

I.0 INTRODUCTION AND SUMMARY

IRAQ'S AGRICULTURAL SECTOR

Agriculture and agribusiness support nearly 7.5 million people (27% of the population) in Iraq, and these sectors' contribution to national income is second only to that of the oil industry. Iraq has the natural and human resources, management capacity, and opportunities to develop a modern and competitive agriculture sector that can satisfy much of its food needs, and export high-value products to the Middle East and beyond.

In recent decades, a combination of wars, poor government policies, and economic sanctions brought the sector to the brink of collapse. Iraq's agricultural sector, once export-oriented and able to satisfy a large portion of the country's food needs, declined precipitously. By the early part of this decade, Iraq's agricultural sector was largely decapitalized and demonetized. There was so little money in the economy that demand for goods plummeted and even maintenance of capital goods was impossible. Iraq sank into a low level economic quagmire; it had been a middle income country, but the confluence of these disastrous events brought cruel impoverishment to its population.

Conditions for the sector became especially bad during the sanctions period that followed the 1991 Gulf War, a period which reduced Iraq's gross domestic product by nearly 80%. The decline in agricultural production was particularly sharp during this period because Iraq was not permitted to purchase agricultural inputs and spare parts on world markets. At the same time, as noted above, Iraqis' purchasing power dropped dramatically, resulting in low effective demand for all products, including food crops.

By 1995, economic hardship was so severe that a humanitarian crisis was declared, resulting in the Oil for Food Program (OFF) established by UN Security Council Resolution 986. OFF had two components relevant to the agricultural sector: 1) it permitted the Iraqi Government to purchase badly needed agricultural inputs such as fertilizer, seeds, tractors, and feed grains with the objective of raising production levels to help ameliorate the humanitarian crisis; and 2) it replaced the partial food supplementation system that the regime instituted in the early 1990s with the Public Distribution System (PDS). PDS was a universal program to distribute free imported food in quantities sufficient to avert malnutrition. Every citizen of Iraq, regardless of income, received rations of food to provide approximately 2,400 calories daily. PDS eliminated the risk of mass hunger and reduced malnutrition and disease.¹ Yet the universal

¹ It is important to acknowledge that PDS, for all of its faults, saved many lives in Iraq. The economy had declined to the point where middle class professionals, who in the past had monthly salaries in the hundreds or even thousands of dollars, received monthly compensation of less than \$10. Many rural residents, some estimate between 60 to 80 percent in the south, depended on PDS for all food requirements. Even worse, the economy was demonetized to the extent that PDS was for many the only form of income.



Iraqi farmer prepares his land for planting.

distribution of free and imported food created market distortions that essentially undercut the ability of the agricultural sector to redevelop, in spite of the resumption of imports of agricultural inputs.

USAID's Agricultural Reconstruction and Development Program for Iraq thus faced a dire agricultural situation in 2003. The challenges that ARDI and its partners in the new Iraqi Government and the private sector faced are broadly outlined below.

Demonetization The embargo resulted in artificially low prices of most goods and services. In 2003, agriculture in Iraq continued to suffer from market distortions caused by continuing PDS, though the consequences had lightened somewhat. Farmers had little buying power to purchase inputs needed for efficient production, and the new government could not continue the practice of subsidizing up to 80 percent of agricultural inputs. This was due to lack of funds, and because the Coalition Provisional Authority (CPA), which controlled procurements refused to permit the importation of inputs. It did not deem agricultural supplies to be a high priority. Further, CPA was reluctant to permit the Iraqi Government to subsidize inputs, even though most farmers, especially small scale farmers, had yet to recover from the sanctions period. With little cash and no access to finance, few were capable of purchasing inputs needed for good production. Consumer spending in the cities recovered more quickly than rural spending, but still unemployment contributed to low purchasing power. Iraq needed an injection of cash at all points of the economy to restart its engine of growth.

Decapitalization The former regime invested little in agriculture infrastructure and the embargo exacerbated this problem. Irrigation and drainage systems had not been maintained over the years, rendering water control and distribution difficult. Iraq's irrigated areas have declined by 30% since the 1970s, principally due to neglected or broken infrastructure. The FAO and World Bank (2003) estimated that at least 500 irrigation and drainage pumps were in critical condition in 2003 and the canal network had been substantially damaged by lack of repair and maintenance. Apart from infrastructure, other forms of capital had declined. The seed supply deteriorated, the national herd declined in quantity and quality, and orchards were neglected and not maintained. Agricultural machinery was in a sorry state, and spare parts were scarce. Soils in the south central and south became highly saline, and in some areas of Mesopotamia salinity eliminated agricultural production altogether. Human capital also suffered. For twenty years, Iraqi professionals, many of whom were highly educated, had little contact with international organizations, and few after the mid-1980s had the opportunity to study abroad. Finally, as if the debacle of the previous twenty years were not bad enough, the looting in April and May of 2003 destroyed government buildings and facilities, making the rebuilding program that much more expensive.

In addition to the broad problems of decapitalization and demonetization, the agricultural sector suffered from weak government services. Massive budget cuts brought about a serious decline in research, extension, animal health, production support, plant protection, and other services. At the same time, funding shortages and political animosities forced the departure of many skilled and experienced personnel.

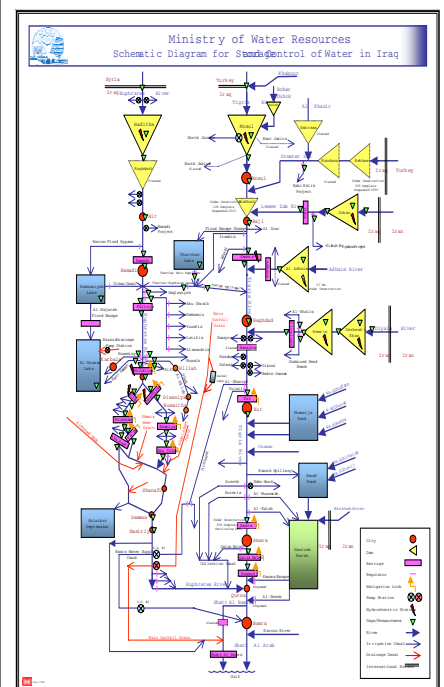


Finally, the agriculture sector's most vital resource – water – slowly dwindled away. Overirrigation and other poor water management practices led to waterlogging and salinity in central and southern Iraq. An estimated 50% of the country's irrigated land – which accounts for 70% of its cultivated land and an even higher percentage of its total agricultural production – is now either saline or waterlogged. Ironically, the government systematically drained 15,000 square kilometers of the country's unique marsh habitat in the mid-1990s, destroying the livelihood of up to 100,000 farmers and fishermen who lived there.

All of this led to a general decline in productivity unprecedented in economic history. The combined forces of war, sanctions, poor government policies, and ad hoc planning reduced the productivity of all of the country's cereal and high-value crops to but a fraction of what it had been. For example, in 2003, Iraq produced only about 600 kg of wheat per hectare, while the production of neighboring countries was two to three times that amount. Such high-value crops as dates also suffered; productivity dropped from 32 kg/tree to about 10 kg/tree between 1970 and 2000 (FAO, 2003). Sanctions curtailed the export of dates, such that by 2003, Iraqi farmers and exporters sold only small amounts of date syrup and industrial products abroad.

Yet, despite the challenges and difficulties, there was and is good reason for hope. At one time, Iraq's agriculture was so productive that exports were common; in the 1970s Iraq even exported wheat. There is no reason to assume that the country cannot be transformed again into an agricultural powerhouse. There is near universal agreement that, with favorable policies and operating environments, and with sufficient and well-targeted investments, a restored and revitalized agriculture sector can help bring prosperity to millions of farmers and contribute in large measure to national recovery efforts.

Neglected and weed infected crops in saline soil.



Schematic of Iraq's irrigation water system.



PROGRAM OVERVIEW

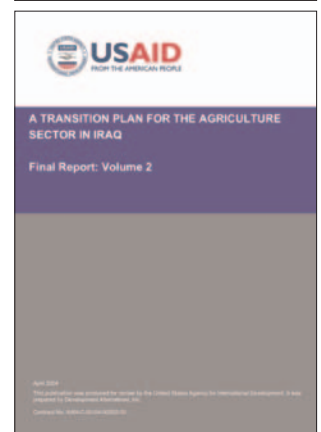
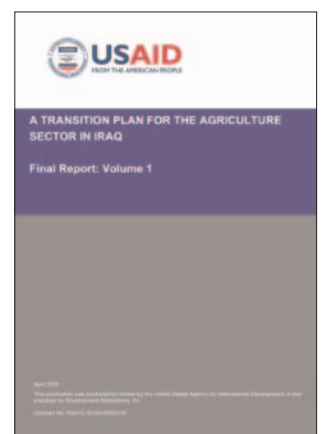
USAID's Agricultural Reconstruction and Development Program for Iraq (ARDI) began on October 15, 2003. This three-year program provided its contractors the flexibility to tackle the myriad problems noted above. Rather than focus on large-scale reconstruction activities, USAID correctly sought through ARDI to touch the lives of millions of average Iraqis throughout the country. The focus of the program was on employment generation, improvements in production and marketing to increase income, and improvement of the policy and regulatory framework to allow the sector to redevelop and recover.

Specifically, USAID sought to correct many of the Iraqi agriculture sector's ills by expanding agriculture productivity and restoring the capacity of rural agro-enterprises to produce, process, and market agricultural goods and services, as well as to improve soils and water management.

Thus, the ARDI team arrived to Baghdad with an ambitious work program. Unfortunately, ARDI's first year of funding was delayed, which forced a team restructuring and drastic alteration in the work plan. The new work plan focused on small-scale activities and key studies intended to equip the ARDI team with knowledge and on-the-ground understanding of conditions so that, once fully funded, it would be well-prepared to implement quickly a much larger set of activities, and to make targeted and strategic investments. During the first year, the ARDI team also strove to gain the confidence of both government and private sector officials. Effective implementation of a large reconstruction and development program was contingent on these important Iraqi partnerships.

One of the main products of ARDI's initial period was *A Transition Plan for the Agriculture Sector in Iraq (Volume I and II)*. Ambassador Bremer, who in February 2004 came to understand the importance of agriculture to the prosperity and security of Iraq, requested that ARDI and the MOA work together to develop a set of recommendations and guiding principles to inform those working in the agricultural sector of specific development and reconstruction needs. For more than two months, a large ARDI team worked with MOA staff, CPA officials, and private sector business people to produce the three-year plan. It became a document which provided overall strategy for ARDI interventions during the balance of the project's three years. It was also used extensively by other donor agencies and the military to focus investments in agriculture.

The *Transition Plan for the Agriculture Sector in Iraq* had two major goals. The first was to move responsibility for the sector from the Coalition Provisional Authority to the Ministry of Agriculture by 2004. When the CPA was dissolved in June 2004, attention turned to the second goal: to begin moving the sector



A copy of the Transition Plan for the Agriculture Sector in Iraq may be downloaded at:
<http://usaid.gov/iraq>

from a command-and-control production and marketing system to a market-driven system within the next three to five years. Specific recommendations from the *Transition Plan for the Agriculture Sector in Iraq* are given below.

The *Transition Plan for the Agriculture Sector in Iraq* brought necessary attention to the importance of the agricultural sector to Iraq's overall economic recovery, and focused on what was specifically needed for the sector to prosper. Little by little, USAID and the CPA, followed by the US Embassy, increased the funds obligated to the ARDI contract. By mid-2004, the new Minister of Agriculture in the Interim Iraqi Government, and her staff, worked with ARDI team members to develop a coherent and timely work agenda. She presented this agenda to the US Ambassador and ARDI subsequently received full funding. For the next two years ARDI, the MOA, and other stakeholders in agriculture worked together on the strategic plan set forth in the summer of 2004.

ARDI Office Locations:
Baghdad, Basrah, Erbil,
Muthanna, and
Sulaymaniyah.



FULL PROGRAM IMPLEMENTATION BEGINS

ARDI's work agenda, developed jointly with the MOA, had six components:

- Agronomic Crop Production
- High-Value Agriculture
- Animal Production and Health
- Crop, Soils and Water
- Government to Market Transition
- Private Sector Development

Each of these components had a manager and team charged with developing and implementing discrete projects and activities, all of which were designed to contribute to overall results as outlined in the contract. ARDI implemented three types of interventions:

- 1) activities implemented directly by the Technical Assistance Team usually with local partners in government, the private sector, communities, or the NGO community. An example of this type of intervention is ARDI's activity to multiply wheat seed in cooperation with the MOA;
- 2) grants to local groups. An example of this is a grant to a local NGO to hire hundreds of young men and women in southern Iraq to clean irrigation canals; and
- 3) training. ARDI trained thousands of Iraqis through field days, seminars, workshops, and formal classroom training. ARDI's Iraqi partners also took part in selected conferences and training abroad.

ARDI set up five offices around the country: Baghdad, Erbil, Samawa, Basrah, and Sulaymaniyah. Project management was centralized, first in Baghdad and subsequently, due to serious and growing security concerns, in Erbil. Activities proposed by branch office staff were vetted by component managers and their

Transition Plan Recommendations	
Short-Term Stabilization Plan 2004-2005	Medium-Term Transition Plan 3 to 5 years, beginning in 2004
<p>Provide agricultural input supplies. To get the sector moving immediately, procure fertilizer, good-quality seeds, proper pesticides, and other inputs (e.g., electricity and diesel for machinery) and provide them to farmers.</p>	<p>Create the appropriate policy environment. The government must cede control of production decisions and focus on regulation, supervision, and certification of private sector activities. Some import subsidies must be phased out, while natural resources are protected (through, for example, government provision of animal vaccines). Export restrictions on major crops and animals must also be resolved.</p> <p>Reform the public distribution system (PDS) for food by eliminating the market disincentives associated with the current limited and price-controlled domestic purchases and by gradually reducing the scope of the PDS plan to make it needs-based.</p>
<p>Reestablish the domestic market for wheat. The Ministry of Trade and the private sector should begin an orderly transition to a wheat market characterized largely by market-based private sector participation, which will lead to farmers receiving international prices for wheat.</p>	<p>Enable public sector capacity to support a market-based agricultural economy. The rules of engagement between the private and public sectors should be reconstructed to ensure that production, marketing, and processing are safe for humans and the environment, and that farmers' rights are protected. This includes developing and implementing regulations, training government officials, and developing their capacity in policy and economic analysis.</p>
<p>Reclaim the natural resource base. To halt natural resource degradation, drainage systems should be rehabilitated immediately and short-term improvements made to on-farm irrigation. The MOA should focus on rehabilitating on-farm canals and strengthening extension services.</p>	<p>Programs for the development of the sector. 1) The MOA should establish the capability to coordinate donor activities so donors work and contribute to a common agenda, 2) Inject working capital to jumpstart the agricultural economy, 3) Test programs in wheat and sheep production and date palm restoration in two governorates and expand the successful ones nationally, 4) Develop pilot projects for the reclamation of saline soils and water resources to direct efforts to tertiary and on-farm irrigation improvements within improved land systems, 5) Work to understand how to initiate necessary changes in the land tenure system, and 6) Protect vulnerable groups (displaced families, the very poor, subsistence farmers) by reaching down into rural communities to provide needed assistance.</p>
<p>Rehabilitate and reequip MOA facilities. Priority should be given to reconstructing veterinary clinics in the 15 southern governorates and repairing and reequipping research and extension facilities.</p>	<p>Continue the rehabilitation program. All facilities need to be equipped and staff trained.</p>
<p>Establish floor prices for maize and cotton. To avoid sharp declines in the production of these two strategic crops, the government should establish floor prices that are below international prices but high enough to give farmers an incentive to produce.</p>	<p>Establish declining value floor price while the market recovers.</p>



ARDI Daily Report carried a topical item of interest each day.

teams and senior management, to ensure that activities or grants in each of the regional offices contributed to the overall success of the project. Regional offices had the advantages of finding and mentoring local partners, tailoring specific activities and grants to local conditions, and providing more direct monitoring and evaluation of project activities. At the same time, they were guided by the same overall work agenda and they stayed focused on the national results that ARDI aimed to achieve. Later in the implementation of the project, ARDI added a liaison office in the International Zone to facilitate contacts with USG and military colleagues.

ARDI interventions, including directly implemented activities, grants, and training, were geared towards the following five categories of achievement. These categories were consistent with specific contract results, they crosscut the component areas listed above, and they fit with the everchanging security and political conditions which ARDI faced.

- Recapitalizing the agricultural sector; with construction and equipment support to MOA offices; extension centers; rural veterinary clinics; computer, communications, and training facilities; and agrometeorological field stations.
- Employing tens of thousands of Iraqis to reestablish agricultural capacity, create reforestation projects, and rehabilitate the irrigation infrastructure.
- Reestablishing major production programs in 1) wheat, through farmer-saved seed treatment and cleaning, procurement of certified seeds, a disease/pest elimination campaign, and tractor repairs; 2) procurement and distribution of high-yield hybrid maize varieties; 3) honey production to provide equipment and training to hundreds of beekeepers; 4) fruit production with new orchards and vineyards, and rehabilitation of existing plantations; 5) irrigation services improvement; and 6) animal health, through the rehabilitation and resupply of veterinary clinics and hospitals, and the vaccination of sheep.
- Introducing new technology through trials and demonstrations for maize, rice, salt-tolerant wheat and rain-fed wheat, orchard fruits and vineyards, and Sunn pest control; experiments on drainage and salinity control; laser land leveling; drip irrigation; buffalo and sheep reproduction; and interplanted fodder crops.
- Creating institutional development and capacity building through programs conducted with government agencies on agro-ecological zone information collection and analysis, a water resources management strategy, agricultural land ownership cadastral digitization and registration support, the collection of survey data by MOA statistical units, the collection and dissemination of wholesale market prices, integrated pest management and extension capacity, and extensive training programs. ARDI also directed considerable time and resources toward the organization and capacity building of civil society organizations, including NGOs, PVOs, and cooperatives, and helped to create the National Association of Agricultural NGOs.

تقرير أسعار الجملة في العراق
 التقرير اليومي لاسعار الجملة في العراق - 2008

السلع: سلع الخضار، سلع الفواكه، سلع الحبوب، سلع البقول، سلع الزيوت، سلع الحبوب المطبوقة، سلع البقول المطبوقة، سلع الحبوب المطبوقة، سلع البقول المطبوقة

السلع	الاصول	الاربعاء	الخميس	الجمعة	السبت	الاحد
القمح	700	575	750	650	700	700
الذرة	1,100			550		
البن	1,200		1,050	950		1,250

السلع الحبوب

السلع	الاصول	الاربعاء	الخميس	الجمعة	السبت	الاحد
القمح	2,000	2,000	1,800	2,100		
الذرة	1,325		900	1,150		
البن		1,338		1,300		
البن	1,100	1,200				
البن			900			

السلع الحبوب

السلع	الاصول	الاربعاء	الخميس	الجمعة	السبت	الاحد
البن			2,200			
البن		3,000				
البن				2,700		

19 February 2008 Page 1 of 9

Wholesale Market Price Reports were available via web, email, and SMS to a mobile phone.

FACTORS INFLUENCING ARDI'S PROJECT IMPLEMENTATION

Many of the circumstances under which ARDI operated influenced its direction, activities, and implementing partners, as well as the practices of its staff. Chief among these was the country's uncertain political and security situation. These circumstances compelled project management to remain flexible and attuned to rapidly changing conditions. ARDI management had daily briefs with security providers and political contacts to assess the feasibility and desirability of implementing certain activities in any given areas. The main factors influencing project implementation are summarized below.

- **Discontinuity in the government** The installation of the CPA-appointed governing council and the three elections held while ARDI was operating led to a series of inconsistent public policies for the agriculture sector. Between October 2003 and April 2006, the leadership of the MOA changed four times. Each of the four ministers had different visions for the sector, and views toward USAID assistance. The MOA during the Iraqi Interim Government was an excellent partner to ARDI, and most of the joint MOA-ARDI activities conducted throughout the life of the project were developed during the Interim Government period. The MOA during the Transitional Government and the current MOA are controlled by political parties and militias. While ARDI was able to continue to cooperate with Directors General on established programs, access to the Minister and deputies was difficult and dangerous. It was during the tenure of the last two ministers that ARDI with the concurrence of USAID made a deliberate decision to focus more project resources on the private sector and the nascent NGO community.
- **De-Ba'athification of the government** Much of the talent in the MOA and other ministries was dismissed under the de-Ba'athification program first promulgated by the CPA. While many officials who had been members of the Ba'ath party were initially able to remain as consultants with the MOA, subsequent purges, especially during the current government, meant that much of the institutional memory and experience base of the MOA was no longer accessible to play a role in the redevelopment and reconstruction of the sector. Most of those purged from the MOA were party members through necessity, and had no hand in the atrocities of Saddam's regime. It removed experienced and well trained talent at a time when Iraq needed it most.
- **Sectoral control** Most of the activities for all sectors in Iraq are still centrally planned, but the responsibility for the oversight of a given sector does not always lie with its ministry. The MOA is no exception. For

example, the Ministry of Trade still controls all agricultural imports and exports, with MOA concurrence, while the Ministry of Planning was responsible for agricultural statistics when ARDI began.

- **US military influence** In addition to providing the MOA with much-needed equipment and supplies, US military civil affairs advisors tried to implement development projects directly with local populations. While these were honorable interventions, and had the counterinsurgency objective of “winning the hearts and minds” of the local population, there was no overriding strategy for individual civil affairs units around the country to follow. The challenge that faced ARDI and the MOA was to provide focus so that military interventions complemented the efforts of USAID and the Iraqi Government.
- **Border issues** When ARDI began working, Iraq had no real border security, making it difficult to develop and enforce policies on quarantines, the importation of seeds, and the export of controlled items.

SECURITY: A DEFINING FACTOR



Early in the program, ARDI staff were able to travel widely. Staff members made low-profile trips by car to Kut, Najaf, Kerbala, Kirkuk, Tikrit, Mosul, Basrah and other major cities in the country. ARDI's security, based on information and stealth first and brute force only as a last option, relied on local information from around the country to provide detailed analyses of current security conditions. ARDI management's decision principle regarding security was that if the use of force was at all likely in order to travel or conduct a certain activity, the plan for implementation would be altered so that violence would be avoided.

By late 2004, living and working in the Red Zone of Baghdad became too dangerous. Several high-profile kidnappings of foreigners occurred close to the ARDI compound in Mansour, and ARDI's intelligence network warned of possible kidnapping attempts. ARDI Iraqi staff were also at grave risk. In addition to threats against ARDI team members local and foreign, the deteriorating

Security: A daily concern.

An explosion near a field where staff were working at a demonstration plot of salt tolerant wheat.



Live munition in a test field in central Iraq.



ARDI Security presence at all field activities.



security situation at that time also made it difficult for ARDI team members to meet with local partners. Local government and private sector officials had been warned not to work with Americans. ARDI management, as a result, chose to relocate to Erbil, where security was easier to maintain, and Iraqi officials could meet with ARDI staff without undue fear.

At first this move was considered temporary. But as time passed, security only continued on a downward trend, and ARDI managers moved the headquarters permanently to Erbil. While being away from the center is usually not optimal, the move to Erbil provided unexpected benefits. It gave the expatriate staff an opportunity to work closely with local stakeholders, especially in such areas as seed cleaning training and high-value agriculture crops. In addition, it provided for freer interaction with Ministry of Agriculture staff, who traveled to Erbil and stayed at program houses to work on surveys, mapping and other activities. The Minister of Agriculture, who was publicly anti-American, turned a “blind eye” to his staff traveling to program meetings and training, as well as the assistance USAID provided to the MOA. The training, conferences, and meetings held in Erbil also afforded an opportunity to individuals from government, NGOs, and the private sector, most from southern or central Iraq, to interact and collaborate in an environment that was free from the stress and danger of Baghdad. ARDI managers, often criticized for being headquartered in Erbil, noted repeatedly that ARDI was able to function as a national project precisely because it was located in Erbil and not in Baghdad. In Baghdad, ARDI managers were able to meet USAID and the embassy only. In Erbil, they were able to meet the full range of stakeholders in the agricultural sector.

The security situation led to innovative solutions for implementing activities. ARDI adopted a layered approach to delivering technical assistance, always keeping a local organization between USAID/program staff and farmers, private companies, NGOs, and such government employees as extension agents. The next section discusses this activity more fully. Implementing projects through local companies and NGOs protected both program staff and beneficiaries, while also creating income and employment opportunities for local enterprises. While many beneficiaries may have been aware that USAID was providing the funding for their activities, they chose not to acknowledge this publicly, which allowed them to continue receiving assistance safely.²

Nonetheless, security continued to be an overriding issue throughout the program, and such concerns will continue to dominate USAID projects in Iraq for the foreseeable future. For this reason as well, ARDI received a waiver from USAID’s branding procedures (such as placing stickers on equipment), and even the faces of beneficiaries in this report have been intentionally blurred for their future protection.

²There were also project staff who were not cognizant that they were hired by an American organization. For example, the livestock development team had a staff of 25 animal scientists and support staff to implement a series of projects in south central and southern Iraq. Only four of this team knew that their salaries were paid by an American company on contract with USAID. This protected those staff members, and it protected the managers

LOCAL IMPLEMENTATION; NATIONAL RESULTS

DEVELOPING CAPACITY AND ENSURING THE BEST RESULTS

To the greatest extent possible, ARDI drew on local resources to implement its activities. The main exception made was on projects that required a high degree of technical sophistication.

Grants to NGOs, cooperatives, and nonprofit organizations comprised 12% of the program, while the services of local companies for contracting, monitoring, procurement, construction management, tractor repair, and other activities were procured from local Iraq firms. ARDI fully implemented the USG's "Buy Iraqi" policy in the procurement of goods and services, including the provision of most training within Iraq instead of utilizing facilities in neighboring countries. The choice of local partners, whether the contracting vehicle was a grant or a Letter of Agreement (LOA) with the MOA, carried advantages to both the program and those implementing it:

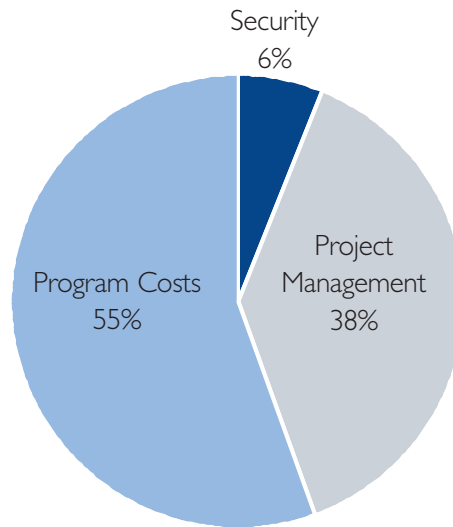
- ARDI put an estimated \$80,000,000 back into the local economy through contracts for equipment, construction, and other services.
- The program's activities generated jobs for 34,000 people in a given week.
- ARDI built the skills of 19 NGOs active in agriculture development; 293 agricultural cooperative members through 15 newly formed cooperative associations; 4,300 beekeepers and honey producers establishing new associations and restarting others; 233 independent pesticide dealers into a national association; and provided 526 extension specialists with participatory service delivery training.
- Ministry of Agriculture staff were also prime beneficiaries from assistance provided through the project. For example, ARDI trained MOA extension agents through a "learn by doing" methodology in the field. This enhanced the capacity of the government, improved their relations with clients, and brought new production techniques to thousands of farmers. A few days before ARDI ended, the director general of the State Board for Extension approved the participatory extension methodology that ARDI introduced.

The contributions of local program staff proved to be an invaluable addition to the program; their technical skills, language abilities, and cultural knowledge allowed them to work with a degree of autonomy, mobility, and responsibility that would not have been possible for the program's expatriate staff. The day-to-day management of all programs in the 15 governorates south of the Kurdish



Indigenous carpenters are trained to make beehives locally.

ARDI EXPENDITURES BY TYPE 2003 - 2006

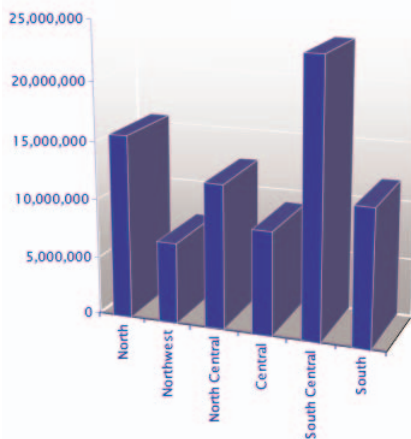


Regional Government was the direct responsibility of these staff, and most of ARDI's success in central and southern Iraq can be attributed to them.

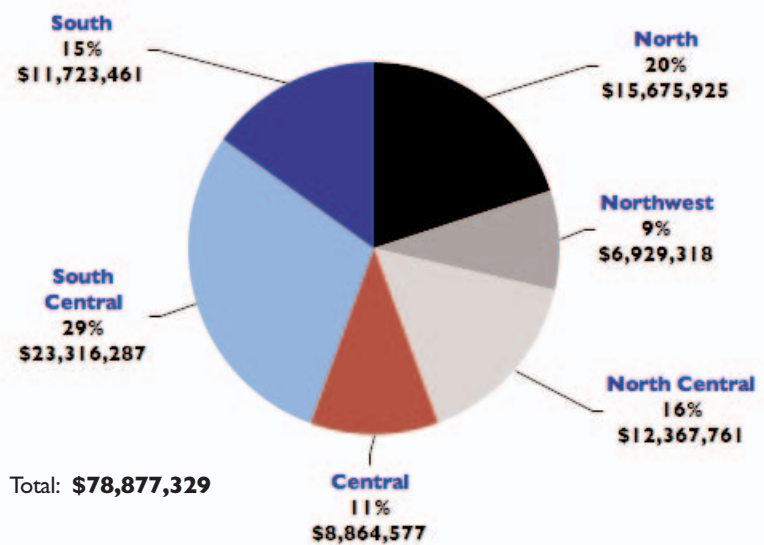
Working from regional offices, ARDI maintained the flavor and agility of a local project, but its goals and strategic focus remained national in scope. Although certain agricultural activities predominate in different geographic regions of Iraq (e.g., date palms and irrigation in the south, wheat and barley in the north), ARDI was careful to distribute its assistance as evenly as possible. The south-central region of Iraq was the largest beneficiary of program assistance.

This distribution of project activities ensured that many of the agriculture sector's most pressing problems were addressed, and also made a contribution toward ensuring the future well-being of all Iraqis.

ARDI EXPENDITURES BY REGION (\$) 2003 - 2006



ARDI EXPENDITURES BY REGION (%) 2003 - 2006



IT INFORMATION TECHNOLOGIES



When ARDI set up operations in the Fall of 2003, senior staff made repeated visits to the various branches and departments of the Ministry of Agriculture, as well as institutions dedicated to agricultural development in the country, such as university schools of agriculture and veterinary services. These visits were part of the initial needs assessment surveys that would help to guide ARDI in investing in projects with the greatest impact, in terms of delivery of services for increased agricultural productivity and profitability.

It was apparent from the beginning of the project that there was a woeful deficit in the area of modern information technologies (IT) to support agricultural development. Iraq started out at a serious disadvantage for two reasons. First, years of economic sanctions made it extremely difficult for the government to purchase imported items that were deemed “non-essential” under the terms of the trade embargo. Second, the authoritarian government exercised great control

The introduction of information technology through internet centers enabled agricultural researchers to gain unfettered access to the world’s information storehouses for the first time in years.

IT @ ARDI

Information technology was also a key tool for the managers of ARDI. The nationwide scope of ARDI, with five offices throughout the country, with three hundred plus staff, three ministries of agriculture and numerous other GOI institutions and subcontractors, required a significant communications infrastructure. A robust IT infrastructure was designed to link it all together electronically. Daily video conferences with the project offices allowed managers and staff to quickly share information and identify issues requiring attention. These video casts were in real time and simultaneous.

Communications was significantly enhanced with IT: almost all staff had access to computers and were trained in the use of e-mail, word processing and analysis. Web sites, file transfer platforms and relational databases were also incorporated into the IT plans.

These electronic systems also required the design, implementation and maintenance of reliable sources of power. Through the use of innovative power technologies we were able to keep the power sources running, even through the most difficult times without power from the grid.

DAI has developed a Lotus Notes based project management system (TAMIS). Not only does it provide email services it served as a database of project activity information. The staff used it for email and collaborative work. This system contains a rich data bank of detailed information on project implementation, execution and results which could be shared immediately among the staff and managers.

(and censorship) over information technologies in general, and internet operations in particular. Apart from these initial disadvantages, however, the looting that occurred soon after the military action in early 2003 was especially destructive to facilities that worked with computer technologies. Looters and thieves immediately targeted the high-value and highly portable computers and peripheral equipment without realizing that much of the goods would be essentially antiquated and useless in a more modern IT environment. During the first visits made by ARDI, even the deans of graduate schools and the Directors General of Ministry of Agriculture departments did not have computers in their offices.

ARDI contributed to the development of IT capability in a number of ways. First, ARDI made direct grants to institutions to establish basic IT support systems, such as centralized computer facilities and internet services. These support systems usually included a number of computers with printers and peripherals to support a functioning facility, furniture and other necessary items to equip a working environment, and a six-month initial subscription to an internet service provider. ARDI also provided for installation, and training for personnel who would use the facility. In rare cases, additional work was required, such as repairs to the facility (especially electrical works). A basic IT grant package included the following:

- IT Equipment, as needed: computers, printers, server, photocopier, camera equipment and appropriate software.
- Furniture/Fixtures/Equipment: computer tables, chairs and air conditioning.
- Civil and engineering works: rarely required.
- Initial installation and training to facility staff.
- Cost to Project: maximum \$100,000.
- Sustainability considerations: Beneficiary to hire and train personnel to operate and maintain new IT facilities.

A second way that ARDI contributed to the dissemination of new information technologies was by ensuring that essential IT support was included in grants and assistance packages when that support would contribute significantly to the successful outcome of the overall project. This support was offered for two principal reasons:

- 1) to contribute to institutional development, such as expanding capacity of agriculture-oriented NGOs and other organizations; and
- 2) to assure the success of discreet project activities, such as provision of Geographical Information Systems (GIS) handsets and training to map essential information gathered through farm surveys or community-level education and extension activities.

Technological support in the form of computer and internet capability was built into grants to renovate 4 agricultural extension centers in the northern part of the country, and equip the National Beekeeping Library and Extension Center of the Ministry of Agriculture in Baghdad. In these cases, the inclusion of IT support greatly enhanced the ability of the institutions to perform effectively. There were also a number of projects, supported through grants, subcontracts, or letters of

DIRECT GRANTS IN SUPPORT OF IT PROJECTS

Name	Location	Governorate	Cost	Permanent Employees
State Board for Lands Internet Center	Baghdad	Baghdad	\$62,000	90
Equipping Media Center at the GD Research & Extension in Erbil	Erbil	Erbil	\$30,000	10
Equipping Media Center at The General Directorate of Agriculture Research and Extension in Sulaymaniyah	Sulaymaniyah	Sulaymaniyah	\$35,000	10
Equipping the Computer Training Hall at the General Directorate of Agriculture Research and Extension in Erbil	Erbil	Erbil	\$30,000	100
Agriculture Training and Development Center, Mosul Agriculture Chamber.	Mosul	Ninewa	25,000	11
University of Baghdad, College of Veterinary Medicine, Internet Center	Abu Ghraib	Baghdad	\$62,000	5
State Board of Agricultural Research, Internet Support	Abu Ghraib	Baghdad	\$62,000	5
State Board of Agricultural Extension, Internet Center	Abu Ghraib	Baghdad	\$55,000	72
U of Baghdad, College of Veterinary Medicine - Media Center	Abu Ghraib	Baghdad	\$5,000	20
Land Registration System for the State Board for Agricultural Lands - Phase I	Baghdad	Baghdad	\$79,200	8
Land Registration System for the State Board for Agricultural Lands - Phase II	Baghdad	Baghdad	\$95,200	--
National Program for the Preparation of Agro-ecological Zone (AEZ) Maps - Phase I	Baghdad	Baghdad	\$71,000	8
National Program for the Preparation of Agro-ecological Zone (AEZ) Maps - Phase II	Baghdad	Baghdad	\$98,900	--
Total : 13 Grants; 10 projects			\$710,300	339

agreement, which required specialized IT support to assure the success of the project. These included a number of agricultural production surveys (see Section 3.1) and community education projects in zoonotic diseases. These projects required training in the use of GIS tools to map the extent of project coverage,

(below left) Maintenance of the IT infrastructure (below) Marine power systems were adapted for stability of the electrical system.





(top) control panel to monitor system, (middle) three stage fuel filter for generator, (bottom) Reliable power is one of the key elements in maintaining sensitive IT and communications equipment.

and specialized computer programs for data treatment. ARDI furnished GIS handsets either through purchase or loan for government agencies and participating NGOs, and provided training in the use of the tools and the statistical programs necessary for returning data in its most useful form.

Finally, ARDI supported several national level projects which were contingent upon newly introduced information technologies for their successful completion. That is, the goal of the projects was not to introduce new technologies, but the new technologies were necessary to achieve the goals. In those cases, ARDI put considerable resources into the acquisition of equipment and in training of personnel to utilize the equipment and assure project sustainability into the foreseeable future. Training was a key component of these projects, and ARDI was able to either bring expert trainers into the country from other parts of the world, or provide assistance so that Iraqis could attend specialized training institutions in other countries.

These projects tended to be large-scale and have broad impact, in the sense that the benefits of the projects would assist the national-level institutions in strategic and long-range planning activities, and would therefore extend to virtually all agricultural producers in the country. These projects have been discussed in detail elsewhere in this report, so the list of projects below includes the appropriate reference for further information:

- Agro-ecological Zoning and Mapping System – Section 3.1
- Cadastral Mapping and Lands Administration Project – Section 3.2
- Agro-Meteorological Network – Section 3.1
- Monitoring Wholesale Market Prices – Section 3.1
- Establishing Ministry of Agriculture Statistical Unit – Section 3.1
- Survey for Water and Land Resources in Iraq – Section 3.7
- Marshlands Monitoring Program – Section 4.1
- Avian Influenza Working Group – Section 2.5