non viable SOEs.

A commission to review these SOEs started working in early 2003 with the mandate to assess assets, evaluate operations and recommend transparent privatization procedures. The success of privatization will depend on security, political stability, law and order and an honest functional tax and banking regime.

State owned enterprises (SOEs) are a burden on national exchequer, itself is dependent on foreign aid, have to be disinvested. This is especially applicable to the only surviving and partially functioning ginnery and oil expelling plant at Lashkagah. Hoping that reconstruction and development activities would make dent into bourgeoning illicit crops and Canola rapeseed and sunflower would be introduced.

All importers be require legally to register and a rational system of Custom duty be devised. Presently 2.5 % custom on processed food items and 5 % on un-processed food items is deterrent to many intending investors that include besides businessmen, former war lords and many a drug barons now looking for respectability for their children.

A strong political will is required to rationalize import of edible oils. Currently any one and anybody can import processed edible oil by-passing formal banking, using *hundi/hawala.* Should all importers be required to import against LCs documentation will result, government revenues will increase.

REVIVE PRODUCTION OF COTTON CROP IN HELMAND

During the pre-conflict years Helmand was one of the major cotton producing provinces, had two modern ginning factories, one with cottonseed crushing and refining unit. All economic indicators point to a steady and rising demand for cotton internationally. Cotton produced in Helmand for its dry growing environment is famous for its superior absorbing capacity and fetches higher prices. During the conflict years production of cotton drastically declined as the Afghan textile industry collapsed. There is no reason that cotton crop grown under improved agronomic practices would not attract international buyers beside producing edible oil and cotton seed cake for livestock.

Cotton is grown primarily for its fibers or lint, but the oil containing seed provides good edible oil and cotton seed cake for livestock. The seed cotton is harvested from the dehisced bolls, partly by hand and by machine. The lint is removed from the seed mechanically at cotton gins and baled. The seed of most varieties is covered with short fibers or linters after the ginning. The seeds consist about half of hull and half of kernel. The seed contains 16 to 18 percent oil. In extracting the oil the seeds are cleaned, de-linted, and pressed or put through expellers either whole or after de-hulling.

A metric ton of seeds with efficient recovery can yield around 130 kg of oil. The meal or press cake is a valuable high-protein livestock feed and the cotton fields, after the harvest, may be used for livestock feed as a concentrate. A hectare of cotton crop, besides providing seed cotton, also provides about 40 tons of fuel wood for fuel short Afghan farmer.

During the pre-conflict years, cotton was the main edible oil producing crop. Some linseed and sunflower were also crushed at local expelling and village *kohlus* for oil extraction. A production ranging between 10 to 15 thousand tons of cotton seed oil was augmented with an estimated 15 to 20 thousand tons of imports formally and, perhaps another 8 to 10 thousand tons of undocumented import from Pakistan.

If Afghanistan has to substitute and curtail import of edible oil, it has to revive its cotton crop which has virtually collapsed during and since the cessation of conflict. Use of traditional oilseed crops, sesame and linseed, would never be an economical feasibility as they fetch much higher price as seed. Neither these crops can command large area of production. Besides cotton, sun flower and Canola rapeseeds would be the other crops for edible oils.

REGULATE TRADE AND MARKET PRICES OF EDIBLE OIL

The writer made another observation that price of imported edible oil in the cities is still another factor for mushrooming growth and demand of edible oils. A cheap brand of imported processed oil, calorie for calorie cost much less than bread (*nan*). The cheapest edible retailed in larger packing cost about 40 Afg. per kg. A regular *nan* costing 9 Afghani is made of 240 Grams of flour which actually is 200 gram. of starch. Starch gives 4 calories per gram. Fat (edible oil) gives 9 calories per gram.

Comparison is:

Nan	One Afghani gives about	90 calories
Edible Oil	One Afghani gives	225 calories

INCREASE DUTY ON IMPORTED/PROCESSED EDIBLE OIL

Present custom duty on processed and unprocessed food products, encourages import of value-added processed food items over unprocessed produce. This is a great deterrence to prospective industrial units who could import, process and produce value added products. It will be a policy of national imperative to increase official revenues, encourage local production of edible oil crops; promote local agro-based industry and trade and business it with a rational taxation regime.

SHIFT CUSTOM HOUSES CLOSE TO BORDER ENTRY POINTS

Presently, all the Custom Houses (*Gumrak*) are located far away from border entry points. Some are located as far as 125 km away from border. This state of affairs results in irregularities, corruption and avoidance of duties. It is recommended that all Custom housed are moved close to border entry points. This will bring a semblance of organized cross border movement of goods and increase government revenues from custom duties and other taxes besides documentation of trade.

IX. REFERENCES CONSULTED

Adamec, Kandahar and South-Central Afghanistan, Graz Austria; 1979.

Afghanistan PEACE Initiative (1997-99), Poverty Eradication and Community Empowerment, Final Version, UNDP; April 1997.

Afghanistan Rebuilding a War-Torn Society, UNDP Afghanistan; 1995.

Agriculture Developments in Afghanistan, Vol. Issue 1, Development Alternatives Inc. (DAI); 1992.

Agriculture Developments in Afghanistan, Vol. II, Issue-2, Development Alternatives Inc. (DAI); 1992.

Ahmad, M. Socio-economic Profile and Alternative Cropping Systems for the Development of Agriculture in Kandahar Province, Afghanistan; 1997.

Amin, D.N. The Rehabilitation of Afghanistan's Irrigation System, the Writers Union of Free Afghanistan, in Dari; 1997.

Anderson, I.M. Program for the Rehabilitation of Afghan Agriculture, Agri.-Systems Overseas) Limited; 1990.

Arez, G.J. The Bio-Climate of Afghanistan, Institute of Geography, Kabul University, in Dari; 1972.

Berging, F.R. Land Management Report, Promotion of Agricultural Rehabilitation and Development in Afghanistan, FAO Afghan Agriculture Strategy; 1997.

Christensen, A. Aiding Afghanistan – The Background and Prospects for Reconstruction in a Fragmented Society, SIDA; 1994.

Clarke, Paul. A Preliminary Guide to the Food Economies of Afghanistan WFP VAM Project; 1998.

DAI, Cash Crop Feasibility Study, Agricultural Sector Support Project, Private Sector Agri-Business; 1990.

DAI/Earth-Sat. Afghanistan, Land Cover and Land Use Report, Afghanistan Agricultural Sector Support Project, Private Sector Agri-Business; 1993.

DAI/USAID. Restraints and Possible Interventions to Increase Agriculture Inputs and Outputs from Afghanistan; 1990.

DAI. Agricultural Dev elopement in Afghanistan, Various Issues; 1992, 1993.

Data Collection for Afghan Repatriation Project; UNHCR Background Report, Kandahar Province; 1989.

Doolan, W.W. Integrated Crop and Food Production in Afghanistan; 1997.

Dupree, L. Afghanistan; 1973.

Economist Intelligence Unit (EIU), Various Issues Afghanistan Country Profiles; 2002 to 2005 issues.

FAO. Afghanistan Land Cover Statistics; 1998.

FAO, Management Support Provision for Agriculture Inputs for the 1988-89 Season; 1989.

FAO Afghanistan Seed Component Activities; 1999.

FAO, Promotion of Agricultural Rehabilitation and Development Program for Afghanistan, The Afghan Agriculture Strategy, Rome; 1991.

FAO, Promotion of Agricultural Rehabilitation and Development Program for Afghanistan, The Afghan Agriculture Strategy; 1997.

Geokart. National ATLAS of the Democratic Republic of Afghanistan; 1984.

Klemm, W. Water Resources and Irrigation – Promotion of Agricultural Rehabilitation and Development in Afghanistan, FAO Afghan Strategy; 1997.

Majrooh, S.B. and Elmi, S.M.Y. The Sovietization of Afghanistan; 1986.

Ministry of Planning (Central Statistics Office). Afghan Agriculture in Figures; 1978.

Ministry of Planning (Central Statistics Office), Republic of Afghanistan, Statistical Year Book; 1362 (1983-84), 1984, 2004.

Ministry of Planning, Republic of Afghanistan, Socio-Economic Development Plan for the year 1369 (1990-91), in Dari, 1990.

Naqvi, Z.F. Afghanistan-Pakistan Trade Relations; 1999 (WB, unpublished).

Ostrom, K. Understanding the Economy of Afghanistan, An Exploratory Study, Asia Department, SIDA; 1997.

Potolski, N. Alternative Crops for Drug Growing Areas in Asia, Pakistan, Afghanistan, Nepal and Thailand, ODA; 1991.

Swedish Committee for Afghanistan (SCA). Agricultural Survey of Afghanistan (ASA), Reports 1-18; 1988-1994.

UNDCP. Afghanistan. Opium Poppy Surveys; 1996-1999.

UNDP, Afghanistan. Rebuilding a War-Torn Society; 1995.

UNDP, Afghanistan. Rehabilitation Strategy, Action Plan for Immediate Rehabilitation, Vol. IV, Agriculture and Irrigation; 1993.

UNDP. Agricultural Rehabilitation in Southern and Eastern Afghanistan; 1993.

UNDP. Baseline Survey, Kandahar Province, Afghanistan; 1994.

UNHCR. Background Reports, Ghazni, Herat, Kandahar, Laghman, Logar, Nangarhar, Paktia, Paktika, Wardak and Zabul Provinces; 1989/90.

UNHCR. Review of Cross-Border Projects; 1989.

UNIDATA. Afghanistan Socio-Economic Profiles – Kandahar Province; 1991/92.

UNOPS. 1995 Comparative Survey, Kandahar Province, Afghanistan; 1995.

USAID. Surface Water Resources Investigation Plan for Afghanistan; 1966.

World Bank. Afghanistan, The Journey to Economic Development, Vol.I and II; 1978.

Registan Water, Pasture Assessment, UNAMA/CADG, Final Report; 2004.

(Personal communications and discussions with officials of the FAO Afghanistan, WFP, UNHCR, WHO, UNODC, UNDP and Officials and Private individuals, importers, industrialists, businessmen, notables and elders in Kabul, Kandahar and Helmand)

ANNEXURES:

2 November 2005

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CROP SEASONS, DIFFERENT FARMING SYSTEMS, P=PLANTING H= HARVESTING

Farming/System/Crop	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Shulgara: Rainfed wheat	P	P					H					P
Linseed			P					H				
Barley			P				H					
Irr. Wheat						H					P	
Rice						P					H	
Cotton					P					H		
Maize						P					H	
Millet								P			H	
Peal							H				P	
Nejrab: Irr. Wheat						H				P		
Clover							P				H	
Maize							P				H	
Bean							H				P	
Barley								P			H	
Mung Bean			P				H					
Rice						H					P	
Rainfed Wheat							P				H	
Mehterlam: Irri. Wheat						H					P	
Rice							P			H		
Clover							P			H		
Maize		P								H		
Mung Bean												
Sugarcane												
Maidan Shehar: Irr. Wheat							H			P		
Potatoes				P							H	
Barley			P				H					
Rice					P						H	
Clover					H	H	H	H		P		
Mung Bean			P				H					
Vetch			P			H						
Qarabagh: Irri. Wheat								H	P			
Alfalfa					H	H	H		P			
Clover					H	H	H		P			
Potatoes				P					H			
Vetch				P			H					
Melon					P			H				
Barley							H					P
Water Melon					P			H				
Nad Ali: Irr. Wheat						H					P	
Poppy					H						P	
Cotton				P		P					H	
Maize						P				H		
Peanut				P							H	
Clover					H	H	H		P			
Melon/water M.			P			P	H		H			
Onion						H				P		
Bean						P			H			
Mung Bean						P			H			

Arghandab: Irri.. Wheat						H					P	
Potatoes			P				H					

CATTLE AND POULTRY FEED

PLANT PARAMETERS	
Capacity, TPA	9600
No.of Shifts / day	2
Working days / Yr.	300
Total Land Area, m^2	4000
Covered Area, m^2	600
MANPOWER	
Managerial	1
Skilled	8
Unskilled	12
RAW MATERIAL	
Molasses	Minerals
Cereals; rejects from processing	Oil seed cake
Dried blood	Vitamins
maize/wheat bran	Minerals
UTILITIES (Per tonne of Product)	
Power, KwH	20
Process Water, KL	1
Raw water, KL	
PLANT & MACHINERY	
Feed grinder	Feed mixer
Bucket elevator	Batch bin
Mixing tanks	Packing unit

The cattle and poultry feed is required to provide an effective and balanced diet to animals for their proper growth which would result in higher yield of products like meat, milk & eggs etc. The animal feed production units have their options a variety of raw materials like cereals, millets, agricultural waste, oil seed meals, fish / silk worm meal and other nutritive materials.

About 20% of animal body weight is composed of proteins, the rest being made up of fats, water and minerals. The animals require considerable amount of proteins and fats and minerals in their diets. Most crops and grains, used as the traditional feeding stuff, contain only small proportion of protein and cannot meet the requirement of the animal. Therefore a high protein supplement derived from by-products like oil cakes and bone-meal of animal origin, etc. is required for animals. However, these supplement foods should be basically palatable and easily digestible. It should have no toxic effect and should stain the meat. It should have high protein content and the protein should have the desired amino acid spectrum.

The most important factor in animal feed production is that it should be made available to the farmers at an economic price. In India the cattle and feeds are produced mostly by small scale units or cooperative sectors and have made a commercial success. A substantial amount of these products are being exported by the Indian manufacturers.

PROCESS

This consists of batting, cleaning, powdering. blending of raw materials in definite proportions and packing processed finished goods in gunnies with polythene lining.

Raw materials are weighed and batched in the proportions and delivered to the intake Hopper of First Bucket Elevator. The Bucket Elevator delivers the material to the Hammer Mill. The Magnets placed at the 'z' Chute removes the Iron materials (if there is any). The powdered raw materials are delivered to the intake hopper of the second elevator which delivers the same to the Batch Bin above the Mixing Mill. From the Batch Bin it is dropped to the mixer where it is blended with molasses and fortified with Vitamins and trace minerals. After mixing, it is bagged in gunny bags lined with polythene weighed and stitched.

PREFERENTIAL TRADE WITH AFGHANISTAN PROPOSED

ISLAMABAD: Pakistan has proposed a preferential trade agreement with Afghanistan and shown keen interest in setting up industrial zones between Kandahar and Jalalabad, once security issues are resolved, said Humayun Akhtar Khan, Pakistan's commerce minister.

Mr Khan said this on Friday during his meeting with Dr Anwarul Haq Ahadi, Afghanistan's finance minister, who is in Pakistan to attend the Pak-Afghan Joint Ministerial Commission (JMC). The commerce minister also proposed to work out a preferential trade agreement (PTA) leading to a free trade agreement (FTA) between the two countries. Both sides agreed to enhance economic and trade cooperation with each other.

Dr Ahadi said Pakistan was Afghanistan's major trade partner and his country attached a lot of importance to Pakistan's valuable assistance for rebuilding Afghanistan. He said there was tremendous potential for trade between the two countries. "Our trade volume is rising rapidly and much needs to be done to increase it further," he said.

The commerce minister apprised Dr Haq of his recent meeting with the Afghan commerce minister who was leading a delegation at Expo 2005 in Karachi.

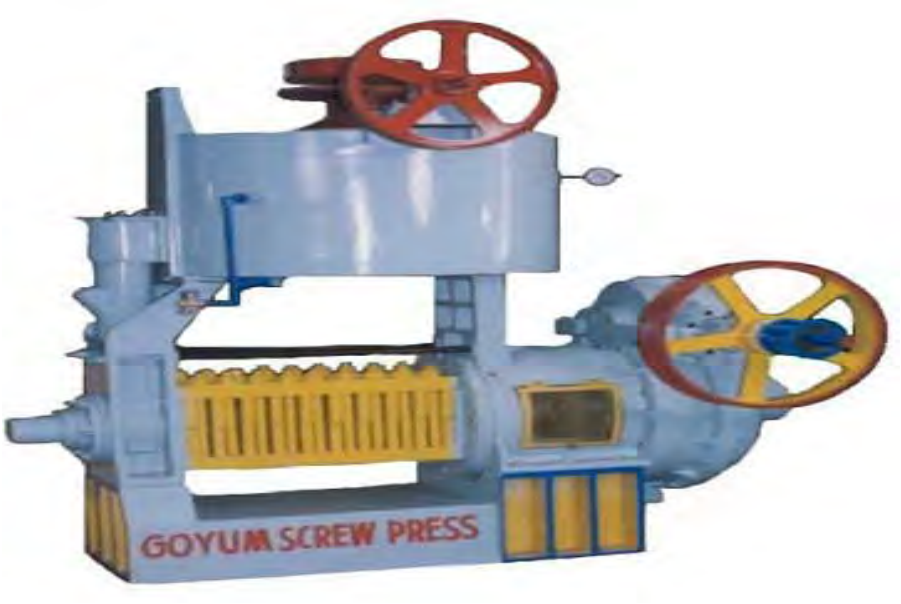
Khan said both countries should form a group to study each other's tariff regimes as well as the complementarities of the two economies so their businessmen could make informed business decisions.

Mr Khan told the Afghan minister that a high profile delegation comprising the commerce secretary and the chairman of the Central Board of revenue would visit Afghanistan soon to discuss various trade issues including the six remaining items on the Afghan Transit Trade negative list.

Bilateral trade with Afghanistan has increased from $192 million (2001-2002) to $540 million (2003-04) and is expected to increase substantially during the fiscal year 2004-05. Since Afghanistan is a landlocked country, the Ministry of Commerce has taken a number of steps to facilitate Afghan Transit Trade.

These include reducing the negative list for Afghan Transit Trade from 24 to only six items, authorising the National Logistic Cell (NLC) to transport rehabilitation goods, adding Port Qasim and Ghulam Khan Killi to the transit routes agreed in the Afghan Transit Trade Agreement 1965 and occasionally allowing items on the negative list to be transit to Afghanistan such as vegetable oil for ghee factories

BASIC SCREW PRESS

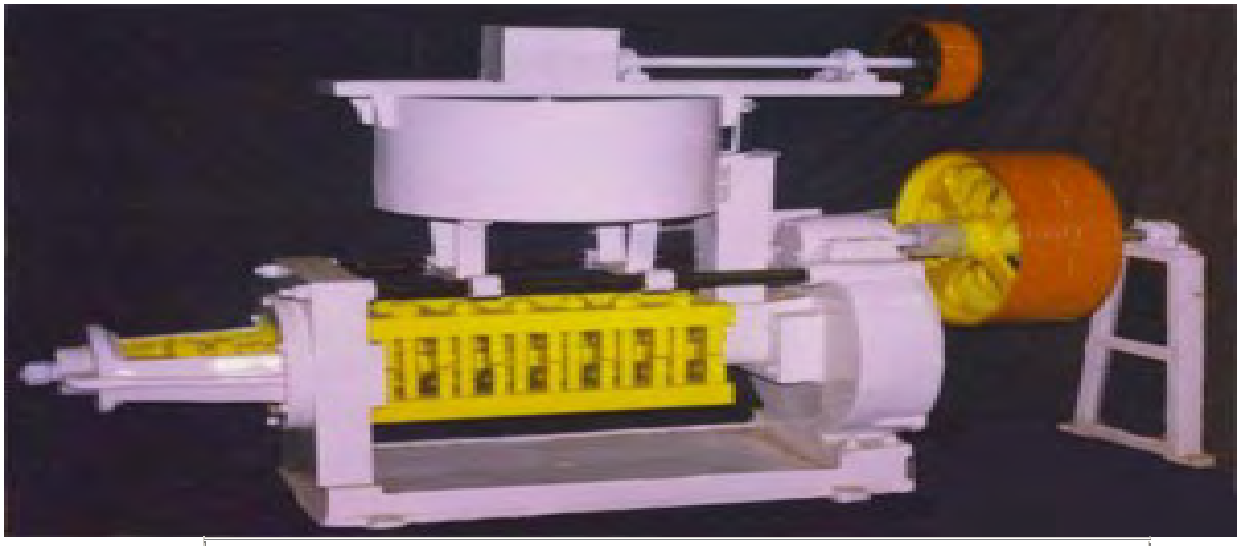


Features
OLD AND CHEAP MODEL.
Double reduction Gear Box of Cast Iron body and Steel fabricated Gears.
Cake thickness adjusting feature is not available in this model.
Case hardened worm assembly and cone point.
Main Worm Shaft can be withdrawn without disturbing the Gear Box.
Crammer Shaft gives extra cramming of the Seed or Cake in the Feed Body.
Superior quality of Oil & Cake.
Low Maintenance.
Steel Fabricated base.
Chamber is assembled from Plate and Frames of Size 33"XØ6" & 44"XØ7".
Same Model is available in 15 ton capacity with 50 H.P.(960 R.P.M.).

Low Power Consumption:	3-Phase 30 H.P Motor 960 R.P.M.
Kettle:	2 High-Ø42" steam jackets for efficient cooking of seed. Pipe fitting contains all the required accessories.

High Capacity:	8 Ton (In 24 Hours) Capacity differs with material density & quantity of oil in the seed.)

10 TON EXPELLER

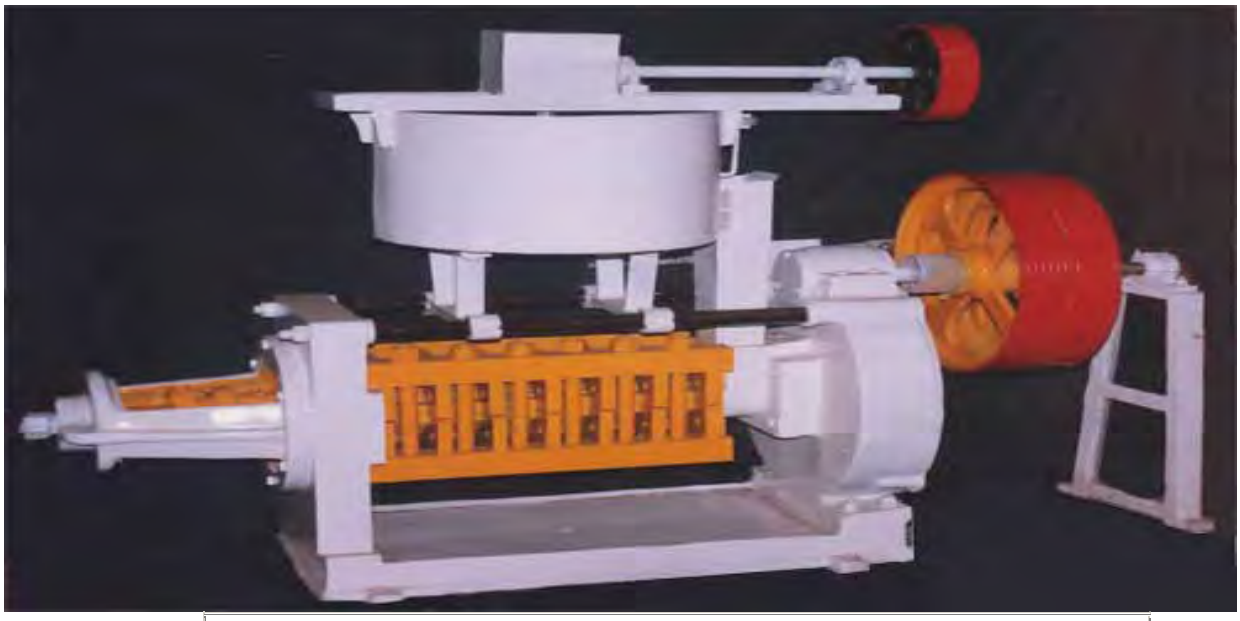


Features
Cast Iron Bodies & Base.
Single Reduction Gear Box with Spur Gears.
Fabricated chamber with three sections of 20" x 3 1/2".
Case hardened worm assembly.
Superior quality of oil & cake.
Very little maintenance.

Low Power Consumption:	3-Phase 5 H.P Motor - 960 rpm.
Feeding Drum:	Single Stage with & without heating arrangement (As Required).
High Capacity:	1 Ton per 24 Hours (Capacity differs with material density & quantity of oil in it.)

Less Space Requirement [Over all M/C dim] (Approx)		
Length	Breadth	Height
1300mm	475mm	1075mm

20 TON EXPELLER

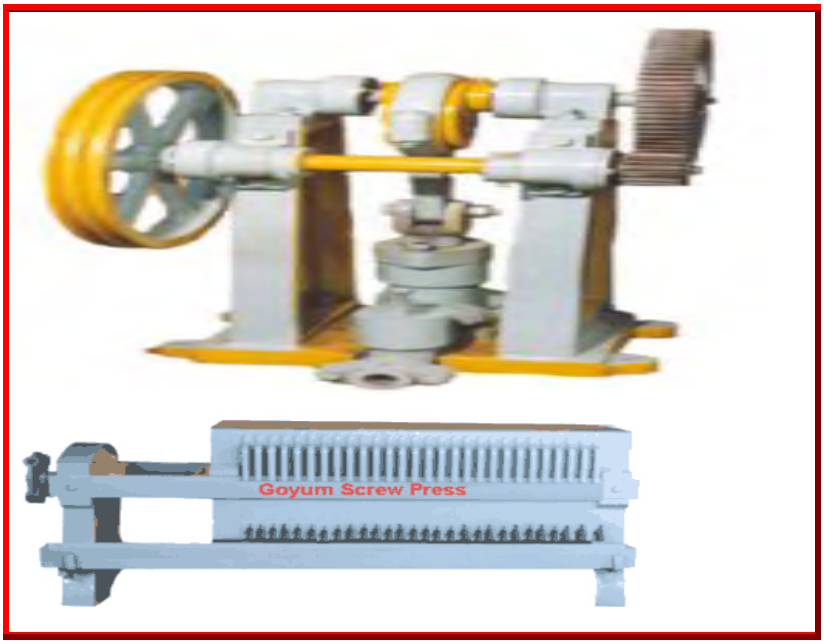


Features
Cast iron bodies and base.
Single reduction gear box with spur gears.
Fabricated chamber with three sections of 24" X 4".
Cake thickness cannot be adjusted on running Machine.
Case hardened worm assembly .
Superior quality of oil & cake.
Very very little maintenance required.

Low Power Consumption:	3-Phase 7.5 H.P Motor - 1440 rpm.
Feeding Drum:	Single Stage with & without steam heating arrangement (As Required).
High Capacity:	2 Tons per 24 Hours (Capacity differs with material density & quantity of oil in it.)

Less Space Requirement [Over all M/C dim] (Approx)		
Length	Breadth	Height
2185mm (86")	685mm (27")	1422mm (56")

FILTER PRESS



Technical Data of Filter Presses						
SIZE	Weight [Kgs]	Area [Sq.Mtrs]	Capacity/Day [Liters]	H.P	RPM of Pump	Size of Plunger Pump
36" x 36" x 36 Plates x 35 Frames	10,000	55	50,000	10	2900	Centrifugal
30" x 30" x 30 Plates x 29 Frames	5,500	35	30,000	5	55-65	80mm
30" x 30" x 30 Plates	4,800	35	25,000	3	55-60	80mm
24" x 24" x 24 Plates x 23 Frames	3,000	16	12,500	3	50-55	60mm
24" x 24" x 30 Plates	2,700	20	12,500	3	50-55	60mm
24" x 24" x 24 Plates	2,300	16	10,000	3	50-55	60mm
18" x 18" x 18 Plates	1,000	7	5,000	1	40-45	50 mm
14" x 14" x 14 Plates	500	3	2,500	1	40-45	50mm
12" x 12" x 12 Plates	380	2	1,500	1	40-45	40mm

DECORTICATOR

Features
1. All Steel fabricated.
2. Case hardened knives.
3. Synchronised feeding.
4. Vibratory Separator fitted underneath.
5. Negligible maintenance.
6. Suitable for Sunflower & Cotton seeds.

Low Power Consumption:	10 H.P. for Decorticator.
	2 H.P. for Vibratory separator.
High Capacity:	15 ton to 20 ton (depending upon quality and density of seed)-in 24 hrs.

Less Space Requirement [Over all Machine dimensions] (Approx)

Length	Breadth	Height
2895mm (9'6")	1575mm (5'6")	2134 mm (7'0")

* Same models are available in higher capacities.

State-Owned Industries Privatization Projects

Project Summary	
Subsector	Privatization
Location	Nationwide
Project Cost	$700.0 Million
Project Type	Privatize State-Owned Industries
Project Executing Firm/Agency	Various Ministries
Funding Agency	Not Identified

Project Outline

Most, if not all, of Afghanistan's industries are state-owned and require accessible investment capital, modern equipment, and efficient management to produce and compete in the current markets. The New Investment Law adopted by the Afghan Government allows 100 percent foreign ownership of Afghan enterprises and there is a move towards promoting privatization and corporatization of state-owned industries.

Technical Description

The following is a list of Afghan state-owned industries that are subject to privatization:

Ministry Owner/Shareholder	Name of Enterprise	Location/Other Data
Commerce	Department of Rations	Kabul. Food storage, silos, bakeries (asset sale).
Commerce	Department of Gasoline	Kabul. Petrol and LNG distribution, gasoline stations (asset sale).
Commerce	**Afghan Cart Co.***	Kabul. Retail trader. Site visit made. **Privatized (lease).**
Commerce	AFSOTER*	Kabul (building/land sale) Site visit made
Mines & Industry	Marble Company*	Kabul. **In process of privatization via Joint Venture.**
Mines & Industry	Jangalak Industrial Co.	Chahl Setoon, Kabul (asset sale).
Mines & Industry	**Metal Mining Co.**	Tarakhel, Kabul (tender).
Mines & Industry.	**Northern Coal Co.**	Karkar Pulkhumri, Baghlan (tender).
Mines & Industry	**Mazar-e Sharif Fertilizer Co.**	Mazar, Balkh (tender for strategic investor).
Mines & Industry	**Ghori Cement Co.**	Pulkhumri, Baghlan (tender for strategic investor or asset sale).
Mines & Industry	**Afghan Gas Co.**	Shebergan, Josjan (tender for strategic investor).
Mines & Industry	**Jabulusaraj Cement Co.***	Jabulusaraj, Parwan (asset sale). Site visit made. Non-operating. Old technology. Small capacity. Poor transport. Centralize large-scale production. Potential strategic investors.
Light Industry	Afghan Carpentry Co.	Chahl Setoon, Kabul.
Light Industry	**Integrated Medical and Technical Dept. (Clemd Winery)***	Kabul (tender). Medical alcohol.
Light Industry	**Wool Weaving Co. of Pulcharkhi***	Kabul (tender). Partially operating. Produces blankets and fabric.
Light Industry	Bagrami Textile Co.	Bagram, Kabul.
Light Industry	**Afghan Textile Co.***	Gulbahar. Site visit. Largest textile plant in Central Asia. Equipment can be partially rehabbed. Needs power and water supplies. Small-scale production lines. Needs donor funding and technical assistance to attract strategic investors. Potential strategic investors.
Light Industry	**Balkh Textile Co.**	Balkh.
Light Industry	**Khandahar Wool Weaving Co.**	Kandahar (going concern, tender).
Light Industry	Spinzar Co. of Kunduz	Kunduz (going concern, potential strategic investors identified).
Light Industry	Bread Baking Co. of Kabul*	Kabul (asset sale).

Light Industry	Bread Baking Co. of Balkh	Balkh.
Light Industry	Herat Textile Industries	Herat.
Light Industry	**Bagrami Brick Co.**	Bagram, Kabul.
Light Industry	**Nangahar Sugar Co.**	Nangahar.
Light Industry	Kunarha Co.	Kunar.
Light Industry	Baghlan Sugar Industry	Baghlan.
Light Industry	Printing plants in 25 provinces	Nationwide.
Light Industry	**Bost Cotton Ginning Plant**	Helmand (going concern, potential strategic investors identified).
Light Industry	**Balkh Ginning Co.**	Balkh. (going concern) 75 percent operating.
Light Industry	Pulikhumri Flour Co.	Pulikhumri, Asset sale.
Light Industry	Pulikhumri Textile Co.	Pulikhumri, (going concern. Tender.
Light Industry	**Kandahar Textile Co.**	Kandahar (going concern, of interest to potential strategic investors).
Urban Development	**Housing Construction Plant***	Kabul. Concrete/building materials complex. (potential strategic investors identified).
Urban Development	**Afghan Construction Co.**	Kabul.
Urban Development	**Banaye Construction Co.***	Badam Bagh, Kabul.
Urban Development	**Helmand Construction Co.**	Helmand.
Urban Development	Dept. of Water Supply and Canals	Kabul (needs donor subsidies for international operator management contract).
Transport	**Mili Municipal Bus Service Co.***	Kabul (privatize, regulatory issues).
Transport	**Petroleum Products Transport Co.**	Kabul (asset sale, gasoline transport).
Culture & Information	Afghan Advertising Co.	Kabul (going concern, tender).
Culture & Information	Azadi Printing Co.	Kabul (government printing press).
Culture & Information	Ariana Printing Co.	Kabul (asset sale).
Water & Power	Iron Components Co.	Kabul (asset sale).
Water & Power	**Power Construction Co.**	Kabul (strategic tender).
Water & Power	**Brishna Electric Power Co.**	Kabul (public utility, strategic tender, regulatory issues).

Water & Power	**Power Development Co.**	Kabul.
Aviation & Tourism	**Ariana Airlines**	Kabul (potential strategic investors/management contract).
Defense	**Construction Materials Production Co.**	Kabul (privatize with US military assistance).
Defense	Slaughter house	Kabul (privatize with US military assistance).
Agriculture	**Nangarhar Valley Authority**	Jalalabad (collective farm, large-scale olive growing/processing and export potential).
Agriculture	Agriculture Fertilizer Co. (AFC)	Kabul (fertilizer distribution; quality control/service and fertilizer subsidy role remain in Ministry; otherwise, eliminate fertilizer distribution role).
Irrigation	**Spin Ghar Construction Co.**	Kabul (investor interest).
Finance	Sukuk Printing Co.	Kabul.
Finance	Afghan Public Insurance Co.	Kabul (likely liquidation candidate, need financial sector assessment).
Public Health	Pharmacy Dept.	Kabul.
Kabul Municipal Authority	Municipal Construction Co.	Kabul.
Education	Educational Printing Co.	Kabul (remain with Ministry for near term).
Ministry of Communication	**Afghanistan Telecommunications System**	Kabul HQ. **Privatization being implemented.** Includes Ministry 50%+ stake in AWCC joint venture. Strategic enterprise. Potential strategic investors. Ministry is to license second cellular operator (Agha Khan Foundation).

Source: USAID Economic Governance Project, Dec 17, 2002
Bold = Initial assessment indicates potential going-concern/viable enterprise for sale via tender process to strategic investors.
* = Site visited by USAID contractor/consultant.

Project Site

The state-owned industries to be privatized are located throughout Afghanistan.

Oil Seed Producing Assessment

Project Status/Timeline

The privatization of these enterprises is expected to take place over the next three years.

Equipment and Services

U.S. involvement is possible, primarily in the investment and refurbishment of the enterprises listed above. Most of these enterprises require technology upgrades as well as management oversight.

U.S. Competitiveness

U.S. companies should be very competitive in privatizing state-owned industries in Afghanistan. Both the Afghan and the U.S. Governments are keen to increase the presence of U.S. firms in Afghanistan. U.S. firms have experience in privatizing similar enterprises in Eastern Europe and Central Asia.

Project Financing

All of these privatization opportunities require the project sponsor to provide a financing package. Most likely these enterprises will be "leased out" to private operators for a set number of years in which the operators will have complete freedom to make the necessary management decisions to reinstate the enterprises.

Conclusion

There are industries that will be privatized in Afghanistan in the near future and often these industries will require extensive capital investment. There are several reasons that an investment in a privatized industry could prove to be worthwhile such as cheap labor, competition against higher priced imported goods, and an emerging consumer market. Investing in Afghanistan is not for the faint-hearted and due diligence is necessary for each of the project opportunities listed above.

Key Decision Makers

Organization or Company Name	Ministry of Light Industries
Contact Person	Eng. Mohamed Bashir Mashal
Title	Deputy Minister
Address	Kabul, Afghanistan
Telephone	+93-70-278372

Organization or Company Name	Privatization and SOE Board
Contact Person	Khaliq Fazal
Title	President
Address	Kabul, Afghanistan
Telephone	+93-70-276275

OPTIONS FOR AFGHANISTAN'S STATE-OWNED ENTERPRISES

When UNIDO Director- General Carlos Magariños was in Afghanistan on 28 May, 2002, President Hamid Karzai asked if UNIDO could give the Afghan officials responsible for the state owned enterprise (SOE) sector, a primer on current thinking and "best practices" in the field of enterprise reform. UNIDO's response, in the form of a paper "Options for Afghanistan's State-owned Enterprises" was presented to President Karzai's Chief of Cabinet on 14 September, 2002. This article is drawn from the "Executive Summary" of the report, which is available here for viewing or downloading.

view or download *Options for Afghanistan's State-owned Enterprises*

Many countries, like Afghanistan, have had sizeable SOE sectors and virtually all have been forced to implement SOE reform programmes of various types, generally with relatively little success, although there have been notable exceptions. In recent years, however, there has been a host of new experiences, especially with privatization, and studies that have advanced our understanding of what works and why. This experience has been gained in countries that face far less difficult circumstances than does Afghanistan, including developed countries, and countries in the transition to a market economy. Nonetheless, much of it is relevant to Afghanistan, even if its application will need to be done with considerable thought to the particular constraints and features of the Afghan situation.

In the general context that the Afghan SOE reform programme be kept in perspective and that the most important driver for private sector development is competitive markets and building the enabling environment, the report presents the options available to the Afghan Government and fundamental and operational decisions that will confront officials with each of them. **Privatization,** (an SOE can be sold to private owners); **reforms external to the SOE,** (the external environment can be changed to provide stronger incentives for the SOE to be efficient); **corporate governance reforms** (the way the government supervises the SOE can be improved); **enterprise restructuring,** (changes can be made to the SOE's structure, organization, or operations); **privatization of management** (some aspects of privatization can be introduced without changing SOE ownership); liquidation (SOEs can also be closed with their assets sold or transferred to other uses).

In deciding among these options, important questions have to be answered for each SOE. The report looks at the pros and cons for the most important of these, such as: **Who Should Decide?** While major decisions are ultimately the responsibility of the most senior government officials, who should be responsible for the day-to-day decisions: a single SOE authority, or multiple bodies at each relevant Ministry or province? Choosing the right people is the most important determinant of right decisions. **Liquidate or Operate?** Given the damage and deterioration of SOEs in Afghanistan, and the scarcity of resources, should there be more emphasis on salvaging SOEs, or on just closing them down and selling

the assets? **Public or Private Ownership?** If the decision is to operate, as it presumably will be for the majority of the SOEs, should it be under public, private or mixed (public and private) ownership? This is likely to be one of the most important and controversial choices. **Public or Private Management?** If the decision is public or mixed ownership, who in government should control the enterprise, and who should manage it day-to-day? **External and/or Internal Reform?** If the SOE remains public, then should the enterprise be restructured? If so, in what form? Should the corporate governance procedures be changed? Should external reforms (e.g., competition policy) be instituted and, if so, how? **Restructuring or Sale "as is"?** If the enterprise is to be privatized, should it be restructured first, or sold as it is?

The report is careful to point out that the fundamental starting point for an SOE reform programme is to consider whether the country is ready yet for such reform. Privatization and major enterprise restructuring are administratively difficult and often expensive. Mistakes can be made by trying to rush the process that are costly and that jeopardize the possibility of reforms later on. If this is the case, then efforts should be concentrated on other types of reform and major changes to SOEs be postponed until conditions are better and reform capabilities are strengthened.

In the context of this "step by step" approach, the report suggests that a good institutional setup might be one that involves the establishment of a public enterprise unit that would be responsible for public enterprise reform. Such a unit would be responsible for pushing the public enterprise reform process, coordinating government efforts in this area, and providing technical expertise in monitoring and providing information about SOE performance. The report recommends that the unit also exercise ownership as well as supervision of the SOE sector, although it would be possible for it to provide only supervisory and advisory services to the government, with ownership vested elsewhere. It also recommends that the public enterprise unit should be kept relatively small and should have a core technical staff whose responsibility is to insure business-like supervision of the SOEs under its control, without excessive intervention in the management of the enterprise.

In keeping with its general cautionary approach, the overall conclusion of the report is "This is not to say that a careful privatization programme or enterprise reform programme should not be done. It is to say, however, that caution should be exercised, that quality should probably be more important than speed at this point, and that expensive restructuring, in particular, should be avoided. Given limited resources, a pragmatic approach to selecting activities should be taken. Privatization of smaller enterprises operating in competitive markets may well be justified in the near future; small investments for working capital, raw materials, and the like may be cost-effective in some cases, and even a very large SOE restructuring may be warranted, with donor financing and technical assistance. Illustrative options for such an approach are contained in the final chapter of the Report".