Appendix 1—Food Security Model: Definition and Methodology

The Food Security Assessment model used in this report was developed by USDA's Economic Research Service for use in projecting food consumption and access and food gaps (previously called food needs) in low-income countries through 2013. In this report, we have renamed the region formerly called New Independent States (NIS) to the more commonly used Commonwealth of Independent States (CIS). The reference to food is divided into three groups: grains, root crops, and a category called "other," which includes all other commodities consumed, thus covering 100 percent of food consumption. All of these commodities are expressed in grain equivalent.

Food security of a country is evaluated based on the gap between projected domestic food consumption (produced domestically plus imported minus nonfood use) and a consumption requirement. For the first time, we are using total food aid data (cereal and non-cereal food commodities). These data are provided by the World Food Program (WFP). All food aid commodities were converted into grain equivalent based on calorie content to allow aggregation. For example: grain has roughly 3.5 calories per gram and tubers have about 1 calorie per gram. One ton of tubers is therefore equivalent to 0.29 tons of grain (1 divided by 3.5), one ton of vegetable oil (8 calories per gram) is equivalent to 2.29 tons of grain (8 divided by 3.5).

It should be noted that while projection results will provide a baseline for the food security situation of the countries, results depend on assumptions and specifications of the model. Since the model is based on historical data, it implicitly assumes that the historical trend in key variables will continue in the future.

Food gaps are projected using two consumption criteria:

1) *Status quo target*, where the objective is to maintain average per capita consumption of the recent past. The most recent 3-year average (2000-2002) is used for the per capita consumption target to eliminate short-term fluctuations.

2) *Nutrition-based target*, where the objective is to maintain the daily caloric intake standards of about 2,100 calories per capita per day—depending on the region—recommended by the UN's Food and Agriculture Organization (FAO). The caloric requirements (based on total share of grains, root crops, and "other") used in this assessment are those necessary to sustain life with minimum food-gathering activities.

The status quo measure embodies a "safety-net" criterion by providing food consumption stability at recently achieved levels. The nutrition-based target assists in comparisons of relative well-being. Comparing the two consumption measures either for countries or regions provides an indicator of the need depending on whether the objectives are to achieve consumption stability and/or to meet a nutritional standard. Large nutrition-based needs relative to status quo needs, for example, mean additional food must be provided if improved nutrition levels are the main objective. In cases where nutrition-based requirements are below status quo consumption needs, food availability could decline without risking nutritional adequacy, on average. Both methods, however, fail to address inequalities of food distribution within a country.

Structural Framework for Projecting Food Consumption in the Aggregate and by Income Group

Projection of food availability—The simulation framework used for projecting aggregate food availability is based on partial equilibrium recursive models of 70 lower income countries. The country models are synthetic, meaning that the parameters that are used are either cross-country estimates or are estimated by other studies. Each country model includes three commodity groups: grains, root crops, and "other." The production side of the grain and root crops are divided into yield and area response. Crop area is a function of 1-year lag return (real price times yield), while yield responds to input use. Commercial imports are assumed to be a function of domestic price, world commodity price, and foreign exchange availability. Food aid received by countries is assumed constant at the base level during the projection period. Foreign exchange availability is a key determinant of commercial food imports and is the sum of the value of export earnings and net flow of credit. Foreign exchange availability is assumed to be equal to foreign exchange use, meaning that foreign exchange reserve is assumed constant during the projection period. Countries are assumed to be price takers in the international market, meaning that world prices are exogenous

in the model. However, producer prices are linked to the international market. The projection of consumption for the "other" commodities is simply based on a trend that follows the projected growth in supply of the food crops (grains plus root crops). Although this is a very simplistic approach, it represents an improvement from the previous assessments where the contribution by commodities to the diet, such as meat and dairy products, was overlooked. The plan is to enhance this aspect of the model in the future.

For the commodity groups grains and root crops (c), food consumption (*FC*) is defined as domestic supply (*DS*) minus nonfood use (*NF*). *n* is a country index and *t* is a time index.

$$FC_{cnt} = DS_{cnt} - NF_{cnt} \quad (1)$$

Nonfood use is the sum of seed use (*SD*), feed use (*FD*), exports (*EX*), and other uses (*OU*).

$$NF_{cnt} = SD_{cnt} + FD_{cnt} + EX_{cnt} + OU_{cnt} \quad (2)$$

Domestic supply of a commodity group is the sum of domestic production (*PR*) plus commercial imports (*CI*), changes in stocks (*CSTK*), and food aid (*FA*).

$$DS_{cnt} = PR_{cnt} + CI_{cnt} + CSTK_{cnt} + FA_{cnt} \quad (3)$$

Production is generally determined by the area and yield response functions:

$$PR_{cnt} = AR_{cnt} * YL_{cnt} \quad (4)$$

$$YL_{cnt} = f(LB_{cnt}, FR_{cnt}, K_{cnt}, T_{cnt}) \quad (5)$$

$$RPY_{cnt} = YL_{cnt} * DP_{cnt} \quad (6)$$

$$RNPY_{cnt} = NYL_{cnt} * NDP_{cnt} \quad (7)$$

$$AR_{cnt} = f(AR_{cnt-1}, RPY_{cnt-1}, RNPY_{cnt-1}, Z_{cnt}) \quad (8)$$

where *AR* is area, *YL* is yield, *LB* is rural labor, *FR* is fertilizer use, *K* is an indicator of capital use, *T* is the indicator of technology change, *DP* is real domestic price, *RPY* is yield times real price, *NDP* is real domestic substitute price, *NYL* is yield of substitute commodity, *RNPY* is yield of substitute commodity times substitute price, and *Z* is exogenous policies.

The commercial import demand function is defined as:

$$CI_{cnt} = f(WPR_{ct}, NWPR_{ct}, FEX_{nt}, PR_{cnt}, M_{nt}) \quad (9)$$

where *WPR* is real world food price, *NWPR* is real world substitute price, *FEX* is real foreign exchange availability, and *M* is import restriction policies.

The real domestic price is defined as:

$$DP_{cnt} = f(DP_{cnt-1}, DS_{cnt}, NDS_{cnt}, GD_{nt}, EXR_{nt}) \quad (10)$$

where *NDS* is supply of substitute commodity, *GD* is real income, and *EXR* is real exchange rate.

Projections of food consumption by income group— Inadequate economic access is the most important cause of chronic undernutrition among developing countries and is related to income level. Estimates of food gaps at the aggregate or national level fail to take into account the distribution of food consumption among different income groups. Lack of consumption distribution data for the study countries is the key factor preventing estimation of food consumption by income group. An attempt was made to fill this information gap by using an indirect method of projecting calorie consumption by different income groups based on income distribution data.[1] It should be noted that this approach ignores the consumption substitution of different food groups by income class. The procedure uses the concept of the income/consumption relationship and allocates the total projected amount of available food among different income groups in each country (income distributions are assumed constant during the projection period).

Assuming a declining consumption and income relationship (semi log functional form):

$$C = a + b \ln Y \quad (11)$$

$$C = C_o/P \quad (12)$$

$$P = P_1 + \ldots\ldots + P_i \quad (13)$$

$$Y = Y_o/P \quad (14)$$

$$i = 1 \text{ to } 5$$

where *C* and *Y* are known average per capita food consumption (all commodities in grain equivalent) and per capita income (all quintiles), C_o is total food consumption, *P* is the total population, *i* is income quintile, *a* is the intercept, *b* is the consumption income propensity, and *b/C* is consumption income elasticity (point estimate elasticity is calculated for

[1] The method is similar to that used by Shlomo Reutlinger and Marcelo Selowsky in "Malnutrition and Poverty," World Bank, 1978.

individual countries). To estimate per capita consumption by income group, the parameter of *b* was estimated based on cross-country (70 low-income countries) data for per capita calorie consumption and income. The parameter *a* is estimated for each country based on the known data for average per capita calorie consumption and per capita income.

Historical Data

Historical supply and use data for 1980-2002 for most variables are from a USDA database. Data for grain production in 2003 for most countries are based on a USDA database as of October 2003. Food aid data are from the World Food Program (WFP), and financial data are from the International Monetary Fund and the World Bank. Historical nonfood-use data, including seed, waste, processing use, and other uses, are estimated from the FAO *Food Balance* series. The base year data used for projections are the average for 2000-2002, except export earnings that are 1999-2001.

Endogenous variables:

Production, area, yield, commercial import, domestic producer price, and food consumption.

Exogenous variables:

Population—data are from FAOSTAT as of September 2003.

World price—data are USDA/baseline projections.

Stocks—USDA data, assumed constant during the projection period.

Seed use—USDA data, projections are based on area projections using constant base seed/area ratio.

Cereal and roots and tuber exports—FAO data.

Inputs—fertilizer and capital projections are, in general, an extrapolation of historical growth data from FAO.

Agricultural labor—projections are based on UN population projections, accounting for urbanization growth.

Food aid—1988-2002 data from World Food Program (WFP).

Gross Domestic Product—World Bank data.

Merchandise and service imports and exports—World Bank data.

Net foreign credit—is assumed constant during the projection period.

Value of exports—projections are based on World Bank (*Global Economic Prospects and the Developing Countries*, various issues), IMF (*World Economic Outlook*, various issues), or an extrapolation of historical growth.

Export deflator or terms of trade—World Bank (*Commodity Markets—Projection of Inflation Indices for Developed Countries*).

Income—projected based on World Bank report (*Global Economic Prospects and the Developing Countries*, various issues) or extrapolation of historical growth.

Income distribution—World Bank data. Income distributions are assumed constant during the projection period.

(***Shahla Shapouri***)

Appendix table-2a—List of countries and their food gaps in 2003

	2003 food gaps				2003 food gaps		
	Status quo	Nutrition	Distribution		Status quo	Nutrition	Distribution
		1,000 tons				*1,000 tons*	
Angola	45	0	126	Algeria	0	0	0
Benin	95	0	13	Egypt	0	0	0
Burkina Faso	0	0	313	Morocco	0	0	0
Burundi	58	411	494	Tunisia	0	0	0
Cameroon	166	0	205	**North Africa**	**0**	**0**	**0**
Cape Verde	8	0	0				
Central African Repubic	49	73	214	Afghanistan	0	0	182
Chad	76	267	415	Bangladesh	0	0	1,786
Congo, Dem. Rep.	749	3,968	4,433	India	0	0	2,296
Côte d'Ivoire	65	0	0	Indonesia	0	0	208
Eritrea	0	300	332	Korea, Dem. Rep.	247	0	231
Ethiopia	2,030	5,180	5,735	Nepal	408	0	180
Gambia	41	0	17	Pakistan	0	0	361
Ghana	0	0	83	Philippines	0	0	524
Guinea	77	21	154	Sri Lanka	0	0	19
Guinea-Bissau	1	0	7	Vietnam	0	0	144
Kenya	124	851	1,337	**Asia**	**655**	**0**	**5,929**
Lesotho	46	281	303				
Liberia	122	161	195	Bolivia	0	0	133
Madagascar	151	347	547	Colombia	0	0	647
Malawi	0	0	14	Dominican Republic	0	0	45
Mali	68	0	319	Ecuador	0	139	359
Mauritania	129	0	20	El Salvador	0	0	73
Mozambique	0	247	548	Guatemala	0	415	627
Niger	322	0	380	Haiti	0	335	536
Nigeria	0	0	446	Honduras	0	253	405
Rwanda	80	0	16	Jamaica	0	0	5
Senegal	0	0	121	Nicaragua	0	275	398
Sierra Leone	52	305	522	Peru	0	0	218
Somalia	80	907	977	**Latin America and**			
Sudan	0	0	67	**the Caribbean**	**0**	**1,417**	**3,445**
Swaziland	12	39	57				
Tanzania	186	1,337	1,724	Armenia	0	0	199
Togo	82	13	94	Azerbaijan	0	0	48
Uganda	660	0	94	Georgia	0	0	0
Zambia	24	677	879	Kazakhstan	0	0	30
Zimbabwe	984	1,615	1,724	Kyrgyzstan	0	0	0
Sub-Saharan Africa	**6,582**	**17,001**	**22,927**	Tajikistan	0	0	0
				Turkmenistan	0	0	17
				Uzbekistan	0	0	0
				Commonwealth of			
				Independent States	**0**	**0**	**294**
				Total	**7,237**	**18,418**	**32,596**

Source: ERS calculations.

Appendix table-2b—List of countries and their food gaps in 2013

	2013 food gaps				2013 food gaps		
	Status quo	Nutrition	Distribution		Status quo	Nutrition	Distribution
		1,000 tons				*1,000 tons*	
Angola	757	58	484	Algeria	0	0	112
Benin	175	0	21	Egypt	1,964	0	11
Burkina Faso	15	14	556	Morocco	0	0	0
Burundi	170	646	751	Tunisia	0	0	26
Cameroon	0	0	183	**North Africa**	**1,964**	**0**	**148**
Cape Verde	21	0	0				
Central African Repubic	89	118	277	Afghanistan	87	880	1,422
Chad	8	266	495	Bangladesh	0	0	1,066
Congo, Dem. Rep.	1,771	6,269	6,884	India	0	0	1
Côte d'Ivoire	172	0	7	Indonesia	0	0	184
Eritrea	145	596	629	Korea, Dem. Rep.	334	0	276
Ethiopia	0	216	1,809	Nepal	154	0	114
Gambia	0	0	11	Pakistan	0	0	0
Ghana	0	0	59	Philippines	0	0	132
Guinea	19	0	152	Sri Lanka	0	0	21
Guinea-Bissau	0	0	6	Vietnam	0	0	0
Kenya	0	31	898	**Asia**	**574**	**880**	**3,216**
Lesotho	0	154	189				
Liberia	390	448	489	Bolivia	0	0	105
Madagascar	214	471	730	Colombia	0	0	152
Malawi	0	0	24	Dominican Rep.	0	0	0
Mali	0	0	351	Ecuador	0	0	0
Mauritania	209	0	40	El Salvador	0	0	0
Mozambique	0	0	150	Guatemala	0	0	0
Niger	751	0	671	Haiti	52	484	707
Nigeria	1,296	0	660	Honduras	0	0	221
Rwanda	287	0	69	Jamaica	0	0	0
Senegal	0	0	172	Nicaragua	0	314	472
Sierra Leone	252	592	836	Peru	0	0	0
Somalia	285	1,482	1,576	**Latin America and**			
Sudan	0	0	452	**the Caribbean**	**52**	**798**	**1,658**
Swaziland	0	0	19				
Tanzania	0	322	1,137	Armenia	0	0	505
Togo	25	0	78	Azerbaijan	0	0	10
Uganda	1,224	0	189	Georgia	0	0	0
Zambia	0	784	1,047	Kazakhstan	0	0	0
Zimbabwe	0	0	242	Kyrgyzstan	0	0	0
Sub-Saharan Africa	**8,276**	**12,467**	**22,342**	Tajikistan	0	146	0
				Turkmenistan	0	0	199
				Uzbekistan	0	0	0
				Commonwealth of			
				Independent States	**0**	**146**	**714**
				Total	**10,867**	**14,291**	**28,077**

Source: ERS calculations.

Appendix 3--Country indicators

Region and country	Population 2003	Population growth rate 2003	Grain production: Growth 1980-2002	Grain production: Coefficient of variation 1980-2002	Root production growth 1980-2002	Projected annual growth in supply 2003-2013	Per capita GNI 2001	Macroeconomic indicators: Per capita GDP growth 2001	Macroeconomic indicators: GDP growth 2001	Export earnings growth 2000	Official development assistance as a share of GNI 2000	External debt Present value as a share of GNI 2000
	1,000		*Percent*				*$ U.S.*			*Percent*		
North Africa:												
Algeria	31,933	1.8	-0.8	46.9	-1.0	1.6	1,650	0.6	2.1	-2.2	0.3	42.5
Egypt	71,378	1.7	4.7	6.4	1.6	1.8	1,530	1.0	2.9	8.2	1.3	29.4
Morocco	31,519	1.8	0.2	47.6	2.9	1.1	1,190	4.8	6.5	1.4	1.6	51.0
Tunisia	9,788	1.1	0.9	47.8	3.9	2.0	2,070	3.7	4.9	14.4	2.0	57.1
Central Africa:												
Cameroon	15,863	2.2	2.6	14.0	1.6	2.3	580	3.1	5.3	1.9	5.0	104.1
Central African Rep.	3,905	1.7	1.7	14.4	0.3	1.4	260	0.1	1.5	--	7.9	85.2
Congo, Dem. Rep.	56,316	3.4	3.0	10.2	0.1	2.7	80	-7.1	-4.5	2.0	5.3	*238.8*
West Africa:												
Benin	6,822	2.8	4.9	9.4	4.5	2.5	380	2.3	5.0	7.8	11.6	70.8
Burkina Faso	12,623	3.1	4.5	13.7	-1.9	3.0	220	3.1	5.6	0.1	15.7	60.0
Cape Verde	455	2.2	6.8	59.5	-3.9	1.1	1,340	0.6	3.3	14.1	13.1	61.5
Chad	8,646	3.1	3.6	17.8	0.1	3.2	200	5.5	8.5	-7.4	11.2	69.3
Côte d'Ivoire	17,038	2.1	2.7	7.5	2.4	1.7	630	-3.3	-0.9	-1.2	1.9	118.4
Gambia	1,399	2.4	3.2	19.6	0.7	3.1	320	3.0	6.0	20.5	13.3	127.9
Ghana	20,626	2.2	6.0	15.6	4.6	2.3	290	1.9	4.0	0.3	12.7	131.9
Guinea	8,524	1.5	3.5	6.1	5.0	2.5	410	1.3	3.6	3.3	9.4	112.3
Guinea-Bissau	1,289	2.4	2.9	22.5	2.8	3.0	160	-2.0	0.2	6.6	32.0	364.8
Liberia	3,439	5.7	-4.6	32.4	1.0	1.6	140	2.6	5.3	--	8.3	449.1
Mali	12,385	2.8	4.2	12.4	2.6	3.1	230	-0.9	1.4	24.7	13.9	115.0
Mauritania	2,912	3.0	7.2	38.4	0.3	1.9	360	1.4	4.6	8.0	26.6	220.0
Niger	12,077	3.7	3.1	15.0	-6.9	2.8	180	4.2	7.6	--	12.8	80.2
Nigeria	123,129	2.6	5.3	12.0	7.6	1.9	290	1.5	3.9	5.6	0.5	81.4
Senegal	10,156	2.5	0.9	17.9	4.3	2.2	490	3.2	5.7	6.6	9.2	75.8
Sierra Leone	5,047	4.6	-3.3	12.4	3.2	1.5	140	3.3	5.4	13.2	45.8	162.9
Togo	4,887	2.6	4.8	14.3	2.6	2.8	270	-0.1	2.7	-1.3	3.8	113.9
East Africa:												
Burundi	6,955	3.0	-3.0	15.9	1.6	2.7	100	1.3	3.2	19.9	19.3	156.8
Eritrea	4,153	4.3	0.0	52.5	0.5	0.8	160	6.9	9.7	55.3	40.8	59.7
Ethiopia	69,273	2.4	3.1	17.3	1.3	5.1	100	5.2	7.7	-1.6	17.5	92.3
Kenya	32,474	1.9	0.3	14.2	2.3	2.6	350	-1.0	1.1	6.8	4.0	51.9
Rwanda	8,105	2.1	-2.2	15.6	3.5	1.5	220	4.5	6.7	39.9	17.3	76.3
Somalia	9,961	4.3	-2.8	36.7	3.7	3.0	--	--	--	--	--	--
Sudan	33,318	2.3	2.7	32.4	-1.8	1.4	340	4.9	6.9	--	1.5	137.5
Tanzania	37,648	2.3	1.8	12.2	2.3	3.3	270	3.4	5.7	17.8	13.3	71.9
Uganda	25,638	3.2	1.8	9.3	1.9	2.9	260	2.0	4.6	6.2	14.1	67.2

See footnotes at end of table.

Continued--

Appendix 3--Country indicators--Continued

Region and country	Population 2003	Population growth rate 2003	Grain production: Growth 1980-2002	Grain production: Coefficient of variation 1980-2002	Root production growth 1980-2002	Projected annual growth in supply 2003-2013	Per capita GNI 2001	Macroeconomic indicators: Per capita GDP growth 2001	Macroeconomic indicators: GDP growth 2001	Export earnings growth 2000	Official development assistance as a share of GNI 2000	External debt Present value as a share of GNI 2000
	1,000		*Percent*				*$ U.S.*			*Percent*		
Southern Africa:												
Angola	14,367	3.0	2.4	24.9	2.7	1.8	500	0.3	3.2	--	3.4	122.1
Lesotho	2,081	0.7	0.2	27.5	7.9	3.5	530	2.6	4.0	40.4	5.5	60.4
Madagascar	17,387	2.9	1.0	4.9	0.9	2.7	260	3.0	6.0	6.0	7.8	91.5
Malawi	12,066	2.2	2.0	24.0	6.1	2.0	160	-3.5	-1.5	3.7	23.4	151.6
Mozambique	19,286	1.8	6.7	29.0	0.4	3.1	210	11.5	13.9	60.0	28.1	134.4
Swaziland	951	0.9	0.6	27.9	-0.4	3.1	1,300	-0.6	1.6	10.3	2.3	24.0
Zambia	11,094	2.1	-0.7	32.1	6.0	2.7	320	2.9	4.9	29.0	10.7	162.0
Zimbabwe	13,298	1.7	-1.6	32.9	4.4	5.3	480	-9.8	-8.4	-3.6	1.8	42.9
Asia:												
Afghanistan	24,318	4.2	-2.3	16.0	-1.2	2.3	--	--	--	--	--	--
Bangladesh	146,317	2.1	2.6	7.7	2.1	2.4	360	3.5	5.3	22.8	2.2	32.8
India	1,055,996	1.5	2.4	5.3	1.6	2.1	460	3.7	5.4	9.0	0.4	20.5
Indonesia	219,943	1.2	1.8	4.1	-0.2	1.9	690	2.0	3.3	1.9	1.1	97.2
Korea, Dem. Rep.	26,525	1.3	-2.9	13.0	5.0	0.0	--	--	--	--	--	--
Nepal	24,707	2.4	2.9	6.1	3.8	2.4	250	2.4	4.8	--	6.7	46.7
Pakistan	152,419	2.6	2.5	5.6	4.3	2.9	420	0.3	2.7	11.8	3.4	55.4
Philippines	79,982	1.9	2.0	5.4	-0.1	2.3	1,030	1.2	3.4	-3.2	0.8	69.2
Sri Lanka	19,467	0.9	1.0	8.3	-3.6	1.0	880	-2.8	-1.4	-6.5	2.0	52.4
Vietnam	81,252	1.3	5.0	5.5	-2.1	4.0	410	5.5	6.8	--	4.4	38.4
Latin America and the Caribbean:												
Bolivia	8,884	2.2	2.7	15.2	-0.1	2.6	950	-1.0	1.2	4.9	9.4	60.3
Colombia	44,157	1.6	-0.8	11.5	0.6	3.2	1,890	-0.3	1.4	4.1	0.5	46.2
Dominican Republic	8,759	1.5	-0.5	11.1	0.5	7.3	2,230	1.1	2.7	-7.9	0.5	25.3
Ecuador	13,325	1.8	3.0	19.1	1.4	6.0	1,080	3.7	5.6	5.0	1.1	85.8
El Salvador	6,630	1.8	1.3	11.3	5.4	5.7	2,040	-0.1	1.8	11.9	1.7	34.8
Guatemala	12,301	2.6	0.3	8.6	0.6	6.7	1,680	-0.5	2.1	0.0	1.1	22.2
Haiti	8,530	1.6	1.1	20.1	0.1	1.0	480	-3.8	-1.7	-3.2	4.4	33.4
Honduras	6,875	2.3	1.0	15.1	3.5	3.7	900	0.0	2.6	4.6	10.9	80.9
Jamaica	2,646	0.9	-5.4	52.5	-1.0	3.5	2,800	1.1	1.7	-5.0	0.7	67.9
Nicaragua	5,482	2.6	2.4	14.1	2.8	2.4	--	--	--	--	--	--
Peru	26,927	1.6	4.0	18.6	1.6	3.7	1,980	-1.3	0.2	6.9	0.9	52.1
Commonwealth of Independent States:												
Armenia	3,794	0.1	0.4	44.8	0.8	1.3	570	9.4	9.6	22.9	9.7	45.9
Azerbaijan	8,185	0.6	1.7	41.2	14.8	1.2	650	9.0	9.9	26.5	4.3	23.3
Georgia	5,179	-0.5	0.6	46.7	6.9	1.1	590	6.2	4.5	-1.2	9.2	54.3
Kazakhstan	15,994	-0.4	-5.8	75.7	-5.1	0.9	1,350	14.4	13.2	-3.3	0.7	67.9
Kyrgyzstan	5,096	1.2	0.0	44.2	12.8	1.9	280	4.5	5.3	-2.2	12.9	117.6
Tajikistan	6,214	0.7	2.8	45.9	11.6	0.1	180	9.3	10.2	-9.1	15.5	105.9
Turkmenistan	5,012	1.9	10.5	40.4	3.4	0.8	950	17.2	20.5	4.8	1.2	--
Uzbekistan	25,942	1.4	8.7	23.3	1.8	0.5	550	3.2	4.5	-5.4	1.4	41.8

-- = Data unavailable or not applicable due to inconsistent data set.

Source: Population=UN World Population Prospects, 2000; Macroeconomic indicators=World Development Indicators, 2003, World Development Report 2003, World Bank.