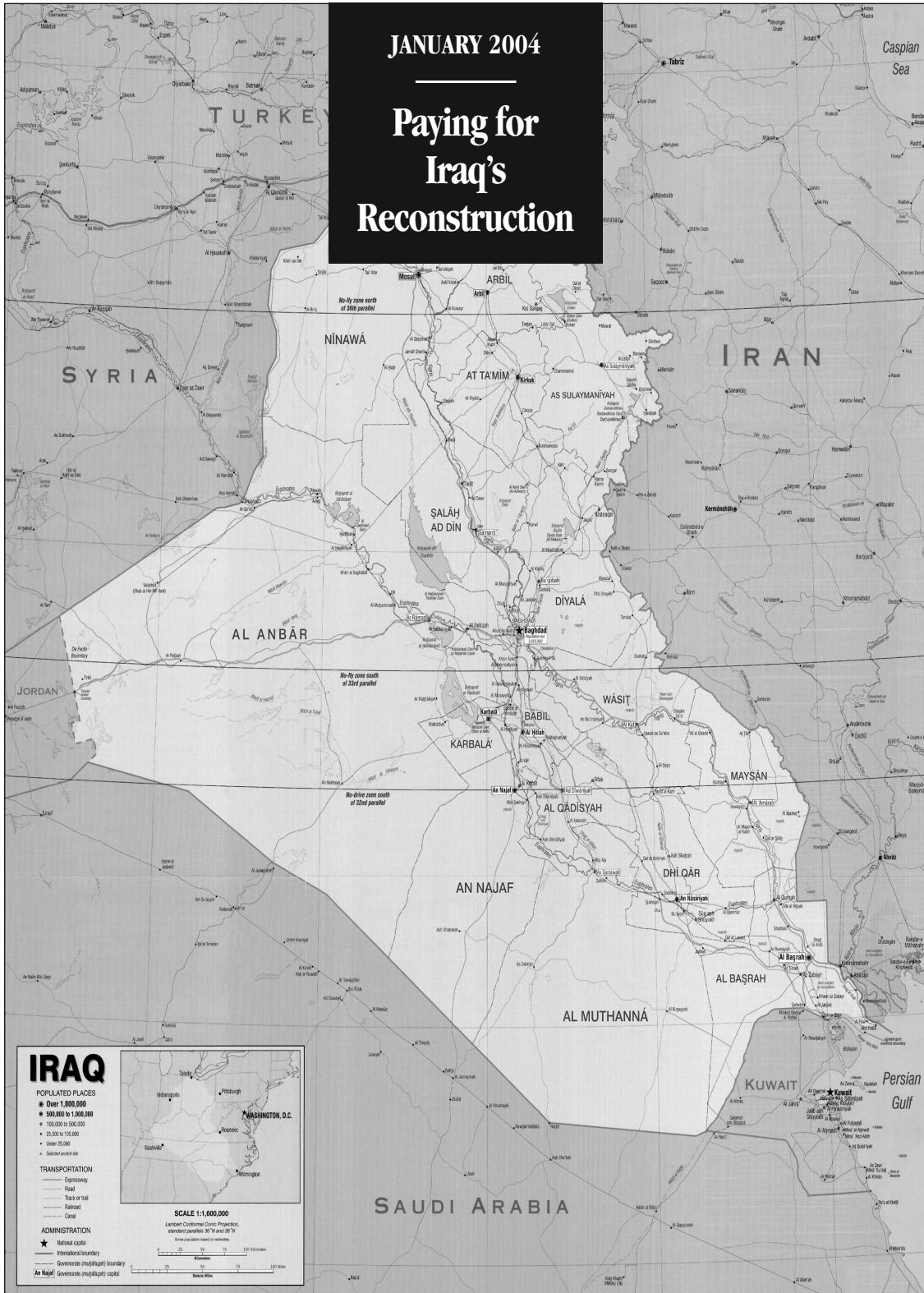


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Paying for
Iraq's
Reconstruction





Paying for Iraq's Reconstruction

January 2004

Note

Numbers in the text and tables of this paper may not add up to totals because of rounding.



Preface

Estimates of the cost of rebuilding Iraq after the overthrow of Saddam Hussein's regime range from \$50 billion to \$100 billion. In recent months, U.S. lawmakers have provided more than \$18 billion in grants to assist in that reconstruction. Other countries and organizations have pledged a similar amount, mostly in the form of loans.

This Congressional Budget Office (CBO) paper—prepared in response to separate requests from the Chairman of the Senate Budget Committee and the Ranking Member of the House Budget Committee—examines the key resource issues related to Iraq's recovery. Those issues include the country's reconstruction needs, its potential oil revenues and debt burden, and what additional resources, if any, may be necessary for the reconstruction effort. The analysis also considers three illustrative approaches to rebuilding Iraq that could require different levels of international funding. In keeping with CBO's mandate to provide objective, impartial analysis, this paper makes no recommendations.

Eric J. Labs of CBO's National Security Division wrote the paper under the supervision of J. Michael Gilmore. Robert Dennis, Richard Farmer, Heywood Fleisig, Doug Hamilton, Arlene Holen, David Moore, Elizabeth Robinson, Joseph Whitehill, and Thomas Woodward of CBO provided thoughtful comments on an earlier draft. Dan Byman of Georgetown University, Michael O'Hanlon of the Brookings Institution, and Admiral David Oliver (ret.) also provided helpful suggestions. (The assistance of such external participants implies no responsibility for the final product, which rests solely with CBO.)

Christian Spoor edited the paper, and John Skeen proofread it. Maureen Costantino designed the cover, Lenny Skutnik produced the printed copies, and Annette Kalicki prepared the electronic versions for CBO's Web site (www.cbo.gov).

Douglas Holtz-Eakin
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January 2004



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Summary

Rebuilding Iraq after 25 years of rule by Saddam Hussein and the war that overthrew his government will be one of the United States' foreign policy priorities in the coming years. By some estimates, the cost of reconstructing Iraq ranges from \$50 billion to \$100 billion. However, substantial disagreement exists about that cost, as well as about how much aid from the international community may be needed to rebuild the country, whether that aid should take the form of grants or loans, how much the United States should contribute, and how much Iraq can finance itself from its future sources of revenue.

To assess the scope of the reconstruction job, the Coalition Provisional Authority (CPA), the United Nations and World Bank, and the Bechtel Corporation (under contract to the U.S. Agency for International Development) carried out surveys of Iraq's needs in 2003.¹ The needs that they identified are mainly associated with the deterioration of Iraqi infrastructure that has occurred since Iraq invaded Iran in 1980. The surveys indicate that although sanctions imposed during the 1990s and damage from recent postwar looting have worsened the condition of Iraq's infrastructure, they are not the most significant cause of its poor state.

1. Those surveys were published in Coalition Provisional Authority, *Request to Rehabilitate and Reconstruct Iraq: Summary of the Request* (September 22, 2003); *United Nations/World Bank Joint Iraq Needs Assessment* (October 2003); and Bechtel National, Inc., *Iraq Infrastructure Program: Assessment Report* (June 2003). Also see Office of Management and Budget, *Quarterly Report on Iraq* (January 6, 2004). The CPA is the organization set up by the coalition that overthrew the Hussein regime. It is responsible for administering Iraq during the transition to a new government. In doing that, the CPA works with Iraq's Governing Council and ministries.

This paper aims to help the Congress examine critical issues dealing with Iraq's reconstruction by reviewing those surveys and analyzing the key resource issues related to Iraq's recovery over the 2004-2007 period—including its potential oil revenues, restructuring of its international obligations (foreign debt and war reparations), reconstruction needs in major sectors, and the role of international aid. In performing the analysis, the Congressional Budget Office (CBO) relied on information from the CPA, the World Bank, the United Nations, the Iraqi government, and the U.S. government. CBO did not conduct an independent assessment of Iraq's reconstruction needs or prepare independent cost estimates of major construction projects that others have identified as being necessary.

CBO's analysis yields three main conclusions:

- The amount of oil exports and the price the Iraqi government receives for them will play a critical role in determining how reconstruction is financed. Although the Iraqi government should be able to pay its day-to-day operating expenses from its oil revenues, those funds will probably not be sufficient to cover all of the country's capital investment needs, at least in the short run.
- The financial plans produced by Iraqi officials do not anticipate paying high levels of war reparations or interest on foreign debt. Thus, if Iraq fails to achieve substantial relief from its international obligations, it may have trouble funding any rebuilding efforts.
- Iraq and its international partners could pursue various approaches to reconstruction over the next few

years depending on such factors as their policy goals and priorities and the amount of resources available. This analysis examines three illustrative approaches to reconstruction and their estimated costs.

Besides the levels of oil revenues and international obligations, other factors could affect Iraq's prospects for funding its reconstruction needs. Two important factors are beyond the scope of this analysis but merit attention: security costs and the role of private investment. The total costs of providing security and stability in the country (except to the extent that such costs are included in the Iraqi government's budget planning) are unclear. The continuing insurgency in Iraq makes it difficult to estimate how much money will be needed to ensure enough security for reconstruction to take place. The extent to which private capital can contribute to restoring Iraq's infrastructure is also unclear. However, this paper briefly discusses the conditions needed to attract private capital as the basis for a market economy.

The 2004 Iraqi Budget

On the basis of estimates included in Iraq's 2004 budget, CBO assumed that the country would collect a total of \$69 billion in oil revenues between 2004 and 2007 as well as \$2.4 billion in other revenues (see *Summary Table 1*).² Those resources would be more than enough to cover the Iraqi government's planned operating expenses (\$51.3 billion) and debt and reparation payments (\$4.1 billion), with \$16.7 left over for reconstruction or capital investment.³

2. Iraq's Ministry of Finance and Ministry of Planning have published a budget for 2004 and provided fiscal guidance for the budgets of 2005 and 2006. For 2007, CBO extrapolated the numbers in the fiscal guidance for 2006.
3. The CPA and the Iraqi government plan to expand Iraq's security services from 125,000 to 226,000 personnel, which could add between \$500 million and \$1 billion to the government's expenses over the 2004-2007 period, CBO estimates. At that cost, the expansion plan would not pose a major financial burden compared with the effects of oil exports, oil prices, and debt repayment.

Summary Table 1.

The Iraqi Government's Budget Plans

(Billions of dollars)

	2004	2005	2006	2007	Total, 2004- 2007
Revenues					
Oil exports	12.0	18.5	19.3	19.3	69.1
Other revenues	<u>0.8</u>	<u>0.7</u>	<u>0.5</u>	<u>0.5</u>	<u>2.4</u>
Total	12.8	19.2	19.8	19.8	71.5
Expenditures					
Operating expenses ^a	12.1	13.0	13.1	13.1	51.3
International obligations ^b	0.6	1.1	1.2	1.2	4.1
Capital investment	<u>0.7</u>	<u>5.1</u>	<u>5.4</u>	<u>5.4</u>	<u>16.7</u>
Total	13.4	19.2	19.7	19.7	72.1
Surplus or Deficit (-)	-0.6^c	*	*	*	-0.5

Source: Congressional Budget Office based on data from Republic of Iraq, Minister of Finance and Minister of Planning, *2004 Budget* (October 2003).

Notes: Figures for 2004 come from Iraq's budget. Figures for 2005 and 2006 come from the fiscal guidance for those years provided in the 2004 budget. Figures for 2007 are an extrapolation of those for 2006 (because there was no fiscal guidance for 2007).

* = between zero and \$50 million.

- a. Actual expenses could be higher, depending on the policies and priorities of the Iraqi government. Additional security (other than that already programmed into the budget) could cost another \$100 million to \$300 million per year.
- b. Represents payments on Iraq's international debt and payments of claims stemming from Iraq's 1990 invasion of Kuwait.
- c. The government plans to make up that deficit using returned funds from the U.N. Oil-for-Food Program.

To show how sensitive Iraq's ability to pay such costs is to projected oil revenues, CBO varied those revenues using plausible scenarios of higher and lower oil exports and prices. The high scenario would earn Iraq \$89 billion in oil revenues between 2004 and 2007, potentially providing an additional \$20 billion for investment. However, the low scenario would produce only \$44 billion in oil revenues, cutting deeply into Iraq's ability to

fund even its day-to-day operations (*see Summary Table 2*).⁴

Similarly, the amount and terms of Iraq's international obligations—foreign debt, contractual obligations, and war-reparation claims—could have a significant effect on the country's ability to pay for reconstruction. Estimates of Iraq's debts range from \$45 billion to almost \$400 billion (half of that latter estimate consists of reparations and compensation claims from the 1990-1991 Gulf War). The international community seems to recognize that Iraq would have difficulty paying all of those obligations. The U.N. Security Council passed resolution 1483 declaring a moratorium on Iraqi debt repayment until the end of 2004.⁵ In addition, former U.S. Secretary of State James Baker has apparently secured pledges of debt reduction from some of Iraq's creditors. Restructuring Iraq's foreign debt will continue to be the subject of negotiations, with the end result unclear. A substantial reduction combined with a longer moratorium could effectively lower Iraq's payments to zero for a few years. Conversely, if negotiations failed, the country could still be obligated for the full amount of its foreign obligations—although, as a practical matter, such a figure would probably never be paid.

CBO examined three possible levels of total Iraqi foreign debt and war reparations—\$40 billion, \$80 billion, and \$120 billion—at high and low interest rates to illustrate their differing effects on Iraq's financial recovery. The most optimistic case would require about \$4 billion in

payments to foreign creditors between 2004 and 2007, which is consistent with the assumptions in Iraq's budget planning. Under that scenario, Iraq would be able to contribute about \$16 billion to reconstruction during that period. The most pessimistic case that CBO considered would require the country to pay \$33 billion to foreign creditors during that period, making it impossible for Iraq to cover even its planned operating expenses.

Summary Table 2.

Range of Estimates for Iraqi Government Funds and Costs, 2004 to 2007

(Billions of dollars)

	Low Estimate	High Estimate
Funds Available to the Iraqi Government		
Oil Revenues	44	89
Other Revenues ^a	3	3
U.S. Aid ^b	18	18
Other Aid ^b	<u>18</u>	<u>18</u>
Total	83	128
Costs and Obligations		
Reconstruction Costs	18	55
Iraqi Operating Costs ^c	72	72
International Obligations	<u>4</u>	<u>33</u>
Total	94	160

Source: Congressional Budget Office.

4. The Iraqi budget anticipates exporting a total of 3.3 billion barrels of oil during the 2004-2007 period at an average price of \$21 per barrel. CBO's high case assumes that level of exports but at an average price of \$27 per barrel. CBO's low case assumes total exports of 2.3 billion barrels over that period at an average price of \$19 per barrel. If Iraq met the targets underlying its budget, it would be exporting more oil and consistently earning more oil revenue than at any time since the 1980s.
5. However, that resolution requires Iraq to continue setting aside 5 percent of its revenues from oil exports (including in 2004) to pay compensation for the 1990 invasion of Kuwait.

- a. Represents the \$2.4 billion in other revenues envisioned in the Iraqi budget and \$600 million in returned funds from the U.N. Oil-for-Food Program.
- b. The U.S. figure reflects amounts appropriated in the 2004 supplemental spending law enacted in November; it excludes about \$3 billion provided in 2003. The figure for other aid represents the full amounts that had been pledged by other countries and international institutions when this report went to press. Although CBO used the same figures in its high and low estimates, those numbers could vary depending on whether donors provide the aid they have pledged or whether the donor community decides to provide more assistance. U.S. aid is in the form of grants, meaning the money does not have to be repaid. Most of the other aid is in the form of loans.
- c. The figure is from the 2004 Iraqi budget. It could vary depending on the priorities of a new sovereign Iraqi government.

Foreign Assistance

To help Iraq with its rebuilding efforts, the international donor community has pledged about \$36 billion in aid. Around half of that amount, \$18.4 billion, will come from the United States and take the form of grants.⁶ The rest will come from other countries and international institutions, mainly in the form of loans. CBO assumes that most or all of that money will ultimately be provided during the four-year period of this analysis. If so, it will represent a large contribution to meeting Iraq's reconstruction needs.

Three Illustrative Approaches to Reconstruction

For the various reasons discussed above, the amount of money that will ultimately be available to Iraq for reconstruction is uncertain. To illustrate how much could be done with different funding levels, CBO examined three alternative approaches to the task of rebuilding (*see Summary Table 3*):

- The first approach would fully pursue the objectives for reconstruction outlined in the *United Nations/World Bank Joint Iraq Needs Assessment* (referred to here as the World Bank report). Generally, the goals of that approach are to restore Iraqi infrastructure to its pre-1991 state and set the country on the path to representative government and a market-oriented economy. According to the report, that approach would cost a total of about \$55 billion through 2007.

6. That \$18.4 billion was appropriated in the 2004 supplemental spending law enacted in early November 2003. It is in addition to about \$3 billion appropriated for 2003 after the end of major combat operations in Iraq.

- A second approach would focus only on meeting the immediate (2004) needs outlined in that assessment. It would essentially restore Iraq's infrastructure to the level that existed before the recent conflict began in March 2003. Such an approach would cost about \$18 billion, mostly spent in 2004 and 2005.
- The third approach would pursue a middle path between the first two, funding all of the immediate needs in the World Bank report plus some major medium-term (2005-2007) needs. That approach would cost between \$34 billion and \$40 billion over four years.

The reconstruction efforts in the second and third approaches would also improve living conditions in Iraq but would not restore infrastructure to the same level as that envisioned in the World Bank report.

Implications of the Analysis

Iraq's need for foreign aid beyond the \$36 billion already pledged by international donors will depend largely on its success in reinvigorating its oil industry and the willingness of creditors to reduce its foreign obligations (as well as the unknown potential of private capital). If oil exports and prices meet or exceed the assumptions made by the Iraqi government, and if the country's debt is reduced sufficiently to permit a reasonable level of annual payments, further U.S. assistance beyond the \$18.4 billion already appropriated may not be necessary. Iraq itself could fund a robust reconstruction effort. Conversely, lower oil exports or prices and high levels of debt payment would most likely mean that Iraq could not afford to pay for even modest reconstruction efforts. In that case, the country could be a candidate for billions in additional aid in the coming years.

Summary Table 3.**The Costs of Three Approaches to Reconstructing Iraq, 2004 to 2007**

(Millions of dollars)

	Approach 1: Fully Fund Immediate (2004) and Medium-Term (2005-2007) Needs as Reported by the World Bank and CPA	Approach 2: Fund Only Immediate Needs as Reported by the World Bank and CPA	Approach 3: Fund Immediate Needs and Some Medium-Term Needs as Reported by the World Bank and CPA
Sectors Assessed Directly by the United Nations and World Bank			
Electricity	12,122	2,377	6,131 to 8,131
Water and sanitation	6,842	1,881	4,993 to 5,898
Education	4,805	1,005	2,165 to 2,921
Agriculture	3,027	1,230	1,979 to 2,791
Transportation	2,030	574	731 to 1,060
Housing and urban management	1,831	535	1,267 to 1,377
Health	1,600	500	900 to 1,600
Private-sector development and rapid- employment programs	1,562	551	684 to 1,184
Telecommunications	1,379	469	590 to 690
Local administration and civil society	387	99	152 to 175
Mine clearing	234	80	234
Subtotal	35,819 ^a	9,301 ^b	19,826 to 26,061 ^b
Sectors Assessed by the CPA and Provided to the United Nations and World Bank ^c			
Oil	8,000	2,000	8,000
Security, police, and justice	5,000	5,000	5,000
Environment	3,500	500	500
Culture	940	140	140
Human rights	800	200	200
Science and technology	400	100	100
Religious affairs	300	100	100
Youth and sport	300	100	100
Foreign affairs	200	100	100
Subtotal	19,440	8,240	14,240
Total Costs	55,259	17,541	34,066 to 40,301

Source: Congressional Budget Office based on data from *United Nations/World Bank Joint Iraq Needs Assessment* (October 2003).

Note: CPA = Coalition Provisional Authority.

- a. Excludes \$1.8 billion required for operation and maintenance of many of the facilities in these sectors between 2004 and 2007.
- b. Excludes operation and maintenance spending.
- c. The estimates for these sectors were provided to the World Bank by the Coalition Provisional Authority; the World Bank did not produce an independent assessment. The estimate for culture is based on an assessment by the United Nations Educational, Scientific, and Cultural Organization.



Paying for Iraq's Reconstruction

Introduction

According to various estimates, the cost of reconstructing Iraq after the overthrow of Saddam Hussein's regime could range from \$50 billion to \$100 billion. As that range indicates, there is considerable uncertainty about the amount of funding that might be necessary to rebuild the country. Debate also continues about how much international assistance Iraq will need, whether that aid should come as grants or loans, what share the United States should contribute, and how much reconstruction Iraq can pay for from its own future revenue sources, principally oil.

The Focus of CBO's Analysis

To help lawmakers consider those questions, the Congressional Budget Office (CBO) has analyzed the major resource issues related to Iraq's recovery, including potential oil revenues, possible restructuring of foreign debt, the need for reconstruction in key sectors of the economy, and the role of foreign assistance. The analysis relies on surveys of Iraq's reconstruction needs conducted by the United Nations and the World Bank, the Coalition Provisional Authority (the U.S.-led entity set up to administer Iraq during the transition to a new government), and the U.S. Agency for International Development (USAID) through a contract with the Bechtel Corporation.¹

Those surveys identify reconstruction needs associated mostly with the neglect of Iraq's infrastructure that has

occurred since the country invaded Iran in 1980. The survey results indicate that although international sanctions imposed in the 1990s and damage done by the recent postwar looting have worsened Iraq's infrastructure, they are not the most significant reasons for its poor state. CBO did not conduct its own assessment of Iraq's reconstruction needs or independently estimate the costs of major construction projects that those surveys have identified as necessary.

Living conditions in Iraq have deteriorated sharply over the years. In the 1970s, Iraq was considered an upper-middle-income country by the World Bank, just slightly below the industrialized countries and on par with such nations as Brazil, Argentina, or prerevolutionary Iran. Today, however, Iraq's gross domestic product (GDP) per capita places it among lower-middle-income countries, such as Egypt, Honduras, and the Dominican Republic. Moreover, its debt per capita makes it one of the most heavily indebted nations in the world.²

This paper discusses the amount of funding that Iraq could contribute to meeting the needs identified in those surveys over the 2004-2007 period. By comparing the Iraqi government's budget plans with alternative scenarios, the analysis shows that oil and foreign debt are likely to play critical roles in the country's ability to pay for reconstruction efforts over the next few years. The paper also discusses the international assistance pledged to Iraq

1. See *United Nations/World Bank Joint Iraq Needs Assessment* (October 2003); Coalition Provisional Authority, *Request to Rehabilitate and Reconstruct Iraq: Summary of the Request* (September 22, 2003); and Bechtel National, Inc., *Iraq Infrastructure Program: Assessment Report* (June 2003).

2. World Bank, *World Development Report, 1978* (Washington, D.C.: World Bank, August 1978), p. 77, and *World Development Indicators, 2003* (Washington, D.C.: World Bank, April 2003). Although data on Iraq's per capita GDP are hard to come by and somewhat unreliable, the World Bank's annual reports suggest that Iraq slipped from being an upper-middle-income country to a lower-middle-income country around 1991.

so far. Finally, to illustrate what could be accomplished with different levels of resources, the analysis looks in detail at three alternative approaches to reconstruction. All of the approaches would improve conditions in the key sectors of electric-power generation, oil production, water and sanitation, education, and health, but to differing degrees.

Other Factors: Security Costs and the Unknown Potential of Private Capital

Some other issues that could have a positive or negative impact on Iraq's ability to fund its reconstruction needs are not included in this analysis. Two of those issues stand out in particular—the costs of defeating the insurgency and restoring security to Iraq and the role of private investment in rebuilding the country's infrastructure and economy.

The total costs of providing security and stability (except to the extent that those costs are included in the Iraqi government's budget plans) are unclear. CBO has no way to determine how much money or how many security personnel, either from the international coalition or Iraqi forces, will be necessary to ensure a safe environment for reconstruction efforts, or for how long they will be needed.³ Current plans call for the Coalition Provisional Authority (CPA) and the Iraqi government to increase Iraq's security forces from about 160,000 personnel in December 2003 to 226,000 personnel in the spring of 2004. The costs for 125,000 of those personnel appear to be included in Iraq's budget plans. Additional security forces could add between \$500 million and \$1 billion to the government's costs over the 2004-2007 period.⁴ Although those sums are not insignificant, expansion of the security forces would not have as great an

impact on Iraq's budget as oil exports, oil prices, and debt repayment would.

CBO did not examine the extent to which private capital—whether from Iraq or abroad—can contribute to rebuilding the country's infrastructure. In September, the CPA and the Iraqi Governing Council announced a new law allowing foreign investment and ownership in most sectors of the economy, including, for example, infrastructure for telecommunications, generation and provision of electricity, and water and sanitation. (The law specifically excludes the oil and mineral sectors.) The CPA hopes that such a policy will encourage private investment and contribute over the long run to Iraq's reconstruction, economic growth, and prosperity.⁵

Experience with economic reforms in other countries (especially in Eastern Europe) suggests that a number of critical factors would be necessary in Iraq for private investment to play a significant role. They include laws that protect property rights and a judicial system capable of preventing crime, enforcing contracts, and adjudicating disputes. Setting up regulatory and tax structures suitable for long-term investment also appears to be necessary for attracting private capital. Since current plans call for handing over sovereignty to a new Iraqi government in July 2004, much uncertainty exists about what laws and systems will ultimately be developed and on what schedule. On the basis of experience with other countries, it appears that such changes would most likely take several years, if not longer.

In the opinion of Iraqi businessmen who took part in a World Bank meeting, the greatest obstacles to improving the country's investment climate are crime, macroeconomic instability, the financial system, and the telecommunications system. Close seconds are the transportation system, uncertainty about future regulatory policies, and the limited availability of electricity. Conversely, the Iraqi businessmen did not rank the legal system, cor-

3. For more information, see Congressional Budget Office, *Letter to the Honorable Robert Byrd regarding the U.S. military's ability to sustain an occupation in Iraq* (September 2003).

4. If the average cost (including hazardous-duty pay) of the additional 101,000 security personnel was \$100 per month (about the pay of a high-grade sergeant in the new Iraqi army), the extra costs over four years would total about \$500 million. If the average cost per person was \$200 a month (the salary of a mid-grade lieutenant colonel), the additional four-year cost would amount to about \$1 billion.

5. Some people have argued, however, that the CPA's policy may be inconsistent with previous agreements about the governance of occupied countries; see Daphne Eviatar, "Free-Market Iraq? Not So Fast," *New York Times*, January 10, 2004.

ruption, or education levels as significant obstacles to investment.⁶

CBO cannot quantitatively assess what impact private investment may have on reconstruction. A successful resolution of the security problem and appropriate reforms to many aspects of the country's legal, regulatory, financial, and institutional frameworks could permit significant private investment in Iraq in coming years.

Various Agencies' Assessments of the Costs of Reconstructing Iraq

Since the fall of the Hussein regime in April 2003, three organizations have conducted assessments of Iraq's reconstruction needs. The first assessment, by the Bechtel Corporation under contract to USAID, focused almost exclusively on infrastructure (excluding the oil industry and needs for security). It examined what facilities could be fixed both in the short term (through 2004) and beyond that. The report identified a total of \$15.9 billion in infrastructure needs (*see Table 1*).

The second assessment is contained in the Coalition Provisional Authority's request for supplemental funding for fiscal year 2004. The CPA asked for \$20.3 billion in reconstruction money, including \$7.2 billion to improve security and the oil industry. Some CPA officials have also indicated that Iraq's reconstruction needs could cost tens of billions of dollars more. On November 6, 2003, the President signed an appropriation law providing about \$18.6 billion for the Iraq Relief and Reconstruction Fund—the money that will be available to the CPA for rebuilding activities. However, \$210 million of that amount was set aside for assistance to Jordan, Liberia, and Sudan.⁷ In a January 2004 report to the Congress,

the CPA indicated how it plans to spend the \$18.4 billion available to it (*see Table 1*).⁸

The third assessment—and the most comprehensive to date—was conducted jointly by the United Nations and the World Bank. (For simplicity, it is referred to in this analysis as the World Bank report.) That survey independently identified \$35.8 billion in reconstruction costs and included another \$19.4 billion in costs that were assessed by the CPA, for a total of \$55.3 billion. Despite their common source, the \$19.4 billion in needs identified by the CPA differs substantially from the CPA's supplemental funding request of \$20.3 billion. For example, although both sets of numbers include \$5 billion for security, the CPA's contribution to the World Bank report identifies \$8 billion worth of spending needed for the Iraqi oil sector, whereas the CPA's request for supplemental funding in 2004 includes only \$2.1 billion for that sector.⁹

The estimates in the World Bank report are divided into "immediate needs" for 2004 and "medium-term priorities" for 2005 through 2007. In general, the immediate needs are aimed at restoring conditions and services to the state they were in before March 2003, when the war to overthrow the Hussein regime began.¹⁰ Those immediate needs make up an estimated \$17.5 billion of the \$55.3 billion. The medium-term priorities represent investments to move the Iraqi economy to a market orientation, promote long-term economic growth, improve living conditions, and restore institutions to a state more reflective of the flourishing Iraqi society of the 1970s. The costs for those activities total \$37.7 billion. The report states that although its estimates represent the best information available to U.N. and World Bank staff at the time of the assessment, there were many constraints

6. Those findings come from a World Bank roundtable discussion with the Iraqi Businessmen's Association; *see Iraq United Nations/World Bank Joint Needs Assessment: The Investment Climate*, Working Paper (October 2003), p. 2.

7. The Consolidated Appropriations Act, 2004 (H.R. 2673) allows another \$100 million of that amount to be used for assistance to Turkey and \$30 million for the Middle East Partnership Initiative.

8. See Office of Management and Budget, *Quarterly Report on Iraq* (January 6, 2004), available at www.whitehouse.gov/omb/legislative/index.html#iraq.

9. However, that \$2.1 billion is consistent with the \$2 billion in immediate needs for the oil sector identified by the CPA in the World Bank report.

10. *United Nations/World Bank Joint Iraq Needs Assessment*, p. viii.

Table 1.**Assessments of the Costs to Reconstruct Iraq, 2004 to 2007**

(Millions of dollars)

Sector	World Bank Report (October 2003) ^a	Coalition Provisional Authority		Bechtel Report (June 2003)
		Request (September 2003)	Allocation (January 2004)	
Electricity	12,122	5,675	5,560	6,045
Water and Sanitation	6,842	4,355	4,053	6,334
Education	4,805	0	90	300
Agriculture	3,027	130	279	109
Transportation	2,030	753	605	2,411
Housing and Urban Management	1,831	100	0	n.a.
Health	1,600	850	793	320
Private-Sector Development and Rapid-Employment Programs	1,562	353	214	n.a.
Telecommunications	1,379	322	135	45
Local Administration and Civil Society	387	413	743	283
Mine Clearing	234	61	61	n.a.
Subtotal	35,819 ^b	12,951	12,533	15,847
Oil	8,000	2,100	1,701 ^c	n.a.
Security, Police, and Justice	5,000	5,075	4,190	n.a.
Environment	3,500	100	0	100
Culture	940	n.a.	n.a.	n.a.
Human Rights	800	15	15	n.a.
Science and Technology	400	n.a.	n.a.	n.a.
Religious Affairs	300	n.a.	n.a.	n.a.
Youth and Sport	300	2	0	n.a.
Foreign Affairs	200	n.a.	n.a.	n.a.
Subtotal	19,440	7,353	5,906	100
Total Costs	55,259	20,304	18,439^d	15,947

Source: Congressional Budget Office based on data from *United Nations/World Bank Joint Iraq Needs Assessment* (October 2003); Coalition Provisional Authority, *Request to Rehabilitate and Reconstruct Iraq: Summary of the Request* (September 22, 2003); Office of Management and Budget, *Quarterly Report on Iraq* (January 6, 2004), available at www.white-house.gov/omb/legislative/index.html#iraq; and Bechtel National, Inc., *Iraq Infrastructure Program: Assessment Report* (June 2003).

Note: n.a. = not available.

- a. The first set of sectors comprises those that the World Bank and United Nations assessed directly for their report. For the second set of sectors, the World Bank and United Nations used estimates from the Coalition Provisional Authority rather than conducting an independent assessment. (The estimate for culture is based on an assessment by the United Nations Educational, Scientific, and Cultural Organization.)
- b. Excludes \$1.8 billion required for operation and maintenance of many of the facilities in these sectors.
- c. Includes \$501 million for the purchase of emergency petroleum products, which is not a capital investment.
- d. The Congress appropriated \$18.6 billion for the Iraq Relief and Reconstruction Fund, but \$210 million was set aside for assistance to Jordan, Liberia, and Sudan. The Consolidated Appropriations Act, 2004 (H.R. 2673) allows another \$100 million of that amount to be used for assistance to Turkey and \$30 million for the Middle East Partnership Initiative.

and difficulties in making the estimates, so actual costs in some sectors could be higher.

The reconstruction costs included in those three assessments should not be regarded as comprehensive. Little agreement exists about how much money would be necessary to achieve the stated policy goals of creating a democratic and free-market Iraq. Further, if the objective was to raise Iraq's infrastructure to Western standards, costs could be much greater than those identified in the World Bank report.

How Much Funding Could Iraq Contribute to Reconstruction?

One major policy question is how much of Iraq's reconstruction funding should be provided by the country itself. Budgets drawn up by Iraqi planners envision spending about 72 percent of revenues on the government's day-to-day operating expenses, 23 percent on reconstruction, and about 6 percent on foreign obligations. Overall, the amount that the Iraqi government can contribute to reconstruction will depend on how much revenue it receives from oil exports and how much debt and other foreign obligations it must pay.

Iraq's Budget Plans

Iraq's Ministry of Finance and Ministry of Planning have published a budget for 2004 and provided fiscal guidance for the budgets of 2005 and 2006 (see Table 2). The budget envisions spending \$13.4 billion in 2004, mainly on government operations, and collecting revenues of \$12.8 billion, mostly from oil.¹¹ The resulting deficit of about \$600 million would be made up with

11. The budget is reported in new Iraqi dinars and assumes an exchange rate of 1,500 to one U.S. dollar. (The current rate as of January 20, 2004, is 1,405 dinars to the dollar.) Differences between the set exchange rate and the actual exchange rate when the money is spent could affect the amount of funds available for reconstruction.

Table 2.
The Iraqi Government's Budget Plans

(Billions of dollars)

	2004	2005	2006	2007	Total, 2004- 2007
Revenues					
Oil exports	12.0	18.5	19.3	19.3	69.1
Customs duties	0.3	0.4	0	0	0.7
Income taxes	0	0.1	0.2	0.2	0.4
Returns from state-owned entities	0.4	0.1	0.1	0.1	0.7
User fees and charges	0.1	0.1	0.1	0.1	0.4
Other taxes and income	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.1</u>	<u>0.3</u>
Total	12.8	19.2	19.8	19.8	71.5
Expenditures					
Operating expenses ^a	12.1	13.0	13.1	13.1	51.3
Kuwait war reparations ^b	0.6	0.9	1.0	1.0	3.5
Interest on foreign debt ^c	0	0.2	0.2	0.2	0.6
Capital investment	<u>0.7</u>	<u>5.1</u>	<u>5.4</u>	<u>5.4</u>	<u>16.7</u>
Total	13.4	19.2	19.7	19.7	72.1
Surplus or Deficit (-)	-0.6^d	*	*	*	-0.5

Source: Congressional Budget Office based on data from Republic of Iraq, Minister of Finance and Minister of Planning, *2004 Budget* (October 2003).

Notes: Figures for 2004 come from Iraq's budget. Figures for 2005 and 2006 come from the fiscal guidance for those years provided in the 2004 budget. Figures for 2007 are an extrapolation of those for 2006 (because there was no fiscal guidance for 2007).

* = between zero and \$50 million.

- Actual expenses could be higher, depending on the policies and priorities of the Iraqi government. Additional security (other than that already programmed into the budget) could cost another \$100 million to \$300 million per year.
- U.N. Security Council resolution 1483 requires Iraq to pay 5 percent of its gross revenues from oil exports to meet reparations claims from the 1990-1991 Gulf War.
- U.N. Security Council resolution 1483 provides for a moratorium on interest and principal repayments of Iraq's foreign debt until the end of 2004. The actual amount of debt that Iraq will be required to repay is unknown at this time.
- The government plans to make up that deficit using returned Oil-for-Food Program funds.

returned funds from the Oil-for-Food Program.¹² Under that budget plan, only \$700 million would be available to fund the \$17 billion of immediate reconstruction needs identified by the World Bank.

The budget picture changes in later years. Over the 2004-2007 period, Iraq would collect a total of \$71.5 billion in revenues (97 percent from oil exports) and spend \$72.1 billion.¹³ But after 2004, annual government spending on capital investment (reconstruction) would grow from \$700 million to more than \$5 billion—for a total of \$16.7 billion over four years (*see Table 3*).

The Role of the Oil Sector

The major way for Iraq to finance capital investment is to increase its oil exports and, thus, its oil revenues. Today, the country exports about 1.6 million barrels of oil per day and receives an average price of about \$28 per barrel.¹⁴ (Total oil production is usually about 500,000 barrels per day higher than exports, with the difference going for domestic use.) The Iraqi government hopes to maintain exports at an average of 1.6 million barrels per day throughout 2004 and raise them to 2.5 million barrels per day by 2006. That plan would result in total exports of 3.3 billion barrels over the 2004-2007 period. However, the government anticipates that the average price it receives will fall to \$21 per barrel. If those targets

are met, the government will net \$69.1 billion in oil revenues during that period.

The Coalition Provisional Authority places great emphasis on increasing Iraq's oil production and exports, since oil revenue is considered critical to the country's ability to provide for its own needs, including reconstruction. Oil is the key sector of the economy that the CPA does not propose to privatize. However, meeting the Iraqi government's goals for oil revenue could be challenging, judging from the past. The government hopes to earn almost \$19 billion a year from oil by 2006 (or about \$18 billion a year in 2002 dollars). That figure represents a level of revenues not generally seen since before the 1990-1991 Gulf War (*see Figure 1*). Iraq has proven oil reserves of 112 billion barrels, but reaching the level of production that the Iraqi government envisions and sustaining it over time will depend on improving the security situation as well as investing in the oil fields and infrastructure (elements of which were in poor condition after the recent conflict).¹⁵

To illustrate the sensitivity of available reconstruction funding to developments in Iraq's oil sector, CBO looked at five alternative scenarios for oil exports and prices (*see Table 4*). One scenario assumes that the price of oil is \$21 per barrel, as in Iraq's budget, but that exports do not rise above the projected 2004 level; in that case, Iraq would export 2.3 billion barrels between 2004 and 2007 rather than the 3.3 billion assumed in the budget. In two other scenarios, the price for Iraqi oil would increase to \$27 per barrel: in one case with oil exports achieving the level assumed in the budget and in the other with exports remaining at the projected 2004

12. The Oil-for-Food Program was set up in 1996 and run by the United Nations. Under it, Iraq could sell oil through the United Nations and have the revenue deposited in a U.N.-administered account, which could then be used to purchase humanitarian goods, such as food and medical supplies. (Later, the program was expanded to allow Iraq to buy materials to improve its infrastructure, including the oil sector.) At the overthrow of the Hussein regime, the account balance stood at about \$3 billion. The program ended in November 2003 and the proceeds were refunded to Iraq. Most of the money was used in 2003.

13. Iraq's budget provides fiscal guidance only through 2006. To ensure comparability with the World Bank report (which covers the 2004-2007 period), CBO extrapolated the data for 2006 to provide numbers for 2007.

14. Those numbers are weekly averages as of January 14, 2004.

15. For example, unless the northern oil pipeline through Turkey can be opened and kept operating, Iraq's maximum export capacity will be about 2 million barrels per day. For two differing views on the challenge that Iraq faces, see Helmut Merklein, "Who Needs Big Oil in Iraq: The Case for Going It Alone," and Sadek Boussena, "Iraq's Petroleum Sector: Future Prospects," both in *Middle East Economic Survey*, vol. 47, no. 2 (January 12, 2004).

Table 3.**Capital Investment, by Sector, in the Iraqi Budget, 2004 to 2007**

(Millions of dollars)

Sector	2004	2005	2006	2007	Total, 2004-2007
Electricity	0	1,500	1,650	1,650	4,800
Water and Sanitation	128	500	500	500	1,628
Education	15	25	25	25	90
Agriculture	12	50	50	50	162
Transportation	62	500	500	500	1,562
Housing and Urban Management	133	300	300	300	1,033
Health	50	100	100	100	350
Private-Sector Development and Rapid-Employment Programs	0	0	0	0	0
Telecommunications	5	150	150	150	455
Local Administration and Civil Society	169	495	665	665	1,994
Mine Clearing	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Subtotal	573	3,620	3,940	3,940	12,074
Oil	0	1,000	1,000	1,000	3,000
Security, Police, and Justice	42	200	200	200	642
Environment	1	20	40	40	101
Culture	1	15	15	15	46
Human Rights	1	5	10	10	26
Science and Technology	5	10	10	10	35
Religious Affairs	5	0	0	0	5
Youth and Sport	3	50	50	50	153
Foreign Affairs	<u>6</u>	<u>10</u>	<u>10</u>	<u>10</u>	<u>36</u>
Subtotal	65	1,310	1,335	1,335	4,045
Other ^a	<u>107</u>	<u>161</u>	<u>161</u>	<u>161</u>	<u>590</u>
Total	746	5,091	5,436	5,436	16,709

Source: Congressional Budget Office based on data from Republic of Iraq, Minister of Finance and Minister of Planning, *2004 Budget* (October 2003).

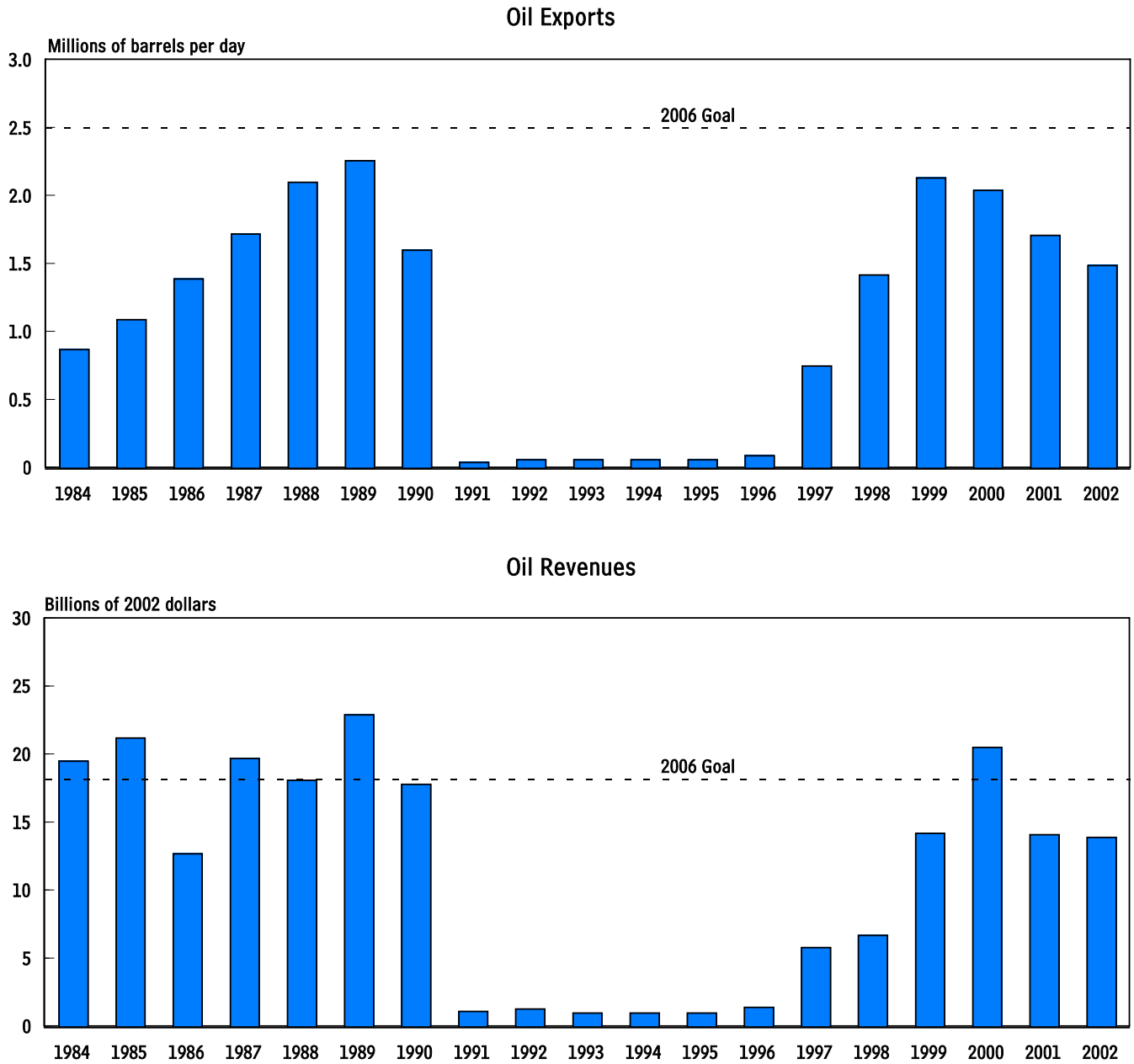
Notes: The categories used in this table correspond to the sectors listed in the World Bank report. Iraq's budget allocates funding for capital investment by ministry.

Figures for 2004 come from Iraq's budget. Figures for 2005 and 2006 come from the fiscal guidance for those years provided in the 2004 budget. Figures for 2007 are an extrapolation of those for 2006 (because there was no fiscal guidance for 2007).

a. Includes categories that do not appear to match well with the sectors listed in the World Bank report, such as trade, planning, and industry and minerals.

Figure 1.

Past Iraqi Oil Exports and Revenues, Compared with the Government's 2006 Goals



Source: Congressional Budget Office based on data from the Organization of Petroleum Exporting Countries; the International Monetary Fund; the Department of Energy, Energy Information Administration; and Iraq's Ministry of Finance and Ministry of Planning.

Table 4.

Effect of Oil Exports and Prices on Iraq's Budget for Reconstruction Under Various Scenarios, 2004 to 2007

(Billions of dollars)

Scenario	Total Oil Exports (Billions of barrels)	Average Price per Barrel (Dollars) ^a	Total Oil Revenues	Other Revenues Assumed in Iraq's Budget ^b	Operating Expenses and Debt Payments Assumed in the Iraqi Budget	Funds Available for Reconstruction (Excluding foreign aid) ^c
Under the Iraqi Budget						
Targets and Assumptions in the Budget	3.3	21	69.1	3.0	55.4	16.7
Under Alternative Scenarios for Oil Exports and Prices						
Exports Remain at Projected 2004 Level; Oil Price Equals Target	2.3	21	49.1	3.0	55.4	-3.2
Exports Reach Target Level; Oil Prices Exceed Target	3.3	27	88.7	3.0	55.4	36.4
Exports Remain at Projected 2004 Level; Oil Prices Exceed Target	2.3	27	63.1	3.0	55.4	10.8
Exports Reach Target Level; Oil Prices Fall Below Target	3.3	19	62.4	3.0	55.4	10.1
Exports Remain at Projected 2004 Level; Oil Prices Fall Below Target	2.3	19	44.4	3.0	55.4	-7.9
Memorandum: Exports and Prices Remain at Current Levels ^d	2.3	28	65.4	3.0	55.4	13.0

Source: Congressional Budget Office.

Note: Figures for 2004 come from Iraq's budget. Figures for 2005 and 2006 come from the fiscal guidance for those years provided in the 2004 budget. Figures for 2007 are an extrapolation of those for 2006 (because there was no fiscal guidance for 2007).

- In these scenarios, the "high" price of \$27 per barrel and the "low" price of \$19 per barrel come from forecasts in Department of Energy, Energy Information Administration, *Annual Energy Outlook 2003 with Projections to 2025* (January 2003), available at www.eia.doe.gov/oiaf/archive/aeo03/index.html. Those forecasts are based on the average price of landed imports in the United States. To estimate high and low prices, CBO used averages of the 2004-2007 period in those forecasts and subtracted \$4 to reflect the price that Iraqis actually receive for their oil.
- The \$2.4 billion in other revenues envisioned in the Iraqi budget and \$600 million in returned funds from the Oil-for-Food Program.
- This column represents the funds that the Iraqi government would have available for reconstruction after meeting its operating and debt expenses. A negative number implies that the government would not be able to cover all of its projected operating expenses.
- Current levels represent weekly averages as of January 14, 2004.

figure. The last two scenarios assume those two export levels but with a price of only \$19 per barrel.¹⁶

CBO did not consider scenarios in which oil exports exceed 2.5 million barrels per day because the challenge in generating those higher export levels would be much greater than the already-considerable task the government faces in meeting the targets assumed in the budget. Further, higher exports would require additional investment—\$10 billion to \$15 billion, by one estimate—which is not accounted for in either the World Bank's report or the CPA's request for funding.

The scenarios in Table 4 indicate that if Iraq did not receive its expected price for oil exports or if oil production did not meet the goals contained in the budget, the amount of money available for reconstruction would be \$6 billion to \$25 billion less than the budget anticipates. In the worst-case scenarios that CBO examined, Iraq would have insufficient funds to meet its operating expenses and no money available for investment. In CBO's best-case scenario (in which oil exports met the budgetary targets and oil prices exceeded them), Iraq could have up to \$20 billion more available for investment than assumed in the budget.

Iraq's International Obligations

Another key determinant of how much money the new Iraqi government will be able to devote to reconstruction is the amount of international debt and other obligations from Saddam Hussein's regime that it will be

expected to pay. Estimates of Iraq's total debt and other obligations range from \$45 billion to nearly \$400 billion.¹⁷

Iraq's 2004 budget and subsequent fiscal guidance assume that only a relatively modest level of funding will be necessary to meet the country's international obligations. U.N. Security Council resolution 1483 set a moratorium on Iraq's principal and interest payments of its international debt until the end of 2004. At the same time, it required Iraq to put 5 percent of its revenues from oil exports into a U.N. fund to pay claims stemming from Iraq's 1990 invasion of Kuwait. Consequently, the Iraqi budget reflects the 5 percent allocated to war claims but sets aside only a small amount for future principal and interest payments. Between 2004 and 2007, the amount budgeted for both reparations and debt is only about \$4.1 billion.

Pros and Cons of Forgiving Foreign Debt. Most observers agree that Iraq's international obligations will have to be renegotiated. For example, Horst Kohler, Managing Director of the International Monetary Fund, has stated that without "substantial debt relief, the country has no prospect of restoring its creditworthiness and of regaining access to private capital to finance future growth."¹⁸ Some observers argue that all of the debt accumulated under the Hussein regime should be forgiven. They maintain that it is unfair to saddle a free people with the debt incurred by the previous, odious regime in which it had no voice. Others believe that Iraq must pay its obligations in order to avoid serious consequences for other nations and, possibly, for the international financial system. In that view, if Iraq's debt was forgiven, other

16. The price range of \$19 to \$27 comes from the long-range forecasts in Department of Energy, Energy Information Administration, *Annual Energy Outlook 2003 with Projections to 2025* (January 9, 2003), available at www.eia.doe.gov/oiaf/archive/aeo03/index.html. The prices in those forecasts, which are in 2001 dollars, reflect the average price that U.S. refiners would pay for oil imports at U.S. terminals. The price that the government of Iraq receives for oil exports is about \$4 less than the average price paid by U.S. refiners. To be consistent with Iraq's budget and the World Bank report, which are in nominal currencies, CBO converted those oil-price forecasts into nominal dollars and then subtracted \$4. (The price of \$21 assumed in Iraq's budget is consistent with the Energy Information Administration's baseline projection for oil prices, minus about \$4.)

17. Hereafter, "international debt" or "foreign obligations" refers to all of the money Iraq owes externally, which could include sovereign debt, reparations and compensation for the Gulf War, and contractual obligations incurred by the Hussein government.

18. "The IMF Stands Ready to Help Iraq" (statement of Horst Kohler, Managing Director of the International Monetary Fund, to the International Donors' Conference for the Reconstruction of Iraq, October 24, 2003), available at <http://imf.org/external/np/dm/2003/102403.htm>.

countries that were less than fully democratic might no longer be able to attract financing from the capital markets for fear that the money would not be repaid if regimes changed. And if those countries could no longer borrow funds, they would appear to have little incentive to pay back what they already owed.

Ample historical precedent exists for reducing the amount that a country owes or the interest rate on its debt after it experiences severe economic difficulties or a regime change. For example, following the fall of the Milosevic government in Serbia, the new government's debt was renegotiated and cut by 66 percent. A two-thirds reduction in debt is considered a common standard.¹⁹

Uncertainty About Iraq's Current Obligations. One difficulty with assessing the potential budgetary impact of Iraq's international obligations is that there appears to be substantial uncertainty about the total amount it owes. For example, Iraq's trade minister recently stated that the country's foreign debt was \$45 billion (a figure that does not appear to include Gulf War compensation) and argued that 65 percent of that amount should be forgiven.²⁰ In 2001, the World Bank estimated Iraq's debt at \$128 billion, including \$47 billion in accrued interest.²¹ The recent World Bank needs assessment suggested a figure of about \$70 billion, including interest but ex-

19. See Alex Skorecki, "U.S. Investors Stay Shy of Iraqi Debt Trade," *Financial Times*, June 27, 2003; David Mulford and Michael Monderer, "Iraqi Debt, Like War, Divides the West," *Financial Times*, June 22, 2003; Stan Crock, "Iraqi Debt: Fast-Track the Restructuring," *Business Week Online*, October 13, 2003; Susan Lee, "Why Iraq's Debt Needs a Good Haircut," *Wall Street Journal*, October 22, 2003; and Steven R. Weisman, "Baker to Press Arab Lands to Forgive Huge Iraqi Debt," *New York Times*, January 5, 2004.

20. "German Government Will Consider Debt Moratorium," *USA Today*, October 28, 2003, p. 9A.

21. Although many discussions distinguish between principal and interest, some observers would argue that such a distinction is artificial because accumulated interest on a debt becomes part of the obligation for that debt.

Table 5.
Estimates of Iraq's International Obligations

	Amount in Billions of Dollars
Gulf War Reparations and Compensation	
Individuals and families	27
Kuwait	69
Saudi Arabia, Egypt, Syria, Turkey, Israel, and Jordan	36
Europe and the United States	24
Other governments	43
Subtotal	199
Foreign Debt	
Gulf states and Kuwait	47
Other countries	34
Accumulated interest	47
Subtotal	128
Pending Contracts	
Russia	52
Others	5
Subtotal	57
Total International Obligations	383

Source: Congressional Budget Office based on data from Center for Strategic and International Studies, *A Wiser Peace: An Action Strategy for a Post-Conflict Iraq* (January 23, 2003).

cluding war reparations. A London-based brokerage estimates that Iraq owes \$116 billion, including \$42 billion to members of the Paris Club and \$46 billion to countries in the Middle East. Various press reports have also stated that Iraq owes about \$40 billion to members of the Paris Club as well as \$80 billion to other states (including interest but excluding reparations).

In January 2003, the Center for Strategic and International Studies (CSIS) published a comprehensive assessment of Iraq's international obligations, which it estimated at \$383 billion (*see Table 5*). That estimate includes items of considerable controversy, however. For example, Iraq argues that money it received from the

Persian Gulf states and Kuwait during the 1980s, when it was fighting Iran, was a grant; those countries claim that the funding was a loan. Other contentious issues include whether Iraq should be held responsible for the \$47 billion in accumulated interest included in that assessment, whether Gulf War reparations and compensation to Kuwait and other parties should be discarded in light of the overthrow of the Hussein government, and whether Iraq must honor the contracts that government signed with Russia or other countries.²²

To begin the process of resolving Iraq's debt situation, the Bush Administration asked former Secretary of State James Baker to visit many of Iraq's foreign creditors to convince them to support debt relief. Although none of the commitments that Secretary Baker has received thus far appear to be binding, many creditors seem open to the idea of debt reduction for Iraq. Russia offered to cut the amount that Iraq owes it by 65 percent after Iraqi officials signaled that Russian companies would most likely be able to restart some prewar oil contracts. France and Germany also offered debt relief but did not specify an amount. Japan, Qatar, and the United Arab Emirates offered to forgive most or all of their Iraqi debt. And Saudi Arabia and Kuwait—Iraq's largest creditors in the Middle East—said they were ready to forgive debt but would only deal with a new sovereign Iraqi government.

Effects of Various Scenarios for Iraqi Debt. To show how sensitive Iraqi reconstruction funding is to the debt issue, CBO constructed six scenarios of the country's future international obligations (*see Table 6*).²³ (In that analysis, CBO takes no position on any of the issues

relating to Iraq's foreign debt, contractual obligations, or war reparations, nor does it attempt to analyze the rationales for the arguments on one side or another.) The scenarios combine one of three different levels for Iraq's total international obligations (\$40 billion, \$80 billion, or \$120 billion) and one of two interest rates (3 percent or 9 percent) to estimate how much funding from the Iraqi budget would be available for reconstruction over the 2004–2007 period, assuming that total revenues and government operating expenses (minus foreign obligations) in that period equaled the numbers in the budget.

The upper limit for debt and other obligations in the scenarios, \$120 billion, reflects a reduction of about two-thirds from the CSIS total of \$383 billion. The level of \$40 billion was chosen as the lower limit because it, along with an interest rate of 3 percent, produces debt-service payments over the 2004–2007 period that are equivalent to what the Iraqi government has budgeted for Gulf War reparations and compensation and debt service during that period. (To simplify the illustration, CBO assumed that debt service would involve only interest payments. For information about possible options for renegotiating the terms of Iraq's debt, *see Box 1*.)

The interest rates in the scenarios reflect the government bond yields published in the August 2003 issue of the International Monetary Fund's *International Financial Statistics*. The lower bound, 3 percent, is the interest rate paid by borrowing countries that are considered low risk, such as Switzerland or the United States. The 9 percent rate represents the interest rate paid by countries that are considered to be higher-risk borrowers. It is comparable to what Myanmar or South Africa might pay but is less than the rates paid by countries such as Namibia or Samoa. (The highest rate in those statistics, 33 percent, was paid by Venezuela.)

The results of the scenarios indicate that the amount of funding Iraq will be able to contribute for reconstruction spans a wide range, depending on the international obligations it is required to pay and the terms for that payment. CBO's best-case scenario—total obligations of

22. A further question is whether the international community would provide loans to a nonsovereign Iraqi government. The issue may be moot, however, since the U.N. moratorium on Iraqi debt repayment runs until the end of 2004, and the CPA plans to transfer sovereignty to a new Iraqi government by the summer of 2004. If that timetable was met, Iraq would not need new or refinanced loans until its new sovereign government was in place.

23. Those scenarios are denominated in dollars. It should be noted that dollar interest rates are currently at all-time lows, and increases in those interest rates could affect the scenarios.

Table 6.

Effect of Debt Levels and Interest Rates on Iraq's Budget for Reconstruction Under Various Scenarios, 2004 to 2007

(Billions of dollars)

Total Level of Debt	Interest Rate (Percent) ^a	Total Foreign Debt Payments (Interest only) ^b	Total Operating Expenses Assumed in the Iraqi Budget	Total Revenue Assumed in the Iraqi Budget ^c	Funds Available for Reconstruction (Excluding foreign aid) ^d
Under the Iraqi Budget					
n.a.	n.a.	4.1	51.3	72.1	16.7
Under Alternative Scenarios for Debt and Interest Rates					
40	3	4.2	51.3	72.1	16.6
80	3	7.8	51.3	72.1	13.0
120	3	11.4	51.3	72.1	9.4
40	9	11.4	51.3	72.1	9.4
80	9	22.2	51.3	72.1	-1.4
120	9	33.0	51.3	72.1	-12.2

Source: Congressional Budget Office based on data from Republic of Iraq, Minister of Finance and Minister of Planning, *2004 Budget* (October 2003).

Notes: Foreign debt is defined to include all international obligations (war reparations as well as debt). Figures for 2004 come from Iraq's budget. Figures for 2005 and 2006 come from the fiscal guidance for those years provided in the 2004 budget. Figures for 2007 are an extrapolation of those for 2006 (because there was no fiscal guidance for 2007).

n.a. = not available.

- a. The "high" interest rate of 9 percent and the "low" interest rate of 3 percent represent the reasonable range of government bond yields paid by higher-risk countries and lower-risk countries according to International Monetary Fund, *International Financial Statistics* (August 2003).
- b. In the scenarios, debt service for 2004 is held constant at \$600 million. Added to that number is the debt service for 2005 to 2007, which is calculated by multiplying the interest rate and the debt level and then multiplying by three for the three-year period.
- c. Includes \$600 million in returned funds from the Oil-for-Food Program.
- d. This column represents the funds that the Iraqi government would have available for reconstruction after meeting its operating and debt expenses. A negative number implies that the government would not be able to cover all of its projected operating expenses.

\$40 billion at 3 percent interest—leaves almost the same amount available for capital investment from 2004 to 2007 (\$17 billion) as assumed in the Iraqi budget. Increases in either the debt level or the interest rate reduce that available funding in gradually increasing amounts. The worst-case scenarios—total obligations of more than \$40 billion at 9 percent interest—leave no funds in the Iraqi budget for capital investment and produce substantial shortfalls in the government's ability to meet its day-to-day operating expenses (see *Table 6*).

A drawback of that analysis is that combining the debt and war-reparations issues, as CBO does, may understate the difficulty of resolving the reparations problem. Parties who have claims against Iraq related to the Gulf War feel strongly that they should be paid, regardless of who governs the country. If Iraq continues to be required to set aside 5 percent of its oil revenue to cover such claims, the amount of sovereign debt and the interest rate that it must pay will have to be very low—for example, debt of only \$10 billion at 2 percent interest—to match the pay-

Box 1.**Terms for Renegotiating International Debt Obligations**

The Paris Club, an informal group of governments to whom most debt of developing countries is owed, usually takes the lead in providing debt reduction and rescheduling to countries that owe money to its member governments. Terms are determined on a case-by-case basis and can vary considerably—from reducing debt or interest rates to lengthening the term of the debt to offering long or short grace periods before payments are required, among other options.

In general, poorer, more heavily indebted countries tend to receive greater relief. Iraq would appear to qualify for the club's "Houston" terms, which are designed for heavily indebted lower-middle-income countries. Although the Paris Club is careful to note that debt relief is always determined with an eye to the individual country and its particular circumstances, the terms under that category may include repayment periods of 15 to 20 years, a maximum 10-year grace period on payments, new interest rates set below the market rate, and debt swaps (such as selling the debt to an investor who then trades it to the debtor government for something of value, such as equity or environmental preservation).

ment assumptions in Iraq's budget plans. (That example assumes that the Iraqi government has no further responsibility for previously signed contracts.)

Foreign Aid Pledged for Reconstruction

Officials in the Bush Administration have argued that giving Iraq substantial aid to help it make the transition from a socialist, Ba'athist dictatorship to a constitutional government and free-market economy is crucial—especially in 2004, when oil revenues could be relatively low. When this report went to press, numerous countries and international institutions had pledged to provide Iraq

with up to \$36 billion in future financial assistance (*see Table 7*). That figure is roughly equivalent to the amount of foreign aid that Iraq might be expected to receive judging from the example of postwar reconstruction efforts in Bosnia and Kosovo (*see Box 2*).

Of that \$36 billion, half (\$18.4 billion) comes from the United States. It was appropriated in the 2004 supplemental spending law enacted in November 2003. That money is in addition to about \$3 billion appropriated for 2003 after the end of major combat operations in Iraq (which is not included in the numbers in Table 7). The U.S. aid takes the form of grants to the Iraqi government, meaning that the money will not have to be repaid.

Table 7.
Projected International Financial Assistance for Iraq, 2004 to 2007

(Billions of dollars)

Source	Grants	Loans	Total
United States ^a	18.4	0	18.4
Japan	1.5	3.4	4.9
World Bank	0	3.0 to 5.0	3.0 to 5.0
International Monetary Fund	0	2.6 to 4.3	2.6 to 4.3
European Union and Associated States	0.7	0.8	1.5
Saudi Arabia and Kuwait ^b	0.5	0.5	1.0
Others ^c	0 to 1.0	0 to 1.0	1.0
Total	21.1 to 22.1	10.3 to 15.0	32.4 to 36.1

Source: Congressional Budget Office.

- In November 2003, the Congress appropriated \$18.6 billion for the Iraq Relief and Reconstruction Fund, but \$210 million was set aside for assistance to Jordan, Liberia, and Sudan. The Consolidated Appropriations Act, 2004 (H.R. 2673) allows another \$100 million of that amount to be used for assistance to Turkey and \$30 million for the Middle East Partnership Initiative.
- Press reports are unclear about the split between loans and grants being offered by Saudi Arabia and Kuwait, but it appears to be about 50/50.
- The breakdown between grants and loans in that \$1 billion is unclear.

Box 2.**The Cost of Reconstructing Iraq on the Basis of Analogies from Bosnia and Kosovo**

A simple top-down approach to estimating how much foreign assistance Iraq may require is to examine the amount of aid per capita that Bosnia and Kosovo received from the international community after the conflicts there. To date, Bosnia has been given a total of about \$1,300 in foreign aid per person, the Congressional Budget Office estimates, and Kosovo has received about \$2,200 per person. Extrapolating those numbers to an estimated Iraqi population of 27.1 million produces a range of \$35 billion to \$60 billion in foreign assistance.

In contrast, the World Bank and the International Monetary Fund (IMF) have pledged up to \$8 billion for Iraq in the form of loans, which will require repayment. The terms under which those loans will be made available are not yet clear. Unlike sovereign states, which can independently set the terms of their financial assistance, the World Bank and IMF are multilateral institutions and must follow certain rules in determining whether a country is entitled to receive grants or loans at zero or very low interest rates, or whether the country must pay market rates to borrow funds.

The remainder of the aid pledged to date, about \$8 billion, comes from various individual countries—the largest donor being Japan—and from the European Union. Most of that aid will probably also be loans, although the terms are still unclear. At least \$3.4 billion of Japan's pledge is in the form of loans.

The \$36 billion pledged for Iraq exceeds the amount needed to cover reconstruction needs for 2004, as identified in the World Bank report. U.S. aid alone appears sufficient for those immediate costs. Thus, the additional funding offered by other countries and multilateral institutions could finance a number of the medium-term needs discussed in that report.

As with oil revenues and debt, however, uncertainties surround those aid commitments. For example, the IMF's assistance will most likely depend on the fund's assessment of whether Iraq needs the loans to support its balance of payments, whether the new government adopts strong economic programs, and whether it is able to implement them effectively.²⁴ World Bank assistance will also almost certainly involve some element of conditionality on what the bank considers sound economic and fiscal policies, as has been the bank's practice in recent years. Furthermore, although U.S. aid will be placed at the disposal of the CPA, most other aid will be provided through the United Nations. Careful planning and coordination may be necessary to ensure that the different financing streams complement one another and do not work at cross purposes. In an attempt to foster such coordination, the CPA and other donors have organized a group to apportion the aid coming from all sources.²⁵

Three Approaches to Reconstructing Iraq

Uncertainty about the amount of money available to the Iraqi government for reconstruction, the time it will take to defeat the insurgency, and the role of private investment could cause the United States and the international community to change its plans for rebuilding Iraq. The rest of this analysis looks at three approaches to U.S. and international involvement in Iraq's reconstruction that would require different levels of investment. The approaches all take as their starting point the needs assessment conducted by the United Nations and World

24. See "The IMF Stands Ready to Help Iraq" (statement of Horst Kohler, Managing Director of the International Monetary Fund, to the International Donors' Conference for the Reconstruction of Iraq, October 24, 2003), available at <http://imf.org/external/np/dm/2003/102403.htm>.

25. For a broader discussion of the effectiveness of aid in promoting development and economic growth in developing countries under various conditions, see Congressional Budget Office, *The Role of Foreign Aid in Development* (May 1997).

Table 8.**The Costs of Three Approaches to Reconstructing Iraq, 2004 to 2007**

(Millions of dollars)

	Approach 1: Fully Fund Immediate (2004) and Medium-Term (2005-2007) Needs as Reported by the World Bank and CPA	Approach 2: Fund Only Immediate Needs as Reported by the World Bank and CPA	Approach 3: Fund Immediate Needs and Some Medium-Term Needs as Reported by the World Bank and CPA
Sectors Assessed Directly by the United Nations and World Bank			
Electricity	12,122	2,377	6,131 to 8,131
Water and sanitation	6,842	1,881	4,993 to 5,898
Education	4,805	1,005	2,165 to 2,921
Agriculture	3,027	1,230	1,979 to 2,791
Transportation	2,030	574	731 to 1,060
Housing and urban management	1,831	535	1,267 to 1,377
Health	1,600	500	900 to 1,600
Private-sector development and rapid- employment programs	1,562	551	684 to 1,184
Telecommunications	1,379	469	590 to 690
Local administration and civil society	387	99	152 to 175
Mine clearing	234	80	234
Subtotal	35,819 ^a	9,301 ^b	19,826 to 26,061 ^b
Sectors Assessed by the CPA and Provided to the United Nations and World Bank ^c			
Oil	8,000	2,000	8,000
Security, police, and justice	5,000	5,000	5,000
Environment	3,500	500	500
Culture	940	140	140
Human rights	800	200	200
Science and technology	400	100	100
Religious affairs	300	100	100
Youth and sport	300	100	100
Foreign affairs	200	100	100
Subtotal	19,440	8,240	14,240
Total Costs	55,259	17,541	34,066 to 40,301

Source: Congressional Budget Office based on data from *United Nations/World Bank Joint Iraq Needs Assessment* (October 2003).

Note: CPA = Coalition Provisional Authority.

- a. Excludes \$1.8 billion required for operation and maintenance of many of the facilities in these sectors between 2004 and 2007.
- b. Excludes operation and maintenance spending.
- c. The estimates for these sectors were provided to the World Bank by the Coalition Provisional Authority; the World Bank did not produce an independent assessment. The estimate for culture is based on an assessment by the United Nations Educational, Scientific, and Cultural Organization.

Bank; they differ in whether they would fund those needs only in the short term (2004) or in the medium term (through 2007) and, if the latter, how many of the medium-term needs would be addressed (*see Table 8*).

- The first approach would fully fund Iraq's reconstruction needs as identified in the World Bank report, at a cost of \$55 billion over the 2004-2007 period.
- The second approach posits that once conditions in Iraq were restored to the level that existed before March 2003, any further investment would be the responsibility of Iraq's new government. Thus, that approach would fund only the "immediate," or 2004, needs identified in the World Bank report, at a cost of about \$18 billion.
- The third approach takes a middle path between the other two. Rather than fund all of the needs identified in the World Bank report, it would establish priorities among them once immediate needs were covered. The funding required under that approach could range from \$34 billion to \$40 billion.

The Condition of Key Iraqi Sectors

The analysis that follows looks at reconstruction needs for five major sectors of Iraq's economy: electricity generation, oil production, water and sanitation, education, and health. Those sectors include about 60 percent of the \$55 billion in reconstruction needs identified by the World Bank. (The three next largest sectors—security, the environment, and agriculture—represent another 21 percent of the World Bank's proposed spending plan. The remaining 19 percent consists of needs associated with transportation, housing, telecommunications, governance, civil society, and economic reform.)²⁶

26. The smaller percentages do not imply that those latter categories are less important, only that, according to the World Bank report, they represent a smaller financial requirement.

As a rough guide to the conditions in some of those sectors, CBO compared Iraq with other countries in the region and other major developing countries using five indicators of development: consumption of electricity, rate of illiteracy, share of the population with access to improved sanitation or water, and rate of infant mortality (*see Table 9*). No group of indicators is fully reliable in determining the level or quality of a country's development, and the statistics that underlie such indicators are often suspect. Nevertheless, those indicators may offer some insight into how large a reconstruction effort the United States or others might face in Iraq and how priorities could be set.

In 2001 (the last year for which the World Bank has compiled a reasonably comprehensive set of data), Iraq compared favorably with other developing countries in terms of electricity consumption and the urban population's access to improved water and sanitation facilities. With respect to infant mortality, however, Iraq fared far worse than many countries, including those much poorer than itself. In terms of adult illiteracy, figures from the Iraqi government put the country roughly on a par with other nations in the region, but figures from various international organizations ranked Iraq much worse than its neighbors (*see Table 9*).

Reliable data for Iraq today, after the war, are virtually impossible to obtain. Presumably, the indicators mentioned above did not improve between 2001 and 2003—and judging from data in the sector papers written to support the World Bank report, they appear to have declined since the recent conflict. Nevertheless, those indicators suggest that restoring Iraq's electric-power system to the level that existed in 2001 would put it in far better shape than many developing countries around the globe. The same could be said of Iraq's water and sanitation systems. However, for the health sector to be on a par with those of other countries in the region, it would need enough investment to return it to pre-1990 levels or better.

Table 9.

How Iraq Compares with Other Countries in Some Key Indicators of Development, 1990 and 2001

	Electricity Consumption (Kwh per capita)		Percentage of Adults Who Are Illiterate		Percentage of Urban Population with Access to Improved Sanitation		Percentage of Population with Access to Improved Water		Infant Mortality Rate (Per 1000 live births)	
	1990	2001	1990	2001	1990	2000 ^a	1990	2000 ^a	1990	2001
Iraq	1,064	1,436	40	27 ^b	n.a.	93	n.a.	85	65	107
Iran	902	1,735	46	23	n.a.	86	n.a.	92	88	35
Egypt	679	974	52	44	96	100	97	97	66	35
Jordan	981	1,339	20	10	100	100	99	96	51	27
Syria	836	1,291	36	25	n.a.	98	n.a.	80	43	23
India	305	488	52	42	44	61	88	84	92	67
Indonesia	230	391	23	13	66	69	92	78	61	33
Philippines	353	516	10	5	85	93	93	86	41	29
Middle East and North Africa ^c	1,291	1,775	47	36	n.a.	94	n.a.	88	79	44
Middle-Income Countries ^d	813	1,648	22	13	75	82	95	82	48	31

Source: Congressional Budget Office based on data from the World Bank's *World Development Indicators* online database; Department of Energy, Energy Information Administration; Department of Commerce, Bureau of the Census; and Iraq's Central Statistical Organization.

Note: Kwh = kilowatt hour; n.a. = not available.

- No data for 2001 were available.
- The data for Iraq's adult illiteracy are ambiguous. This figure comes from a 2000 survey of Iraq's adult population conducted by the Iraqi government. CBO chose to use the figure because it represents a primary source, although the method used is unclear. Statistical databases of organizations such as the Central Intelligence Agency, the World Bank, and the United Nations Children Fund report Iraq's adult illiteracy rate at 40 percent to 60 percent for the same period.
- Algeria, Cyprus, Djibouti, Egypt, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Libya, Morocco, Qatar, Saudi Arabia, Syria, Tunisia, and the United Arab Emirates.
- Middle-income countries, as defined by the World Bank, are those with gross national income per capita of \$746 to \$9,205. (Lower-middle income would be from \$746 to \$2,975 and upper-middle income would be from \$2,975 to \$9,205.)

Approach 1: Fully Fund the Needs Identified by the United Nations and World Bank

This approach would fund—using external sources—the full reconstruction effort presented in the *United Nations/World Bank Joint Iraq Needs Assessment* report. That approach is consistent with statements by Ambassador Paul Bremer, civilian head of the Coalition Provisional Authority, that Iraq will require \$50 billion to \$100 billion for reconstruction.

The goals of the World Bank and the CPA are not merely to rebuild damage caused by the recent conflict

but to reverse much of the neglect that Iraq's infrastructure suffered during the Hussein regime; change the country's economy from a socialist system to a free-market, capitalist one; and remake Iraqi governance and society, transforming it from a dictatorship into a pluralist, liberal democracy in which the rule of law prevails and individual rights are respected. The CPA articulated that vision in its supplemental funding request: the objective is "an Iraq government by and for the people of Iraq, to serve as the model for democracy in the Middle East and to help fight the global war on terrorism by

providing an alternative framework for governance.”²⁷ According to the World Bank report, the “development priorities for Iraq include: (i) strengthening institutions of sovereign, transparent, and good government; (ii) restoring critical infrastructure and core human services destroyed and degraded by years of misrule and conflict; and (iii) supporting an economic and social transition that provides both growth and social protection.”²⁸

Advocates of this sort of extensive reconstruction effort argue that Iraq will need substantial international help to transform itself into a democratic, free-market system that can serve as a model for other Middle Eastern countries—an outcome that many regard as being in the United States’ national security interests. The immediate aftermath of the war and decades of neglect and misrule by the Hussein regime left Iraq incapable of providing for its operating expenses in 2003, much less of financing its reconstruction in 2004. Eventually, as institutions are reformed and infrastructure rebuilt, Iraq will be able to manage and pay for its own long-term investment needs, supporters maintain.

Opponents of this approach would argue that although Iraq may need some modest, short-term help, a \$55 billion program over four years is too expensive, risks depriving Iraq of being able to chart its own future path, and probably cannot be executed efficiently or cost-effectively. Indeed, the historical record on the effectiveness of aid provided by one government to another is ambiguous at best.²⁹ Further, critics would argue, since most of Iraq’s needs were not caused by the recent conflict but by the way the Hussein regime governed the country, the international community should not be responsible for rebuilding Iraq.

Electricity. In the opinion of the United Nations and World Bank, restoring and improving electric-power generation will require far more resources than any other sector. Their report estimated \$12.1 billion in immediate and medium-term needs for that sector, about 22 percent of the total (*see Table 8 on page 16*). Overall, the World Bank’s approach would restore the Iraqi power system to the level of efficiency and capability it had before 1991 but would not necessarily enhance the system further. By comparison, the CPA’s supplemental funding request proposed investing \$5.7 billion in the electricity sector immediately to help alleviate shortages, an amount roughly consistent with Bechtel’s estimate of \$6.0 billion. (The CPA allocated \$5.6 billion.)

The potential continuous demand for electricity in Iraq is 6,500 to 7,000 megawatts (MW), whereas current electricity generation averages about 3,700 megawatts, with a peak capability of about 4,400 MW. (That peak figure, which is similar to the prewar average, is up from a low of 3,300 MW in the summer of 2003.) The World Bank proposes a program of investment that would increase generating capacity to 4,775 MW by 2004 and 8,760 MW by 2007, anticipating that recovery and economic growth would boost the demand for electricity (*see Table 10*).³⁰ That program would also improve the infrastructure for transmitting and distributing electricity.

The CPA hopes to reach 6,000 MW of generating capacity by the summer of 2004, but the World Bank report says that goal “will be difficult to achieve without the addition of significant emergency generating plants.”³¹ The CPA does plan to install emergency plants, but it is not clear from available data whether they, along with other efforts, will be sufficient to meet the 6,000 MW

27. Coalition Provisional Authority, *Request to Rehabilitate and Reconstruct Iraq*, p. 3.

28. *United Nations/World Bank Joint Iraq Needs Assessment*, p. vi.

29. See Congressional Budget Office, *The Role of Foreign Aid in Development*.

30. Although the June 2003 Bechtel report is now dated, as a point of comparison, most of the money it proposed spending on the electricity sector would be used to build new plants over five years to provide an additional 6,000 MW of generating capacity. According to Bechtel, Iraq was producing only about 2,600 MW of electricity at the time that report was published.

31. *United Nations/World Bank Joint Iraq Needs Assessment*, p. 30.

Table 10.

Summary of the Different Approaches to Reconstruction, by Sector and Funding Provided in the Iraqi Budget

	Approach 1: Fully Fund Immediate (2004) and Medium-Term (2005-2007) Needs as Reported by the World Bank and CPA	Approach 2: Fund Only Immediate Needs as Reported by the World Bank and CPA	Approach 3: Fund Immediate Needs and Some Medium-Term Needs as Reported by the World Bank and CPA
Electricity Sector	\$12.1 billion to increase electricity generation to 4,775 MW in 2004 and 8,760 MW by 2007	\$2.4 billion to increase electricity generation to greater than pre-March 2003 capacity or to 4,775 MW	\$6.1 billion to \$8.1 billion to increase electricity generation to 4,775 MW in 2004 and 6,000 to 7,000 MW by 2006
Water and Sanitation Sector	\$6.8 billion to restore water and sanitation to pre-1991 levels and then expand access by 2007	\$1.9 billion to repair existing systems damaged after the recent conflict and looting and then expand access	\$5.0 billion to \$5.9 billion to repair existing systems and then expand access in urban areas
Education Sector	\$4.8 billion to rehabilitate or construct schools and higher education systems	\$1.0 billion to rehabilitate existing schools and build new schools to relieve extreme congestion; very little funding for higher education	\$2.2 billion to \$2.9 billion to rehabilitate existing schools and build new ones; very little funding for higher education
Health Sector	\$1.6 billion to raise per capita spending on health care to \$70 through 2007	\$500 million to raise per capita spending on health care to \$70 in 2004 only	\$900 million to \$1.6 billion to raise per capita spending on health care to \$62 to \$70 through 2007
Total Costs of Approach	\$55.3 billion	\$17.5 billion	\$34.1 billion to \$40.3 billion
Total Costs Minus Funds for Reconstruction in Iraq's Budget for 2004	\$54.6 billion	\$16.8 billion	\$33.4 billion to \$39.6 billion
Total Costs Minus Funds for Reconstruction in Iraq's Budget Plans for 2004 to 2007	\$38.6 billion	\$0.8 billion	\$17.4 billion to \$23.6 billion

Source: Congressional Budget Office.

Note: CPA = Coalition Provisional Authority; MW = megawatts.

goal. (The emergency plants by themselves would not be enough to reach that level.)

According to the World Bank, electricity consumption in Iraq averaged about 700 kilowatt hours per person in the summer of 2003, after the war. That marked a decline of more than half from 2001, when per capita consumption exceeded 1,400 kilowatt hours (*see Table 9 on page 18*).³² Today, consumption appears to have risen to about 1,300 kilowatt hours per capita, based on current average generating capacity. (For an explanation of how generating capacity in megawatts translates into consumption in kilowatt hours per capita, *see Box 3*.)

Oil. The oil sector, which is expected to become a major source of revenue for Iraq, will require significant reconstruction funding.³³ The World Bank did not assess Iraq's oil sector independently; it adopted a CPA estimate that \$8 billion will be necessary between 2004 and 2007 to improve the oil industry. The CPA did not specify what that \$8 billion would buy, and CBO found little independent information about those expenditures (which is why they are not included in Table 10). Presumably, that amount is associated with achieving and sustaining the Iraqi government's export goal of 2.5 mil-

32. The World Bank reported that same consumption for 2002 as well as 2001.

33. For some useful background information on Iraq's oil sector before the war, see *Guiding Principles for U.S. Post-Conflict Policy in Iraq*, Report of an Independent Working Group Cosponsored by the Council on Foreign Relations and the James A. Baker III Institute for Public Policy of Rice University (New York: Council on Foreign Relations, December 2002), available at www.cfr.org/pdf/Post-War_Iraq.pdf. See also, Department of Energy, Energy Information Agency, *Iraq Country Analysis Brief* (August 2003), available at www.eia.doe.gov/emeu/cabs/iraq.html.

Box 3

Generating Capacity and Electricity Consumption in Iraq

A country's total capacity to generate electricity is measured in megawatts (MW), or millions of watts, whereas electricity consumption is often measured in kilowatt (1,000-watt) hours per capita per year. Assuming that generating systems ran 24 hours a day, 365 days a year, and that all of the electricity produced was consumed, a generating capacity of 4,000 MW in Iraq would equal consumption of about 1,300 kilowatt hours per capita. The formula for conversion is straightforward:

$$\begin{array}{rcl}
 4,000,000,000 \text{ watts} & \times & \\
 365 \text{ days per year} & \times & \\
 24 \text{ hours per day} & & \\
 \hline
 27,100,000 \text{ Iraqis} & = & 1,293 \text{ kilowatt hours} \\
 & & \text{per capita per year}
 \end{array}$$

Thus, the different capacity levels discussed by the Coalition Provisional Authority and the World Bank convert as follows:

Generating Capacity (MW)	Consumption (Kilowatt hours per capita)
3,200	1,034
4,000	1,293
4,400	1,422
4,775	1,543
6,000	1,939
6,500	2,101
7,000	2,262
8,760	2,831

Those calculations assume that capacity is fully used around the clock, with no downtime for maintenance. Incorporating downtime would reduce per capita consumption from the numbers shown above. However, the CPA's and World Bank's goals for electricity consumption appear to already factor in downtime for maintenance or other purposes, which means that the numbers shown here would represent actual consumption per capita.

lion barrels per day, compared with the current level of 1.6 million barrels per day.³⁴

Water and Sanitation. According to the World Bank report, this sector needs the third-largest amount of money for investment over the 2004-2007 period, \$6.8 billion. The report proposes a program that would restore Iraq's water and sanitation systems to pre-1991 levels and then expand urban and rural access to improved water and sanitation by 15 to 30 percentage points.³⁵ By comparison, Bechtel's report called for spending \$6.3 billion on water and sanitation—including more than \$3 billion to improve and expand sewer services in Baghdad and Basra, which were the focus of the company's initial efforts.

As with electricity, the demand for safe water and sanitation exceeds the available supply. Little of Iraq's water and sanitation infrastructure was damaged in the recent conflict; its problems result from the 1990-1991 Gulf War, long-term neglect by the Hussein regime, and looting after the recent conflict.

Education. The World Bank report envisions an investment program for the education sector of about \$4.8 billion over the next four years, with the goal of restoring Iraq's education system to the level of the early

1980s. Of that amount, \$2.2 billion would be spent on rehabilitating or constructing elementary and secondary schools, \$1.9 billion on higher education, and almost \$800 million on education supplies, such as textbooks.

Education levels in Iraq have declined dramatically over the past 20 years. In the 1970s, the country had one of the best education systems in the region, with nearly universal enrollment, and in 1985, adult illiteracy stood at only 12 percent. By the 1999-2000 period, primary school enrollment had fallen to 93 percent, secondary school enrollment was less than 40 percent, and actual attendance was even lower.³⁶ Adult illiteracy had risen to 27 percent (or far higher, in some estimates).

Health. The assessment in the World Bank report is that Iraq's health care sector will need up to \$1.6 billion in funding beyond that already expected from the Iraqi budget and private sector. Lack of data prevented the World Bank from trying to determine the needs of the Iraqi health care system by assessing actual infrastructure problems or shortages, as it did with other sectors. Instead, the World Bank assessment (in conjunction with the World Health Organization, UNICEF, and the CPA) looked at the level of per capita funding for health care in countries of a similar socioeconomic status. It determined that a spending level of \$70 per person based on a gross national product per capita of \$1,000—the projected amount for Iraq—was an appropriate funding level for the health sector. Although that level is lower than in most of the Gulf states, Iran, or Jordan, it is higher than the amount spent by Egypt, Syria, Algeria, or Yemen.³⁷

34. Sustaining an export goal requires continuous investment as well as funding for day-to-day operations. For example, maintaining pressure in an oil field so it continues to produce usually requires pumping in water to take the place of the oil that is being pumped out. If such action is not taken when required, the productive capacity of the field will eventually decline. Iraq has many fields that cannot produce or are producing poorly but that can begin producing again if investments are made.

35. As an example of the unreliability of data on development indicators, three World Bank publications provide three different numbers for the percentage of the urban population in Iraq that had access to improved water in 2000. The World Bank's online database puts that figure at 85 percent, whereas the World Bank needs assessment gives the number as 92 percent. The World Bank publication *World Development Indicators* uses the figure of 96 percent, which would suggest no real decline in the urban population's access to water since 1990.

36. *Iraq United Nations/World Bank Joint Needs Assessment: Education Sector*, Working Paper (October 2003).

37. The health sector is another area in which data are unreliable. Figures for per capita health spending in Middle Eastern countries in the World Bank report differ from those published by the World Health Organization (WHO). Although the World Bank report did not provide a number for such spending in Iraq in 2002, one report by WHO cites a figure for 2000 of \$375 per person (at current exchange rates). However, WHO's country profile for Iraq reports total health spending per capita of \$44.

According to the World Bank report, that \$1.6 billion from the international community would probably be spent on improving Iraq's health care infrastructure, not on providing ordinary health care services. Other countries' per capita spending is not being spent on improving infrastructure to the same degree because their health care systems have not suffered the damage and neglect that Iraq's has.

Approach 2: Fund Only the 2004 Needs Identified by the United Nations and World Bank

An alternative approach to reconstruction would be for the international community to fund only what the World Bank identified as immediate needs (the funding for 2004). Such an approach, which would cost about \$18 billion, would address only the most critical problems, with an emphasis on restoring services to the levels that existed before March 2003. After those immediate needs were met, Iraq would have to find—and fund—its own path to reconstruction.

Supporters of that approach might argue that regardless of how much aid was provided, transforming Iraq into a market-oriented country with a democratic government could prove difficult, if not impossible. It is not clear that any amount of money could bring about such a transformation. Therefore, since the United States caused little actual damage in its military campaign to overthrow Saddam Hussein, it or other countries should not be responsible for rebuilding Iraq beyond the conditions that existed when the campaign began. (In that view, most of Iraq's reconstruction needs resulted either from years of misrule by its former government or from the actions of Iraqis themselves, particularly the looting and vandalism that occurred after the Hussein regime fell.) Other advocates of this approach could contend that giving Iraq large amounts of aid over a relatively short period risks having the funds used inefficiently or ineffectively. Better, they would say, to meet only imme-

mediate needs and then let Iraqis figure out for themselves the best means and timetable for future reconstruction.

Opponents of this more limited approach, by contrast, could argue that providing only for immediate needs would be insufficient to support Iraq's change into a stable, free-market-oriented, democratic country. Without large amounts of assistance, Iraq might be unable to provide many basic services, such as electricity, water, and sanitation. Such inability could provoke social discontent and thus make the transition to a peaceful, democratic state difficult—an outcome that some observers believe could harm U.S. national security. Some critics of this approach might also argue that although damage from the recent conflict was relatively light, sanctions imposed on Iraq by the United Nations throughout the 1990s, as well as postwar looting, did as much harm to Iraq's infrastructure and society as Saddam Hussein did. Thus, they would say, the international community has an obligation to assist as much as possible in Iraq's reconstruction.

Electricity. The World Bank identified about \$2.4 billion in immediate needs for the electricity sector. The short-term objective for that funding would be to restore generating capacity to 4,775 MW in 2004 as well as to repair transmission and distribution systems (*see Table 10 on page 20*). That amount of generating capacity would exceed the level of March 2003 but fall well short of the demand (more than 6,500 MW) that is expected to occur when the heat of the summer returns in 2004.

Oil. The World Bank report (based on estimates provided by the CPA) stated that Iraq's oil sector will require \$2 billion of investment in 2004 alone. The CPA's supplemental funding request of September 2003 specified \$2.1 billion in investment for the sector. Presumably, those two estimates reflect essentially the same requirements. The CPA's request spelled out a variety of activities to fund, including repairing damage from the war and postwar looting, improving security, and restoring wells and other systems. Its goal is to return sustained oil production to the prewar level of about 2.5

That number seems more consistent with available information on the condition of Iraq's health care system.

million barrels per day, which would translate into about 2 million barrels per day for export.

Water and Sanitation. In its assessment of this sector, the World Bank identified about \$1.9 billion in immediate funding requirements for 2004 that could not be provided from the Iraqi budget. The emphasis of those immediate needs is to repair systems damaged by looting, vandalism, or neglect after the recent conflict. That amount of funding would increase the share of the population with access to clean water by 15 percentage points in urban areas and 20 percentage points in rural areas. It would also reduce the rate of water loss by 10 percentage points by fixing visible water leaks and would raise the urban population's access to sanitation by 10 percentage points. Rehabilitation or improvements beyond those levels would be left to the Iraqis to finance.

Education. The World Bank's immediate needs for the education sector amount to about \$1 billion. Most of that money would go to rehabilitate and reconstruct existing primary and secondary schools. Some could also be spent to build new schools in particularly congested situations. (For example, some schools are operating in triple shifts and could be targeted first.) That funding would also provide for an immediate infusion of textbooks and other school supplies. Few investment resources would be spent on higher education.

Health. According to the World Bank, the financing gap for health care (the amount needed to reach a funding level of \$70 per person) is \$500 million for 2004. This approach would cover that gap in 2004 but not in subsequent years.

Approach 3: Fund All Immediate Needs and Some Medium-Term Needs

A third approach to reconstructing Iraq could take a middle course between the previous two plans—the international community could pay for all of the 2004 needs outlined in the World Bank report as well as some medium-term priorities. In this illustrative example,

such an approach would cost \$34 billion to \$40 billion over the 2004-2007 period.

Advocates of an intermediate approach would argue that funding the full World Bank program might be more ambitious than international donors' resources or Iraq's absorptive capacities would allow. It might also be more than one country deserved, especially since many other countries around the world are in equally bad shape as Iraq, or worse. However, they would argue, funding only Iraq's immediate needs would probably be insufficient to set the country on the path to recovery, given the poor state of its infrastructure. Providing enough aid to meet some longer-term needs as well would be more likely to achieve a successful transition to a freer society—and thus avoid the serious long-term consequences (including to U.S. national security) that could follow if such a transition was unsuccessful.

Another argument in favor of an intermediate approach is that given the uncertainty surrounding the total cost of rebuilding Iraq, a middle path may be reasonable. That total cost could far exceed the amount identified in the World Bank report—in which case, Iraq would of necessity have to fund a substantial fraction of the reconstruction effort itself.

Opponents of this intermediate path could cite the arguments for one or the other of the approaches described above. On the one hand, they might say that the potentially large amounts required to pay for Iraq's total reconstruction are a reason to fund nothing less than all of the needs identified by the World Bank. On the other hand, they could argue that financing more than Iraq's immediate needs could prove counterproductive if the country was unable to absorb the funds efficiently or if Iraqis did not feel they had control over rebuilding their own country. Opponents on that side might also observe that even with all of Iraq's recent troubles, its development indicators and natural resources put it in a stronger position than many other developing countries.

Electricity. This approach would fully fund the 2004 needs of the electricity sector as well as efforts to rehabilitate and reconstruct existing electric power systems, at a cost of \$6.1 billion over four years. If donors desired, they could invest a further \$2 billion in new systems to expand Iraq's generating, transmission, and distribution systems, for total aid to the electricity sector of \$8.1 billion. That range of funding would bring total generating capacity to about 6,000 to 7,000 MW by 2005 or 2006—enough to support electricity consumption of 1,900 to 2,300 kilowatt hours per person (*see Table 10 on page 20*).

Oil. Because of the lack of information about needs in the oil sector, and because of the importance of raising oil exports to generate additional revenue for reconstruction, CBO did not choose a middle path for this sector. Instead, it adopted the full CPA assessment of requirements through 2007. Thus, this approach—like the first one—would spend \$8 billion on the oil industry during the 2004-2007 period, with the goal of exporting 2.5 million barrels per day by 2006.

Water and Sanitation. Besides fully funding immediate needs, this approach would restore Iraq's water and sanitation infrastructure to pre-1991 levels. In addition, funding could be provided to increase access to potable water in urban areas by 15 percentage points, reduce water loss by 20 percentage points, and raise sanitation coverage in urban areas by 30 percentage points. Those activities would require total funding of \$5.0 billion to \$5.9 billion over four years. (Needs cited by the World Bank that would not be funded in this approach include expanding water and sanitation services in rural areas and improving trash and other solid waste removal.)

Education. As with the electricity and water sectors, this approach would fully fund Iraq's immediate education needs as identified by the World Bank report. In addition, it would finance the rehabilitation and rebuilding of existing primary and secondary schools as well as needed textbooks and supplies through 2007. This approach could also fund construction of new primary and

secondary schools as identified by the World Bank. However, most funding for higher education—primarily rehabilitation and reconstruction of technical institutes and universities—would not be covered. The amount of funding required under this approach could range from \$2.2 billion to \$2.9 billion.

Health. In light of the World Bank's method of assessing the level of funding required for health care, providing an intermediate approach is difficult. Most countries in the region spend more than the World Bank's goal of \$70 per person on health care per year (the average for the Middle East and North Africa is \$113). However, one alternative approach would be to spend \$62 per capita on health care, which is the level of funding in Algeria—a much larger country than Iraq with more than twice its per capita GDP. Reaching that level of spending would require \$900 million through 2007, compared with \$1.6 billion to reach the World Bank's goal. Those two amounts are the range that CBO used for the middle approach.

The Cumulative Effect of the Oil and Debt Scenarios and the Approaches to Iraq's Reconstruction

To illustrate how much reconstruction funding might be available to pay for those approaches, CBO examined the combined effects of the different scenarios for Iraqi oil revenues and international obligations presented earlier and the amount of foreign aid pledged to date. The six oil-revenue scenarios and six debt-service scenarios produce 36 potential outcomes; eight are shown in *Table 11*, including the best- and worst-case scenarios and the one that most closely matches the assumptions used in the Iraqi budget. (All of the scenarios assume that the Iraqi government's operating expenses over the 2004-2007 period total \$51.3 billion; its nonoil revenues total \$3.0 billion, including \$600 million in returned funds from the Oil-for-Food Program; and international assistance equals \$36 billion.)

Table 11.**The Impact of Oil Prices and Debt on Iraq's Reconstruction, 2004 to 2007**

(Billions of dollars)

Scenario	Assumptions	Total Foreign Debt Payments (Interest only)	Total Oil Revenues	Funds Available for Reconstruction from the Iraqi Government	Total Funds Available for Reconstruction (Including \$36 billion in foreign aid)
1	3.3 billion barrels of oil exports \$27 per barrel \$40 billion in foreign debt 3 percent interest rate	4.2	88.7	36.2	72.2 ^a
2	3.3 billion barrels of oil exports \$27 per barrel \$80 billion in foreign debt 9 percent interest rate	22.2	88.7	18.2	54.2
3	3.3 billion barrels of oil exports \$21 per barrel \$40 billion in foreign debt 3 percent interest rate	4.2	69.1	16.6	52.6 ^b
4	3.3 billion barrels of oil exports \$21 per barrel \$80 billion in foreign debt 9 percent interest rate	22.2	69.1	-1.4	34.6
5	2.3 billion barrels of oil exports \$21 per barrel \$40 billion in foreign debt 9 percent interest rate	11.4	49.1	-10.7	25.3
6	3.3 billion barrels of oil exports \$19 per barrel \$120 billion in foreign debt 9 percent interest rate	33.0	62.4	-18.9	17.1
7	2.3 billion barrels of oil exports \$19 per barrel \$80 billion in foreign debt 9 percent interest rate	22.2	44.4	-26.1	9.9
8	2.3 billion barrels of oil exports \$19 per barrel \$120 billion in foreign debt 9 percent interest rate	33.0	44.4	-36.9	-0.9 ^c

Source: Congressional Budget Office.

Note: This analysis assumes that, as projected, the Iraqi government's operating expenses over the 2004-2007 period total \$51.3 billion and its other revenues total \$3.0 billion (including \$600 million in returned funds from the Oil-for-Food Program). The analysis also assumes that international assistance equals \$36 billion, the amount pledged to date.

a. This represents the best-case scenario that CBO explored.

b. The assumptions in this scenario conform most closely with those of the Iraqi budget.

c. This represents the worst-case scenario that CBO explored.

CBO has no basis for assessing the likelihood of the various results. Nevertheless, the analysis indicates that there are many plausible outcomes in which substantially greater or lesser amounts would be available to pay for Iraq's reconstruction. For example, Scenario 1, the best case, would provide a total of \$72.2 billion over four years for reconstruction. That amount would be enough to fully fund the \$55.3 billion in needs assessed in the World Bank report even if little foreign aid other than that appropriated by the United States materialized (or enough for a larger rebuilding effort if it did). Scenarios 2 and 3 would both permit a level of investment that could pay for almost all of the recommendations in the World Bank report (Approach 1). Scenario 4 would provide enough funding to carry out the intermediate approach to reconstruction described above (Approach 3). Scenarios 5 and 6 would only permit Iraq to cover the most immediate needs identified in the World Bank report (Approach 2). Scenarios 7 and 8 would essentially

represent disaster for Iraq's reconstruction efforts: much of the foreign assistance pledged to date would be needed to cover the government's operating expenses, leaving little or no money for rebuilding.³⁸

Those results show that if oil exports and prices meet or exceed the goals set by the Iraqi government, and if the country's international obligations are reduced sufficiently to permit a reasonable level of debt service, further U.S. aid beyond the \$18.4 billion already appropriated may not be necessary. However, lower oil exports or oil prices and higher levels of debt service could mean that Iraq would need billions in additional assistance in the years to come.

38. Those last two scenarios may understate how difficult the situation would be, as international donors would be unlikely to provide aid just to support Iraq's operating budget.

