

## **Full Planet, Empty Plates**

### **Supporting Data for Chapter 6: Peak Water and Food Scarcity**

#### [Wheat Production, Consumption, and Imports in Saudi Arabia, 1960-2011](#)

GRAPH: Wheat Production and Consumption in Saudi Arabia, 1960-2011

GRAPH: Wheat Imports by Saudi Arabia, 1960-2011

#### [Grain Production, Consumption, and Imports in Yemen, 1961-2011](#)

GRAPH: Grain Production, Consumption, and Imports in Yemen, 1961-2011

GRAPH: Grain Imports by Yemen, 1961-2011

#### [Grain Production, Consumption, and Imports in the Arab Middle East and Israel, 1961-2011](#)

GRAPH: Grain Production, Consumption, and Imports in the Arab Middle East and Israel, 1961-2011

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#### [World Irrigated Area and Irrigated Area Per Thousand People, 1961-2009](#)

GRAPH: World Irrigated Area, 1961-2009

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GRAPH: Estimated Groundwater Withdrawals in Selected Countries, 1940-2010

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GRAPH: Estimated Groundwater Withdrawals in the United States, 1950-2005

A full listing of data for the entire book is on-line at:

[http://www.earth-policy.org/books/fpep/fpep\\_data](http://www.earth-policy.org/books/fpep/fpep_data)

This is part of a supporting dataset for Lester R. Brown, **Full Planet, Empty Plates: The New Geopolitics of Food Scarcity** (New York: W.W. Norton & Company, 2012). For more information, see Earth Policy Institute on-line at [www.earth-policy.org](http://www.earth-policy.org).

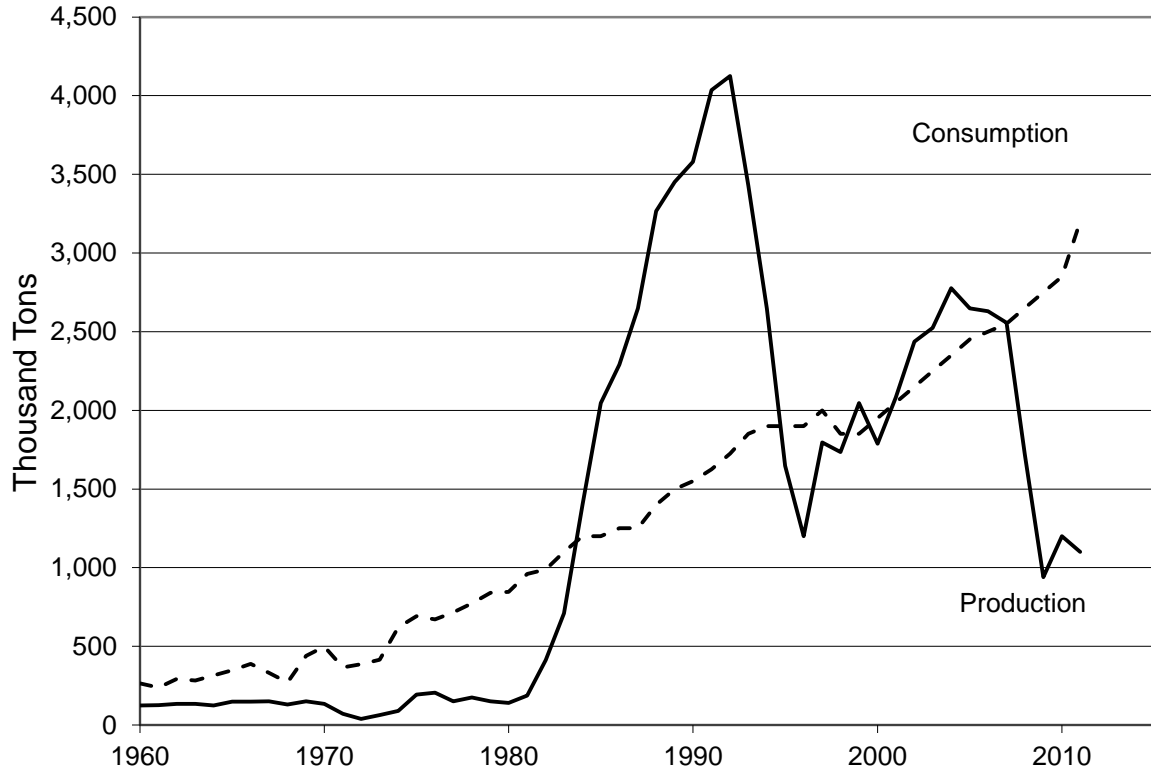
### Wheat Production, Consumption, and Imports in Saudi Arabia, 1960-2011

Year	Production	Consumption	Imports
	Thousand Tons		
1960	125	264	139
1961	127	238	111
1962	135	293	158
1963	135	282	147
1964	125	315	190
1965	148	348	200
1966	149	389	240
1967	150	332	182
1968	130	270	140
1969	150	440	290
1970	135	498	363
1971	72	366	294
1972	39	386	347
1973	63	414	351
1974	90	621	531
1975	193	691	598
1976	205	672	467
1977	150	716	767
1978	175	772	599
1979	150	841	1,293
1980	141	846	732
1981	187	961	581
1982	412	988	686
1983	710	1,100	327
1984	1,402	1,200	206
1985	2,047	1,200	87
1986	2,290	1,250	105
1987	2,649	1,250	204
1988	3,267	1,400	154
1989	3,452	1,500	161
1990	3,580	1,550	184
1991	4,035	1,625	329
1992	4,124	1,725	222
1993	3,430	1,850	71
1994	2,646	1,900	46
1995	1,648	1,900	67
1996	1,200	1,900	68
1997	1,795	2,000	110
1998	1,734	1,850	33
1999	2,046	1,850	41
2000	1,788	1,950	25
2001	2,082	2,050	101
2002	2,436	2,150	161
2003	2,524	2,250	26
2004	2,776	2,350	50
2005	2,648	2,450	80
2006	2,630	2,500	100
2007	2,556	2,550	75
2008	1,720	2,650	1,275
2009	940	2,750	1,909
2010	1,200	2,850	1,742
2011	1,100	3,200	2,300

Source: Compiled by Earth Policy Institute from U.S. Department of Agriculture, *Production, Supply and Distribution*, electronic database, at [www.fas.usda.gov/psdonline](http://www.fas.usda.gov/psdonline), updated 11 July 2012; 2011 consumption and imports from Hussein Mousa, *Saudi Arabia Grain and Feed Annual Report 2012* (Riyadh: USDA, March 2012).

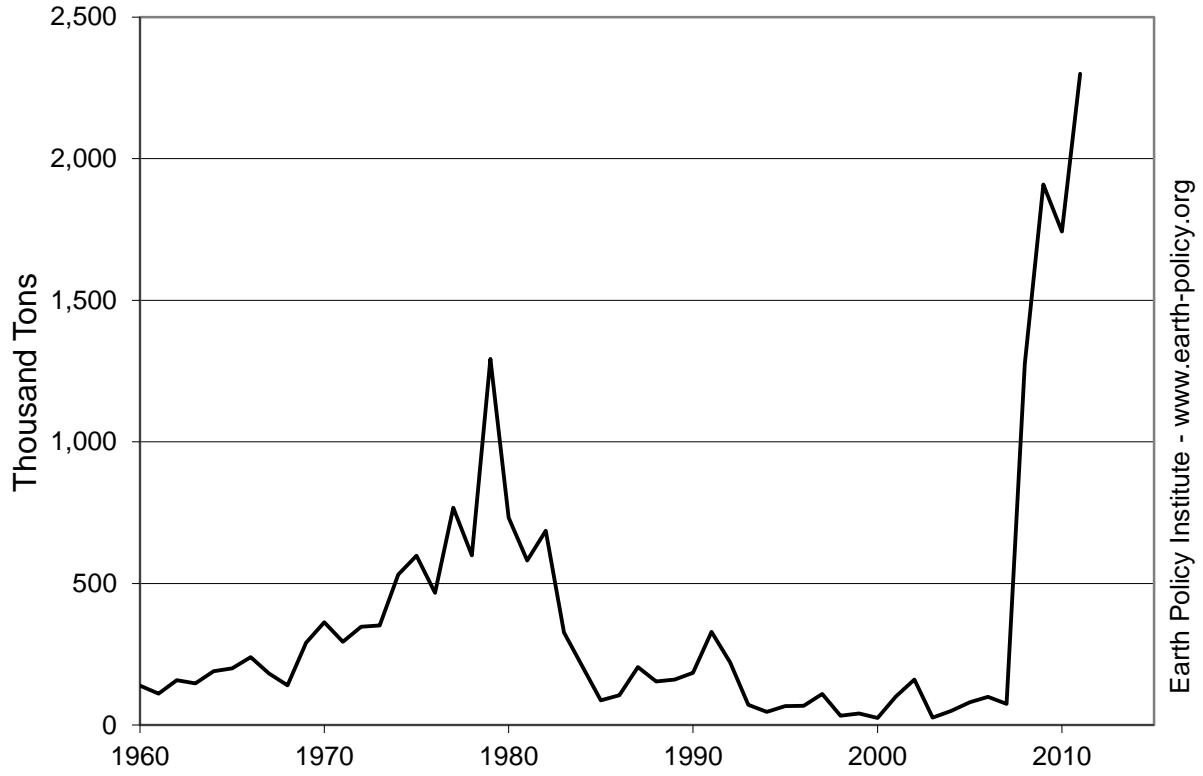
This is part of a supporting dataset for Lester R. Brown, **Full Planet, Empty Plates: The New Geopolitics of Food Scarcity** (New York: W.W. Norton & Company, 2012). For more information, see Earth Policy Institute on-line at [www.earth-policy.org](http://www.earth-policy.org).

# Wheat Production and Consumption in Saudi Arabia, 1960-2011



Source: USDA

Wheat Imports by Saudi Arabia, 1960-2011



Source: USDA

Earth Policy Institute - [www.earth-policy.org](http://www.earth-policy.org)

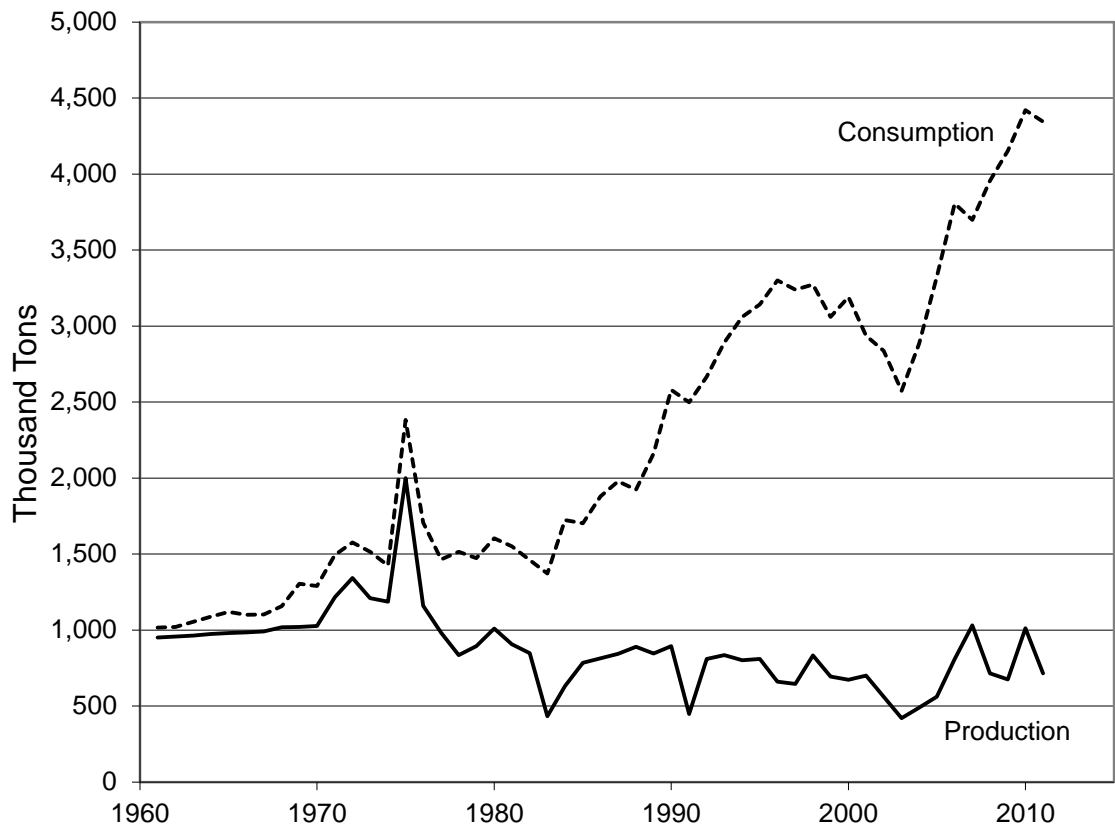
### Grain Production, Consumption, and Imports in Yemen, 1961-2011

Year	Production	Consumption	Imports
	Thousand Tons		
1961	951	1,016	94
1962	957	1,020	93
1963	963	1,054	127
1964	973	1,087	145
1965	981	1,119	170
1966	985	1,099	156
1967	991	1,102	129
1968	1,017	1,156	149
1969	1,020	1,305	301
1970	1,026	1,289	279
1971	1,216	1,494	288
1972	1,342	1,575	254
1973	1,210	1,515	304
1974	1,187	1,425	251
1975	1,998	2,383	398
1976	1,158	1,706	594
1977	983	1,465	493
1978	834	1,514	665
1979	894	1,472	582
1980	1,009	1,603	604
1981	907	1,550	653
1982	847	1,461	624
1983	432	1,372	940
1984	630	1,724	1,094
1985	785	1,702	917
1986	814	1,878	1,064
1987	843	1,977	1,134
1988	890	1,923	1,033
1989	845	2,161	1,316
1990	893	2,579	1,686
1991	447	2,498	2,051
1992	810	2,667	1,857
1993	835	2,891	2,056
1994	801	3,059	2,258
1995	810	3,142	2,332
1996	660	3,299	2,639
1997	645	3,239	2,594
1998	833	3,273	2,440
1999	694	3,061	2,367
2000	672	3,191	2,519
2001	700	2,935	2,235
2002	561	2,836	2,275
2003	419	2,573	2,154
2004	489	2,885	2,396
2005	562	3,324	2,762
2006	809	3,806	3,176
2007	1,030	3,698	2,647
2008	714	3,955	3,616
2009	675	4,152	3,455
2010	1,012	4,420	3,532
2011	715	4,345	3,440

Source: Compiled by Earth Policy Institute from U.S. Department of Agriculture, *Production, Supply and Distribution*, electronic database, at [www.fas.usda.gov/psdonline](http://www.fas.usda.gov/psdonline), updated 11 July 2012.

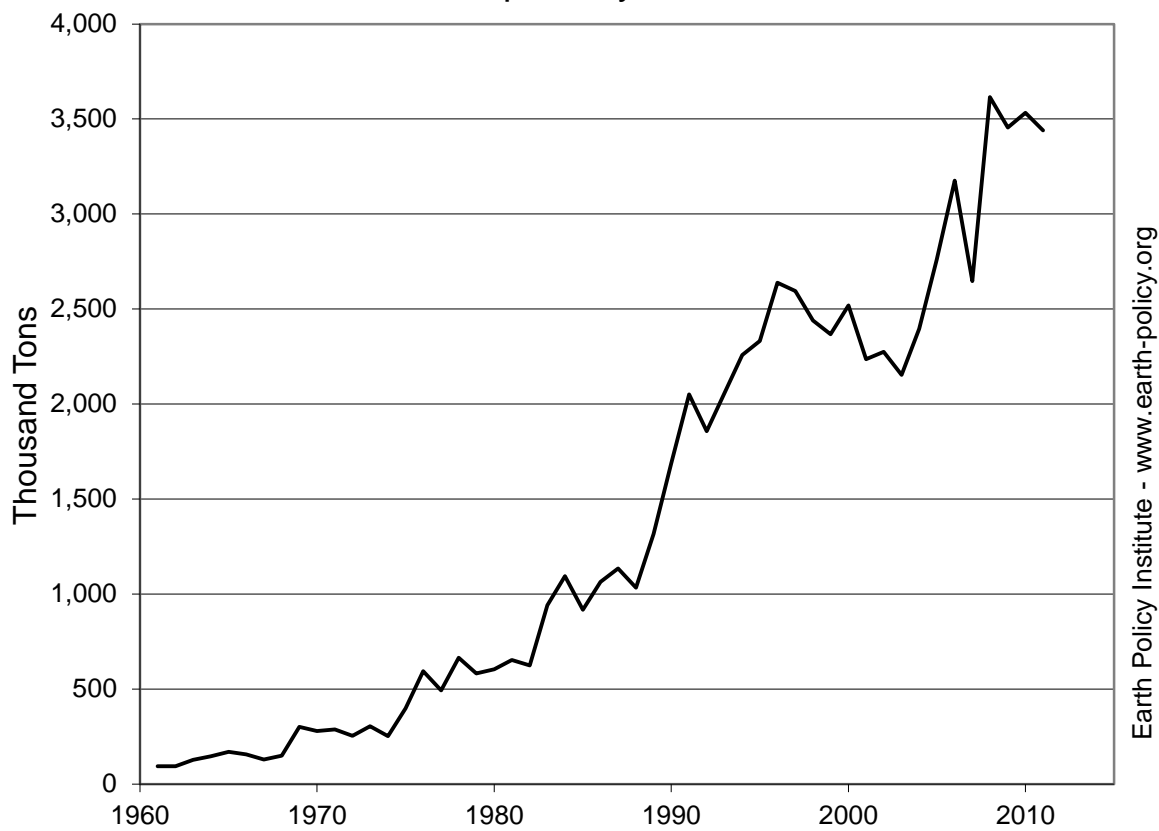
This is part of a supporting dataset for Lester R. Brown, **Full Planet, Empty Plates: The New Geopolitics of Food Scarcity** (New York: W.W. Norton & Company, 2012). For more information, see Earth Policy Institute on-line at [www.earth-policy.org](http://www.earth-policy.org).

### Grain Production and Consumption in Yemen, 1961-2011



Source: USDA

Grain Imports by Yemen, 1961-2011



Source: USDA

Earth Policy Institute - [www.earth-policy.org](http://www.earth-policy.org)

### Grain Production, Consumption, and Imports in the Arab Middle East and Israel, 1961-2011

Year	Production	Consumption	Imports
	Million Tons		
1961	4.5	6.3	2.2
1962	5.9	7.0	2.0
1963	5.0	6.5	2.0
1964	5.5	6.7	1.7
1965	5.7	7.2	1.8
1966	4.1	6.7	2.7
1967	5.6	8.1	2.6
1968	5.6	7.6	2.2
1969	5.8	8.0	2.6
1970	4.5	8.3	3.9
1971	4.5	8.4	4.3
1972	8.7	9.9	3.0
1973	4.2	9.1	4.1
1974	6.5	10.3	4.7
1975	6.4	11.2	4.8
1976	7.0	11.5	5.7
1977	4.8	12.5	7.1
1978	5.8	13.3	7.5
1979	4.7	14.7	11.1
1980	7.4	16.9	10.1
1981	7.1	18.6	11.7
1982	6.0	18.3	12.1
1983	6.3	21.7	15.6
1984	4.9	20.7	16.3
1985	8.6	22.5	15.7
1986	9.0	23.8	19.1
1987	8.6	24.1	17.1
1988	12.8	23.9	15.3
1989	8.1	23.4	16.6
1990	12.4	22.9	14.0
1991	11.9	26.4	18.3
1992	13.8	25.1	13.4
1993	14.5	26.2	14.8
1994	14.2	26.9	14.7
1995	12.9	26.4	13.6
1996	11.5	28.7	18.7
1997	9.7	28.5	17.5
1998	11.5	29.3	19.5
1999	8.4	29.7	20.8
2000	8.3	29.8	21.3
2001	14.0	32.1	21.5
2002	14.3	33.8	22.2
2003	14.2	34.8	21.9
2004	13.0	35.0	23.5
2005	13.8	38.3	28.1
2006	13.7	39.2	24.7
2007	13.4	38.9	25.6
2008	8.0	39.8	31.4
2009	9.8	40.5	31.5
2010	11.9	40.1	27.2
2011	11.2	41.7	31.2

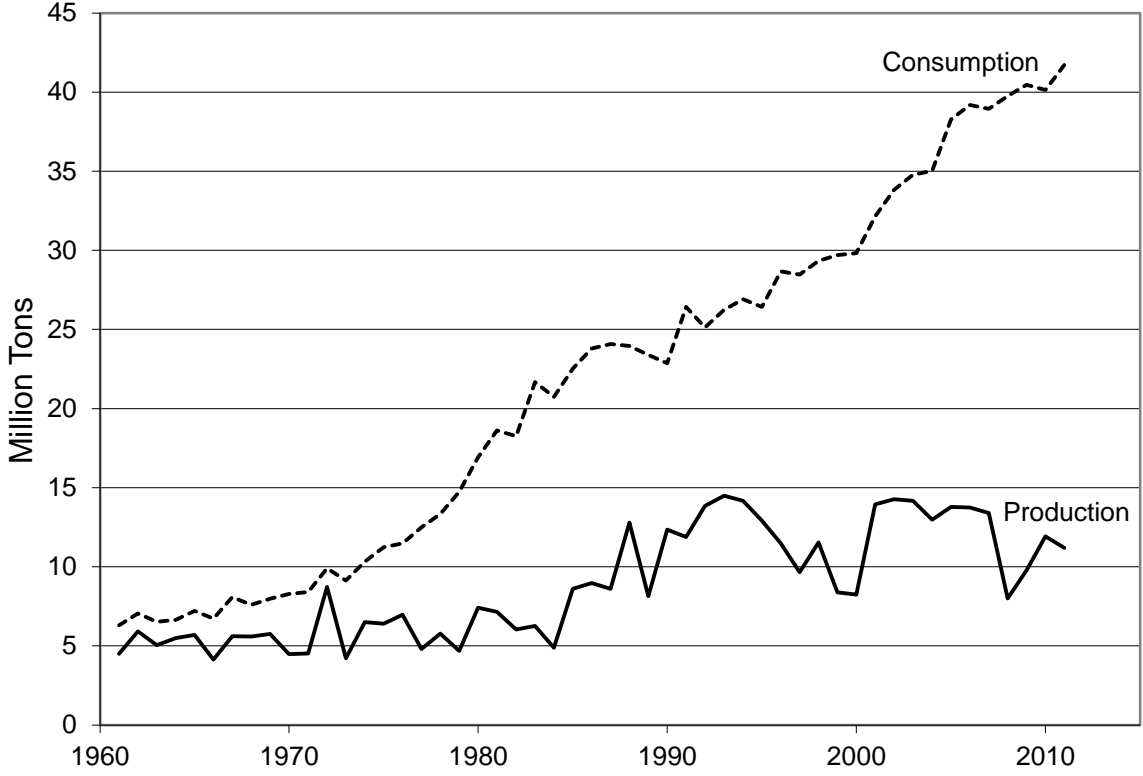
Note: Arab Middle East total includes Iraq, Jordan, Lebanon, Saudi Arabia, Syria, and Yemen.

Source: Compiled by Earth Policy Institute from U.S. Department of Agriculture, *Production, Supply and Distribution*, electronic database, at [www.fas.usda.gov/psdonline](http://www.fas.usda.gov/psdonline), updated 11 July 2012.

This is part of a supporting dataset for Lester R. Brown, **Full Planet, Empty Plates: The New Geopolitics of Food Scarcity** (New York: W.W. Norton & Company, 2012). For more information, see Earth Policy Institute on-line at [www.earth-policy.org](http://www.earth-policy.org).

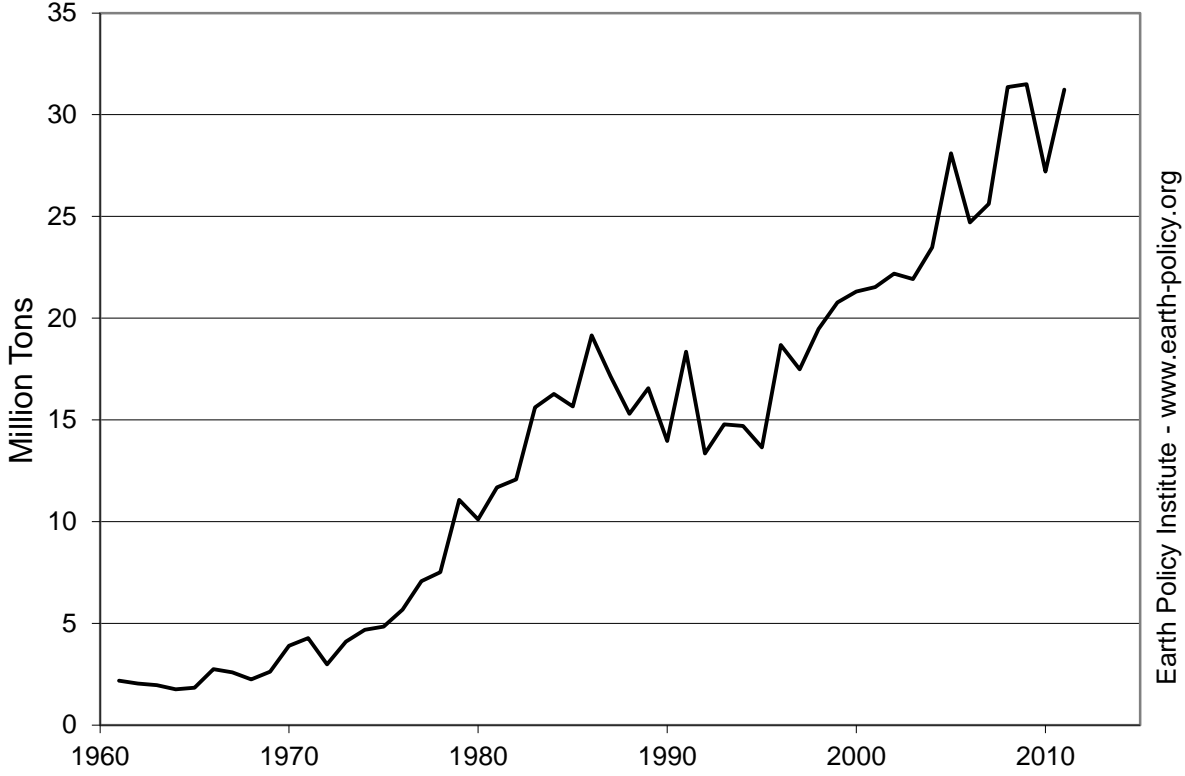


### Grain Production and Consumption in the Arab Middle East and Israel, 1961-2011



Source: EPI from USDA

# Grain Imports by the Arab Middle East and Israel, 1961-2011



Source: EPI from USDA

Earth Policy Institute - [www.earth-policy.org](http://www.earth-policy.org)

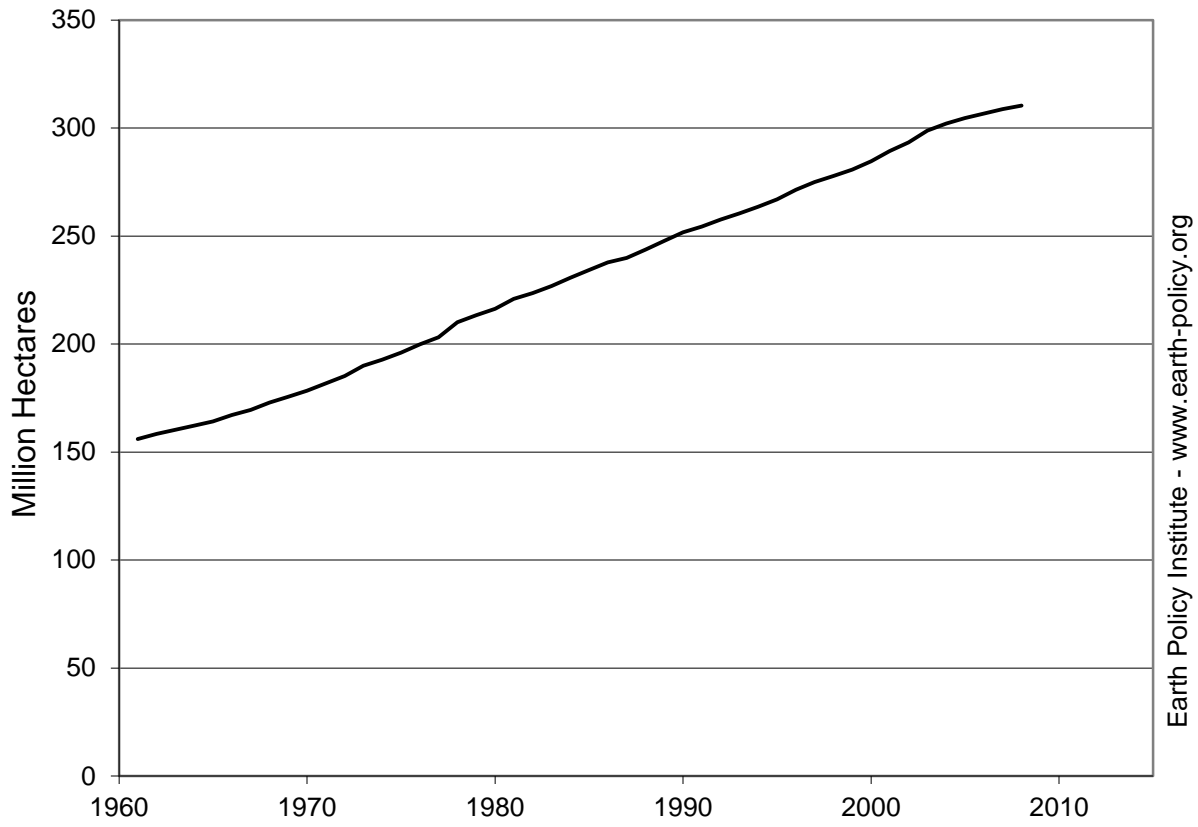
### World Irrigated Area and Irrigated Area Per Thousand People, 1961-2009

Year	Irrigated Area	Irrigated Area per Thousand People
	Million Hectares	Hectares
1961	156	50.4
1962	158	50.3
1963	160	50.0
1964	162	49.6
1965	164	49.2
1966	167	49.1
1967	169	48.8
1968	173	48.8
1969	176	48.5
1970	178	48.2
1971	182	48.2
1972	185	48.1
1973	190	48.4
1974	193	48.2
1975	196	48.1
1976	200	48.2
1977	203	48.0
1978	210	48.8
1979	213	48.8
1980	216	48.6
1981	221	48.7
1982	223	48.5
1983	227	48.3
1984	231	48.3
1985	234	48.1
1986	238	48.0
1987	240	47.6
1988	244	47.5
1989	248	47.5
1990	252	47.4
1991	254	47.2
1992	258	47.0
1993	260	46.8
1994	264	46.7
1995	267	46.6
1996	271	46.7
1997	275	46.7
1998	278	46.6
1999	281	46.4
2000	285	46.5
2001	289	46.7
2002	293	46.7
2003	299	47.0
2004	302	47.0
2005	305	46.8
2006	307	46.6
2007	309	46.3
2008	310	46.0
2009	312	45.7

Source: Compiled by Earth Policy Institute from U.N. Food and Agriculture Organization, *FAOSTAT, electronic database, at faostat.fao.org*, updated 21 July 2011; population from U.N. Population Division, *World Population Prospects: The 2010 Revision*, electronic database, at [esa.un.org/unpd/wpp/index.htm](http://esa.un.org/unpd/wpp/index.htm), updated 3 May 2011.

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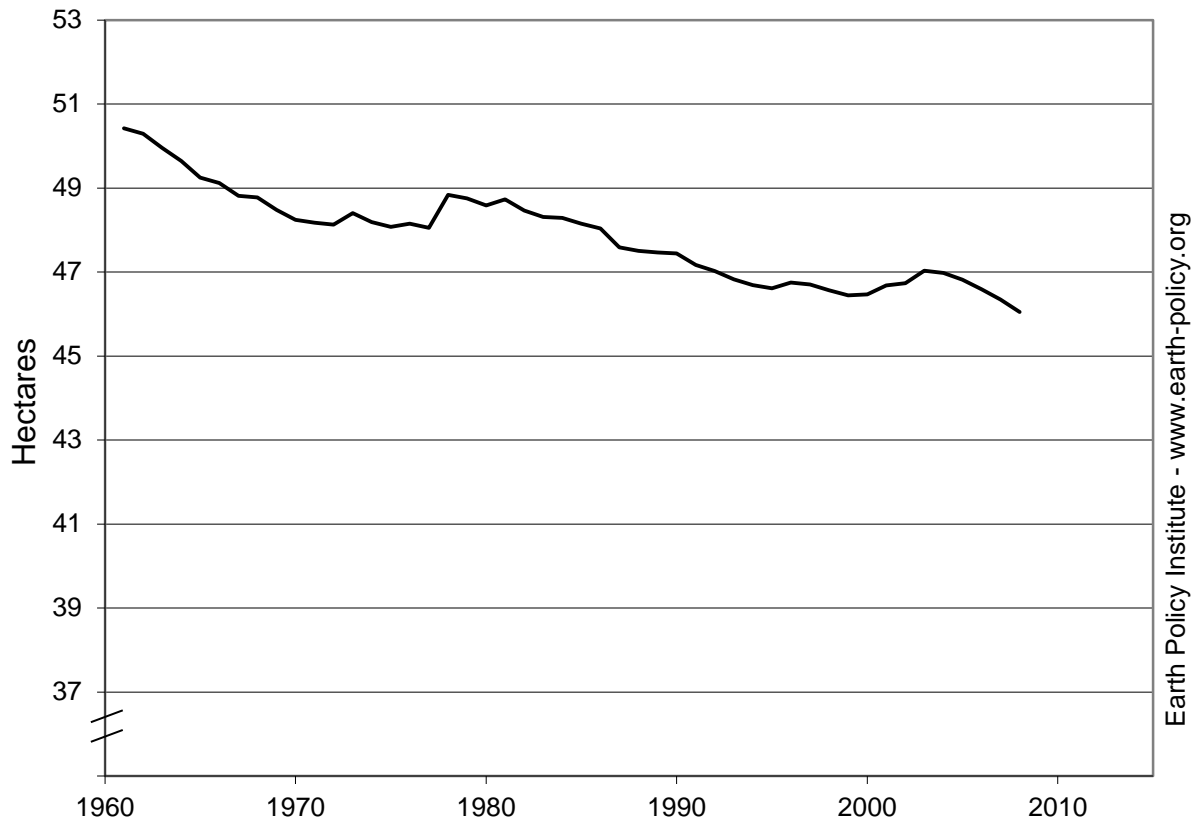
# World Irrigated Area, 1961-2009



Source: FAO

Earth Policy Institute - [www.earth-policy.org](http://www.earth-policy.org)

World Irrigated Area Per Thousand People, 1961-2009



Source: FAO; UNPop

Earth Policy Institute - [www.earth-policy.org](http://www.earth-policy.org)

### Irrigated Area in the United States by State and Country Total, 1964-2007

State	1964	1969	1974	1978	1982	1987	1992	1997	2002	2007
Thousand Acres										
Arizona	1,125	1,178	1,153	1,196	1,098	914	956	1,075	932	876
Arkansas	974	1,010	949	1,683	2,023	2,406	2,702	3,785	4,150	4,461
California	7,599	7,240	7,749	8,506	8,461	7,546	7,571	8,887	8,709	8,016
Colorado	2,690	2,895	2,874	3,431	3,201	3,014	3,170	3,374	2,591	2,868
Florida	1,217	1,365	1,559	1,980	1,585	1,623	1,783	1,874	1,815	1,552
Idaho	2,802	2,761	2,859	3,475	3,450	3,219	3,260	3,544	3,289	3,300
Kansas	1,004	1,522	2,010	2,686	2,675	2,463	2,680	2,696	2,678	2,763
Minnesota	18	36	78	272	315	354	370	403	455	506
Montana	1,893	1,841	1,759	2,070	2,023	1,997	1,978	2,102	1,976	2,013
Nebraska	2,169	2,857	3,967	5,683	6,039	5,682	6,312	7,066	7,625	8,559
Nevada	825	753	778	881	830	779	556	764	747	691
New Mexico	813	823	867	891	807	718	738	852	845	830
North Dakota	51	63	71	141	163	168	187	183	203	236
Oklahoma	302	524	515	602	492	478	512	509	518	535
Oregon	1,608	1,519	1,561	1,881	1,808	1,648	1,622	1,963	1,908	1,845
South Dakota	130	148	152	335	376	362	371	367	401	374
Texas	6,385	6,888	6,594	6,947	5,576	4,271	4,912	5,764	5,075	5,010
Utah	1,092	1,025	970	1,169	1,082	1,161	1,143	1,218	1,091	1,134
Washington	1,150	1,224	1,309	1,639	1,638	1,519	1,641	1,787	1,823	1,736
Wyoming	1,571	1,523	1,460	1,662	1,565	1,518	1,465	1,750	1,542	1,551
Other	1,639	1,927	2,009	3,220	3,795	4,546	5,475	6,326	6,938	7,743
<b>U.S. Total</b>	<b>37,057</b>	<b>39,122</b>	<b>41,243</b>	<b>50,350</b>	<b>49,002</b>	<b>46,386</b>	<b>49,404</b>	<b>56,289</b>	<b>55,311</b>	<b>56,599</b>

Note: One acre equals 0.4 hectares.

Source: Compiled by Earth Policy Institute, with data for 1964-1982 from "Table 1 - Irrigated Farms in the Censuses of Agriculture: 1964 Through 1987," *1987 Census of Agriculture: Farm and Ranch Irrigation Survey (1988)* (Washington, DC: U.S. Department of Agriculture (USDA), 1989), p. 1; 1992-2007 from "Table 1 - Irrigated Farms in the Censuses of Agriculture: 2007 and Earlier Censuses," in *2007 Census of Agriculture: Farm and Ranch Irrigation Survey (2008)* (Washington, DC: USDA, November 2009), pp. 3-4.

This is part of a supporting dataset for Lester R. Brown, **Full Planet, Empty Plates: The New Geopolitics of Food Scarcity** (New York: W.W. Norton & Company, 2012). For more information, see Earth Policy Institute on-line at [www.earth-policy.org](http://www.earth-policy.org).

## Countries Overpumping Aquifers in 2012

Country	Population Million
Afghanistan	33
China	1,354
India	1,258
Iran	76
Iraq	34
Israel	8
Jordan	6
Lebanon	4
Mexico	116
Morocco	33
Pakistan	180
Saudi Arabia	29
South Korea	49
Spain	47
Syria	21
Tunisia	11
United States	316
Yemen	26
<b>Total</b>	<b>3,599</b>

Source: Compiled by Earth Policy Institute from Lester R. Brown, *Plan B 2.0: Rescuing a Planet Under Stress and a Civilization in Trouble* (New York: W. W. Norton & Company, 2006), Table 3–1, p. 43; Isam E. Amin et al., “Major Problems Affecting the Principal Aquifers in Lebanon,” in *Geological Society of America, Abstracts with Programs*, vol. 40, no. 6 (2008), p. 471; Dale Lightfoot, *Survey of Infiltration Karez in Northern Iraq: History and Current Status of Underground Aqueducts* (Paris: UNESCO, September 2009); “Afghanistan: Groundwater Overuse Could Cause Severe Water Shortage,” *Integrated Regional Information Networks (IRIN) News*, 14 September 2008; populations from U.N. Population Division, *World Population Prospects: The 2010 Revision*, electronic database, at [esa.un.org/unpd/wpp/index.htm](http://esa.un.org/unpd/wpp/index.htm), updated 3 May 2011.

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### Estimated Groundwater Withdrawals in Selected Countries, 1940-2010

Country	1940	1950	1960	1970	1980	1990	2000	2010
	Cubic Kilometers per Year							
India	8	12	20	50	100	150	210	260
United States	60	70	80	90	100	104	107	107
China	10	12	14	20	35	50	75	90
Bangladesh	5	9	18	30	45	60	70	80
Pakistan	3	5	8	15	30	45	60	75
Mexico	20	23	28	35	42	48	54	58
Tunisia	8	9	10	11	12	15	30	40
Western Europe	45	45	44	43	42	41	40	39
Viet Nam	2	2	2	4	6	8	15	25

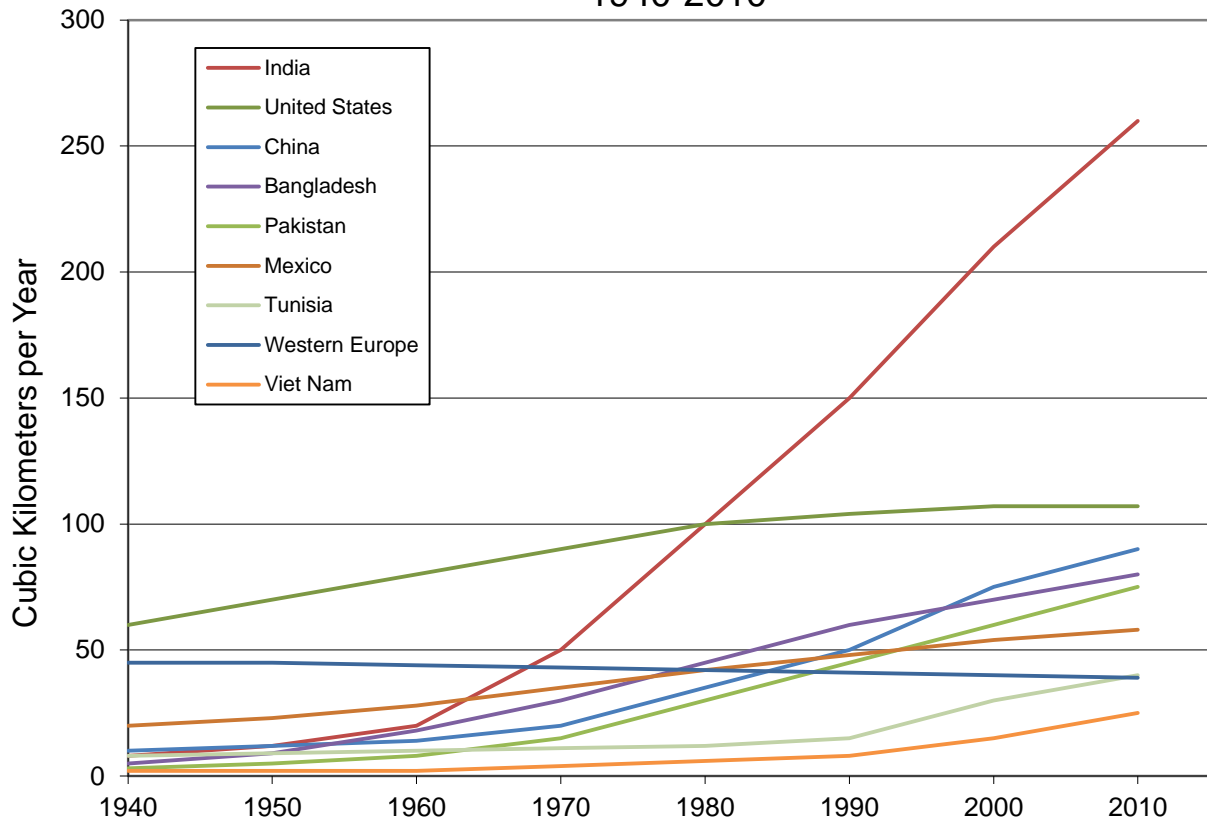
Note: Data on groundwater resources and use are scarce. These are estimates made by Tushaar Shah in the course of a 2003 meeting of international hydrogeologists and groundwater researchers, based on national data and personal interviews with country specialists.

Source: Compiled by Earth Policy Institute based on Figure 1 in Tushaar Shah, "Groundwater and Human Development: Challenges and Opportunities in Livelihoods and Environment," *Water Science & Technology*, vol. 51, no. 8 (2005), pp. 27-37, with data from Tushaar Shah, International Water Management Institute, e-mail to Hayley Moller, Earth Policy Institute, 29 August 2012.

This is part of a supporting dataset for Lester R. Brown, **Full Planet, Empty Plates: The New Geopolitics of Food Scarcity** (New York: W.W. Norton & Company, 2012). For more information, see Earth Policy Institute online at [www.earth-policy.org](http://www.earth-policy.org).



# Estimated Groundwater Withdrawals in Selected Countries, 1940-2010



Source: Shah

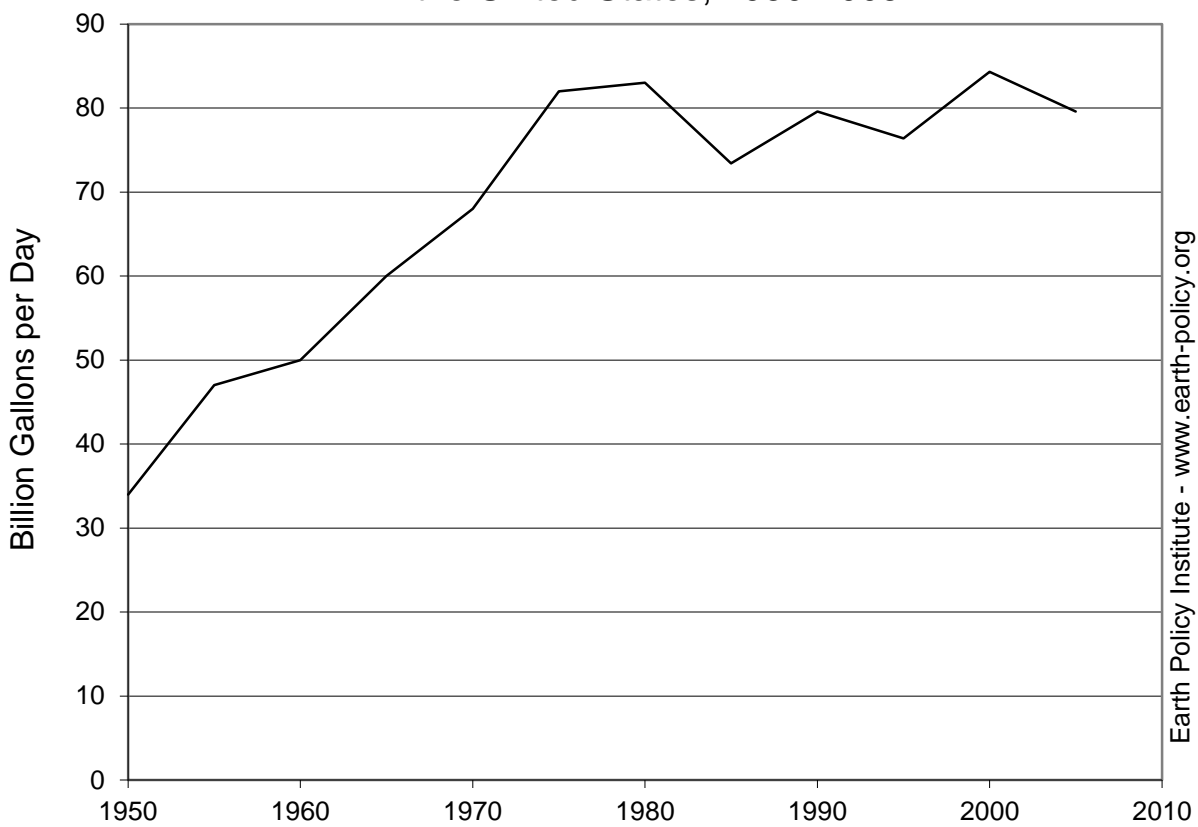
## Estimated Groundwater Withdrawals in the United States, 1950-2005

Year	Withdrawals
	Billion Gallons per Day
1950	34.0
1955	47.0
1960	50.0
1965	60.0
1970	68.0
1975	82.0
1980	83.0
1985	73.4
1990	79.6
1995	76.4
2000	84.3
2005	79.6

Source: Compiled by Earth Policy Institute from "Table 14 - Trends in Estimated Water Use in the United States, 1950-2005," in Joan F. Kenny et al., *Estimated Use of Water in the United States in 2005*, U.S. Geological Survey Circular 1344 (Washington, DC: U.S. Geological Survey (USGS), 2009), p. 43.

This is part of a supporting dataset for Lester R. Brown, **Full Planet, Empty Plates: The New Geopolitics of Food Scarcity** (New York: W.W. Norton & Company, 2012). For more information, see Earth Policy Institute on-line at [www.earth-policy.org](http://www.earth-policy.org).

### Estimated Groundwater Withdrawals in the United States, 1950-2005



Source: USGS

Earth Policy Institute - [www.earth-policy.org](http://www.earth-policy.org)