United Nation Development Programme
United Nation Development Group Iraq Trust Fund

Evaluation of:

Restoration and Development of Essential Livestock Services in Iraq

FAO Code: **OSRO/IRQ/407/UDG**
UNDG Code: **C5 – 10**

Final Report – November 2009

ABBREVIATIONS

ACSAD	Arab Centre for the Studies of Arid Zones and Dry Lands (Syria)
AI	Artificial Insemination
AUSAID	Australian Agency for International Development
BSE	Bovine Spongiform Encephalopathy
CTA	Chief Technical Advisor
DRC	Desert Research Centre (Egypt)
ENA	Ecole Nationale d'Agriculture (Morocco)
FAO	Food and Agriculture Organisation of the United Nations
GPS	Global Positioning System
HQ	Headquarters
KRG	Kurdistan Regional Government
MoA	Ministry of Agriculture
NGO	Non Governmental Organisation
OI	Immediate Objectives
SBAR	State Board of Agriculture Research
SCARS	State Company for Animal Resource Services
TCE	FAO Emergency Operations and Rehabilitation Division
UK	United Kingdom
UN	United Nations
UNDG ITF	United Nations Development Group Iraq Trust Fund
UNICEF	United Nations Children's Fund
USA	United States of America
USAID	United States Agency for International Development

TABLE OF CONTENTS

ABBREVIATIONS 2
TABLE OF CONTENTS 3
EXECUTIVE SUMMARY 4
1. INTRODUCTION AND BACKGROUND 8
2. PROJECT OBJECTIVES AND DESIGN 8
2.1 Development and immediate objectives 8
2.2 Work plans, assumptions and risks 10
2.3 Institutional arrangements 10
2.4 Relevance 11
3. PROJECT IMPLEMENTATION STATUS 12
3.1 Project budget and expenditure 12
3.2 Implementation status 16
4. SUPPORT BY GOVERNMENT, TECHNICAL AND OPERATIONAL BACKSTOPPING, PROJECT MANAGEMENT 17
4.1 Support by government/national institutions 17
4.2 Technical and operational backstopping 17
4.3 Project management 18
5. ACTUAL AND POTENTIAL RESULTS 18
Output #1 19
Output #2 21
Output #3 22
Output #4 22
Output #5 24
Output #6 25
Output #7 25
6. SUSTAINABILITY 28
7. COST-EFFECTIVENESS 28
8. SPECIFIC CONSIDERATIONS AND ISSUES 29
8.1 Gender equity in project implementation and results: 29
8.2 Cooperation with other agencies: 29
9. CONCLUSIONS AND RECOMMENDATIONS 29
9.1 Conclusions 29
9.2 Recommendations 30

Annex I: Terms of Reference
Annex II: List of Reviewed Documents
Annex III: Persons Met and Interviewed

EXECUTIVE SUMMARY

The present evaluation focussed on five projects implemented in Iraq from 2004 to 2008 by FAO with UNDG ITF funding. Projects OSRO/IRQ/402/UDG, OSRO/IRQ/403/UDG and OSRO/IRQ/404/UDG were dealing with the issues of irrigation and drainage, while OSRO/IRQ/406/UDG and OSRO/IRQ/407/UDG dealt respectively with the restoration of veterinary and animal production support services. The present report covers OSRO/IRQ/407/UDG.

The evaluation was conducted towards the end of the project life and used the following methods: document analysis, field survey by Iraqi surveyors, telephone interviews and individual meetings with available FAO personnel that handled the project. However, the evaluators were not able to go to Iraq, see achievements on the ground and meet with beneficiaries in person, which put significant limits to the depth of analysis and precision this evaluation could achieve.

Like many public facilities and functions, most essential government services in the livestock sector collapsed during the last war in 2003 and the widespread looting and damage that followed. National staff working in the livestock sector has been left far behind in developments that occurred in the last two decades both in technical areas and in policy formulation. To alleviate the impact of this crisis on animal source food supply and on the population itself, it was deemed crucial that there be a rapid restoration of the most essential livestock services in the country.

The developmental objective of this project was to restore the critical and essential government services in the animal production sector in Iraq. The immediate objectives were:

- Rehabilitate the artificial insemination facilities and nation-wide scheme of semen distribution to cattle producers
- Develop the embryo transfer technology for sheep and goat breeding
- Rehabilitate the central laboratory of feedstuff analysis in Baghdad, Abu-Ghraib, to resume quality and safety control of feed and feed additives
- Provide refresher training to managerial and technical staff in charge of operating the above facilities and services
- Conduct field surveys to identify the major constraints and issues to be addressed in future development programs of the sector
- Build the capacity of the livestock extension services to carry out effective and well targeted extension programs
- Improve the livestock breeding capability of the Ministry of Agriculture with the supply of small ruminant breeding stock[1]

These objectives were found reasonably relevant except for the embryo transfer component, which may not fall under the “essential livestock services” that this project aimed to restore. The technology is also fairly complex and, if successfully developed in Iraq, is likely to be used only by the largest cattle farming entrepreneurs in the country.

Towards the attainment of the above objectives, important results have been achieved, including:

[1] This objective was added to the project after the approval of the project document under the pressing request of the MoA, to allow for distribution of improved sheep and goats to farmers.

- Equipment for the Central Feed Laboratory was delivered in 2005. Due to the poor security conditions in Abu Ghraib where the laboratory was originally located, the MoA changed the location to the Baghdad city centre, where construction of a new laboratory building started in February 2006 with MoA funding. Construction was completed in September 2007 and all the equipment transferred there, but the building was then occupied by coalition forces.
- The main Artificial Insemination Center in Abu Ghraib was rehabilitated and liquid nitrogen production restarted. AI equipment was installed in Abu Ghraib and Governorate AI centers. Thirty bulls were procured from Australia and safely transported to the newly-rehabilitated Abu Ghraib center. The center now produces about 20,000 straws a month, i.e. 60 to 70% of 1980s' levels. Governorate AI centres are active. All semen sent by Abu Ghraib is tested and quality is good.
- Also, 200 Damascus (Shami) goats and 1000 heads of Awassi sheep were procured from Turkey and Cyprus respectively for breeding in Abu Ghraib. F1 and F2 generations were bred in two regional centers (Ninawa and Al Anbar). Subsequent generations are to be sold to farmers. The centers have started selling the sheep, while the goats are still under observation.
- Some embryo transfer equipment was delivered to the State Board of Agriculture Research (SBAR). This limited equipment does not appear to be used.
- Capacity building took place throughout the project implementation period. Twelve training activities were conducted or contracted out by the project in feed analysis, artificial insemination techniques, meat inspection, good practices in livestock industry, livestock extension services, embryo transfer and data collection for the National Livestock Survey. Due to security constraints, training was carried out outside Iraq.

Two issues are of particular concern in terms of utility and impact of the installed infrastructure. One is related to the Central Feed and Drugs Laboratory. At evaluation time, the building was still occupied by the military and hence, it could not be used for its intended purpose. The FAO Iraq office has raised the above issue several times with the highest authority in Baghdad. The Senior Deputy Minister of Agriculture has recently been granted access to the building and found the equipment still safely stored in boxes.

The second issue pertains to the rehabilitated Artificial Insemination (AI) services. Demand and/or the dissemination system do not seem to be able to absorb the increased production. Only a quarter of all produced straws are distributed to regional centers and private veterinarians. Beside shortages of liquid nitrogen, the State Company for Animal Resource Services (SCARS) seems to lack a clear marketing strategy for their new product. It is vital to reach out to private veterinarians who provide most of AI and veterinary services to farmers in post-war Iraq.

The project was placed under the purview of a Chief Technical Advisor covering both this (OSRO/IRQ/407/UDG) project and project OSRO/IRQ/406/UDG on veterinary services. However, due to the insecurity prevailing in Iraq, the CTA had to reside and work in Amman. Over the implementation period of the projects, four CTAs occupied this position. Activities were followed on site by a National Project Coordinator. Remote project management might have delayed some activities and limited contacts between FAO and the MoA in Baghdad and Erbil.

The project was implemented under very trying circumstances and the fact that most of the project components were successfully completed is a testimony to the hard work, commitment and creativity of project staff and partners. Lack of security in Iraq,

especially in Abu Ghraib, was a very serious constraint. Obtaining visas for Iraqi trainees emerged as a strong constraint to overseas training.

It was hard to predict at project design time that the country would experience such a high level of insecurity. However, the project objectives were too “developmental” for the context in which they were pursued. In part because of the conditions placed on the use of UNDG ITF funds, the first generation of UN projects after the war tended to be heavily oriented towards hardware and the rehabilitation of state infrastructure. As a result, the project invested into sophisticated operations which are yet to prove their utility in present-day Iraq.

Capacity building is still needed and in high demand. In the area of extension, the project offered fairly limited though useful training, and much more remains to be done to help Iraq rebuild its livestock extension services to farmers.

The MoA in Erbil pointed out that training was performed almost only for the officials in the central and southern parts of Iraq and that few of Kurdistan Regional Government (KRG) staff were invited to the training workshops. Available records support this assertion. Overall, the total share of trainees from the KRG amounts to 6% of the total number of trainees (107). More generally there were few training opportunities for governorate-level staff. This is because the training plan was designed in support of project rehabilitation activities, with the main topics being AI, embryo transfer, animal feed analysis and the likes, activities undertaken in or around Baghdad. However, representatives of all governorates of Iraq participated in the training programmes for the livestock survey, which is nationwide in scope, and in the two modules on livestock extension.

SCARS would like to resume subsidised feed sales as a way to entice farmers to use AI services. However, private veterinarians interviewed by the evaluation team indicated they were able to market AI on its own merits, without the need for additional incentives. Out of the 17 farmers interviewed, 15 were very satisfied with the service and praised the high insemination success rate.

Now that such essential state infrastructure has been rehabilitated, an evolution of the FAO portfolio towards activities with more direct, tangible benefits to the people of Iraq appears desirable. Making sure that the AI service delivers through the channel of private veterinarians, improving milk collection around cities, and supporting the backyard poultry sector are a few opportunities that if pursued, could deliver quick results and impact on people’s livelihoods and food security.

Recommendations

1. As a way to maintain a constant, independent channel of information between project sites, beneficiaries and project staff, FAO should set up a monitoring capacity within Iraq, through one or several third parties (Iraqi companies or NGOs) able to perform frequent monitoring missions throughout the country.
2. Now that the capacity to produce high-quality semen has been rehabilitated in Iraq, FAO and the MoA should concentrate on advertising and disseminating this high quality semen through public and most importantly private operators. Private veterinarians should be viewed as strategic partners in these efforts to reach farmers with AI services, as they are the main service providers to livestock owners in nowadays Iraq. A dedicated outreach effort and an advertising campaign through media, leaflets, etc. are necessary to connect private veterinarians with AI production and storage facilities in Abu Ghraib and in

Governorates. FAO may also wish to establish contacts with Governorate AI centers and professional veterinary associations to help advertise the new AI service.

3. To study the efficacy of the used semen, the resulted off-springs should be followed and production records adequately kept. Attention should be paid to avoid in-breeding as much as possible.
4. FAO should cease to provide equipment support to embryo transfer technology in Iraq, and focus instead on making the much simpler AI technology deliver straws throughout the country for the benefit of the Iraqi dairy farmers.
5. FAO should continue to raise the issue of the occupation of the central feed laboratory with the MoA and should also explore other channels to help find a solution with coalition forces, such as the Special Representative of the Secretary General for Iraq.
6. If future funding prospects materialise and if the security conditions continue to improve, FAO should try and re-gear its training provision capacity towards more in-country training in order to make training events more client-oriented and relevant to local conditions.
7. More emphasis should be placed on allowing a fairer share of training opportunities for staff working at the decentralized and/or governorate level, including those under the Kurdistan Regional Government.
8. Capacity building should now reach the private sector since they play an important role in delivering AI services to farmers.
9. FAO should offer additional support to the MoA for data analysis, and later to start formulating development strategies based on such analysis.
10. More emphasis should be placed on building up strong livestock extension services.
11. The distribution of improved animals should be conducted in a systematic way, with clear beneficiary selection criteria emphasising competence and access to feed, even at the risk of not helping the poorest farmers. The candidates should continue to have to pay a reasonable price (higher than the slaughter price, as current practice) and agree to submit to regular data collection and follow-up of the offspring.
12. FAO and the MoA should undertake a follow-up study on the adaptability of Shami and Friesian races in Iraq.

1. INTRODUCTION AND BACKGROUND

The national herd of cattle in Iraq was estimated before the war to be approximately 2.5 million head, while that of sheep and goats is about 17 million head. Livestock and poultry raising are key sub-sectors for enhancing food security, good nutrition and health, for creating sustainable employment and generating income among the estimated 7 million people in rural areas of Iraq.

The civil unrest and consequent instability set in motion an unprecedented movement of people and livestock in and outside the country. Available statistics show a dramatic reduction in the number of livestock and poultry across the country.[2] This is possibly due to increased destocking by households and farmers to face food and survival needs, lack or high cost of feed, and migration of rural households to towns and out of the country. The lack of disease control and prevention measures may also have led to increased livestock diseases and mortality.

Like many public facilities and functions, most essential government services in the livestock sector, severely weakened as a consequence of previous political conflicts and international sanctions, have collapsed during the last war in 2003 and the widespread looting and damage that followed. Immediately after the end of major military operations, they found themselves unable to deliver even basic services due to lack of infrastructure, material and funds, poor security, lack/unreliability of electrical supply, problematic logistics and transport, etc. Equally important, national staff working in the livestock sector has been left far behind in developments that occurred in the last two decades both in technical areas of livestock production and related services and in sector analysis and policy formulation. Moreover, a considerable number of staff have either left their jobs, do not attend due to security reasons, or have left the country.

To alleviate the impact of this crisis on livestock food supply and on the population itself, it was deemed crucial that there be a rapid restoration of the most essential livestock services in the country.

2. PROJECT OBJECTIVES AND DESIGN

2.1 Development and immediate objectives

The developmental objective of this project was: to restore the critical and essential government services in the animal production sector in Iraq in order to urgently resume their normal activities and outputs and enhance their important socio-economic roles for the benefit of the Iraqi people.

The *immediate objectives* and their corresponding outputs were[3]:

OI 1: Re-establish the cattle breeding program through rehabilitation of the artificial insemination facilities and restoration of the nation-wide scheme of semen distribution to cattle producers

Output 1: Central facilities and regional artificial insemination centres functioning and quality semen supplied timely and regularly to cattle producers.

[2] 2009 National Livestock Survey, unpublished.
[3] Not numbered in the project document.

OI 2: Development of embryo transfer technology for sheep and goat breeding programme

Output 2: Central Facility for embryo transfer technology functioning and embryo supplied to sheep and goat producers.

OI 3: Resume the system of quality and safety control of feed and feed additive inputs to all livestock and poultry sub-sectors through the rehabilitation of the central laboratory of feedstuff analysis in Baghdad, Abu-Ghraib

Output 3: Central laboratory for feed analysis functioning as the reference laboratory in Iraq for controlling quality and safety of feed raw materials and serving the needs of the feed industry, feed traders, research centres, universities and the whole animal production sector (both public and private) including poultry farms, fish producers, cattle and small ruminant breeders.

OI 4: Provide the necessary refresher training to managerial and technical staff in charge of operating the above facilities and services

Output 4: Technical and managerial staff appointed to operate the above artificial insemination services and laboratory facilities well trained for optimal operation of scientific equipment and adequate delivery of services.

OI 5: Conduct the necessary field surveys and review studies of the major livestock sub-sectors in order to gather base-line and updated information and to identify the major constraints and issues to be addressed in future development programs of the sector

Output 5: Surveys and review studies completed and plans being drafted and agreed for the implementation of a long term national cattle breeding strategy taking into account the priorities for Iraq and well integrated into the regional context

OI 6: Build the capacity of the livestock extension services to carry out effective and well targeted extension programs for the benefit of livestock farmers, particularly dairy cattle producers.

Output 6: Sufficient number of livestock extension specialists with increased skills for identification, formulation and implementation of appropriate extension programs in the livestock sector.

OI and Output 6 could have been merged with OI and Output 4 since they both deal with training.

While the development goal and the immediate objective of the project stressed the restoration and rehabilitation of animal production services in Iraq, at least one of the immediate objectives and its corresponding output (the embryo transfer component) are more developmental in nature. This component was added late in the formulation stage at the request of the Government, and is not described in early project documentation.

Another immediate objective (Improvement of the livestock breeding capability of the Department for multiplication and distribution of small ruminant breeding stock) was added to the project after the approval of the project document under the pressing request of the MoA, to allow for distribution of improved sheep and goats to farmers.

2.2 Work plans, assumptions and risks

The first batch of Iraqi projects after the war was planned rather quickly based on Government information and a short FAO technical assessment mission. There was a strong pressure to get reconstruction under way, coupled with significant political instability and a rapid succession of interim governments and ministers.[4] The project documents were therefore conceived as provisional plans, with priorities understood to be subject to regular updates and modifications after project signature, as would be the case for the present project with the supply of small ruminant breeding stock added to the objectives after the signature of the project document.

The work plan (short activity listing) of the project document reflected a logical sequence of events. Evidently, the project designers did not consider the delays related to funding, nor delays that occurred in equipment procurement (especially issues related to delivery and re-routing through different countries).

Only limited risks ("deterioration in political and security conditions") were foreseen for this project, without sufficient analysis of their possible consequences. Risks associated with delays in delivery of procured goods, difficulties in securing visas for trainees and insuring close supervision of the project due to a seriously worsening security situation were not properly addressed in the project document.

2.3 Institutional arrangements

Institutional arrangements were not outlined in great detail in the project document. The main implementing partners have been the Iraqi Ministry of Agriculture in general, and the Animal Production Department, the State Company for Animal Resource Services (SCARS) and the State Board for Agriculture Research (SBAR) in particular. The SCARS is responsible to provide essential livestock-related services to the State and the public, such as procurement of equipment, animal feed, artificial insemination and even some loans to small farmers. The SBAR is mainly dealing with research and development of the sector, including a new activity, the embryo transfer programme.

The MoA was involved through a National Coordinator in all aspects of implementation, including selection of beneficiaries, procurement, training modules, and distribution plans. No formal Project Steering Committee was set up to regularly review progress and workplans. However, a stable core group of senior officers, composed of the Head of the Feed Analysis and Quality Control Department, the Head of the AI Department, the Director of the Livestock Office in the MoA and the Head of the Livestock Department in the SBAR, attended several meetings with FAO staff in Amman throughout the project lifetime to follow up and assess the implementation of the project activities. A Training Committee was also established within the Ministry to screen and select candidates for the training offered by the project.

[4] There has been four Ministers of Agriculture since the war: Abd al-Amir Rahima al-Abbud from September 2003 to June 2004 under the Iraqi Governing Council; Sawsan Ali Magid Al-Sharifi from June 2004 to May 2005 under the Iraqi Interim Government (she was deputy minister under the IGC); Ali al-Bahadili from May 2005 until May 2006 under the Iraqi Transitional Government; and Yaroub al-Abodi from May 2006 to April 2007 under the first Government of Iraq. Ali al-Bahadili was reappointed after the ministers belonging to the Sadrist Movement left the Government in October 2007, and again left his post during early spring 2009. The Ministry is currently headed by a caretaker from another ministry.

2.4 Relevance

Among those destroyed livestock services that were considered essential and in need of immediate restoration were some which the evaluation consider very relevant and of high priority, such as the artificial insemination services and the control of the quality and safety of feedstuff.

Artificial insemination (AI) of cattle in Iraq was established in the early 1960's and has been since then very widely used in all cattle production systems throughout the country. In addition to the central semen production facility in Baghdad, artificial insemination services have been provided to farmers through about a hundred government-run AI centres and countless private veterinary clinics in the various governorates of Iraq. Before the war, the demand was estimated to be nearly 250,000 frozen semen straws per annum. The service is still in high demand: strong, recurrent requests for frozen semen from cattle breeders have been received and the Government rightly perceived an obligation to resume rapidly the activities of the central semen production facilities in Baghdad and reactivate the distribution of semen to cattle breeders. Cattle insemination is the starting point of the cow's production cycle of both milk and calves. The technique provides an economical means for a livestock breeder to improve his herd utilizing males having desirable genetic traits, and is nowadays commonly used for all genetic improvement programs and is considered a safe alternative to natural mating with unknown bulls. The latter is usually associated with a high risk of spreading infectious diseases, low fertility performance and slow genetic progress. Given the worsening security situation after the war, transporting a cow for natural mating to a bull (not all farmers can afford to keep a bull) may have become a hazardous and costly proposition as well. Hence AI appears like an appropriate alternative both on technical accounts and on socio-economic ones.

Equally important, the control of quality and safety of feed ingredients used in livestock, poultry and fish production is a government responsibility. Iraq has been importing large amounts of these feeds and will continue to import such commodities to meet the increasing needs of all animal production sub-sectors. Prior to the last war, the central laboratory in Baghdad, Abu-Gharib has been the main reference laboratory in the country with the capacity to perform all the required chemical, toxicological and biological analysis, not only for routine control of imported and locally produced or manufactured feed ingredients, compound feeds and grains, but also to serve the needs for sample analysis of collaborating research institutions and universities in Iraq. The laboratory has been, prior to 2003, in charge of controlling the quality and safety of the 500.000 metric tons of feed raw materials imported annually, It has been serving the analytical needs of more than 3.000 feed and seed mills factories, compound feed importers and researchers. Due to severe looting and damage to the infrastructure and the equipment, all activities in this laboratory have been halted and there was an urgent necessity for its rehabilitation and re-establishment.

Livestock extension services are important for providing advice and technical guidance to farmers and for disseminating appropriate technologies. However, extension staff has been left behind in new developments and most extension programs have been either severely weakened or interrupted. Strengthening these extension services would be highly beneficial and a necessary step for the preparation of future reconstruction/development programmes for the sector. In this respect, the lack of reliable and updated information on the livestock sector in Iraq (the last livestock census dated back to 1986) was a serious impediment. The results

of a new livestock survey, for which the data are now in the final phase of analysis, are therefore eagerly awaited.

However, the evaluation team considers that giving the situation of Iraq's livestock sector directly after the war, embryo transfer program may not have fallen under the "essential livestock services" that this project aimed to restore. The technology is complex and difficult to master. Theoretically more suitable for small ruminants, it is likely to be used only by the most modern and large cattle farming entrepreneurs in the country. MoA officials claim that they used the technique in the 1980's and therefore can use it again, but unfortunately the times have changed. Iraq is no longer the modern, prosperous country it was before the first gulf war. Current times call for the resumption of the most basic and essential services to farmers rather than the pursuit of sophisticated technologies with uncertain outcome.

Another argument in favor of embryo transfer – that it will help rapidly improve the genetic potential of Iraqi livestock – is equally mistaken in the view of the evaluation team. Under the circumstances (a brake down of essential health services being progressively reinstated, high cost of feed, difficulties with milk collection and commercialization), the economics are not conducive to a rapid improvement of the genetic potential of the national herd. Such improvement of the genetic potential will have to proceed slowly and start around cities, concurrently with the resumption of veterinary and milk collection services.

At project design time, priorities were set opportunistically rather than based on a comprehensive needs assessment. More could perhaps have been done to cover other sub-sectors within agriculture in the first batch of projects. This issue has been taken into consideration in the more recent projects which cover a wider array of issues (micro-industry promotion, vegetable and cereal seed industry, palm trees, food safety, fisheries and aquaculture, decentralization, public sector reform, etc.).

3. PROJECT IMPLEMENTATION STATUS

The budget and expenditure figures are based on the project document and available reports, including final report written by the CTA.

3.1 Project budget and expenditure[5]

The total approved budget of the project was US$8,545,727, to be funded totally by the UNDG ITF. However, the Livestock project had to be slowed down and at some stage some activities had to be halted or postponed as a result of a loan (US$1.7 million) made to project OSRO/IRQ/406/UDG - Restoration of Veterinary Services in August 2005, as per UNDG ITF guidance allowing for full flexibility in project budget management[6].

As a result, the available budget for project OSRO/IRQ/407/UDG - Restoration of Livestock Services amounted to US$6.8 million from mid-2005 to July 2006, when a US$1.8 million contribution towards the Veterinary project from the Government of Australia enabled FAO to return US$1.3 million to the Livestock project. This significantly relieved the implementation constraints, but certain activities still had to be kept pending until March 2007 when another contribution of US$1.9 million

[5] The budget and expenditure figures are based on the project document, the project accounts and available reports, including final report written by the CTA. All data in US$, expenditures as of 26 march 2009.
[6] Communication dated 24/08/05 between Bisrat Aklilu, Executive Coordinator UNDG ITF, and Henri Carsalabe, Assistant Director-General Technical Cooperation Department FAO.

towards the Veterinary project from the Government of Australia allowed FAO to return the remaining US$0.4 million to the Livestock project, finally allowing for the full implementation of the whole project. Obviously, this phased funding and consequently phased implementation caused significant delays in the implementation.

As of 26 March 2009, 97% of all received funds have been spent or committed. Unsettled commitments were negligible, amounting to US$11,024, i.e. 0.13% of all committed and spent funds (actual expenditures: US$8,268,596, total committed and spent: US$ 8,279,620). The unsettled commitments as of 26 March 2009 were related to unpaid days for a consultant and pending invoices for a superintendent (Saybolt-Jordan) and the transporter Kuhne & Nagel A/S.

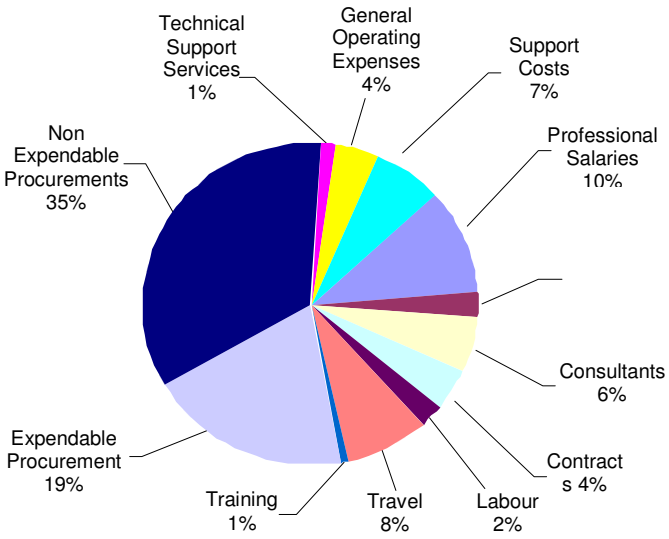
Resources unspent at evaluation time amounted to US$ 266,115. These were intended to be used for the installation of the laboratory equipment in the Central Feed and Drugs Laboratory, once the building would have become accessible. Unfortunately this did not happen before the closure of the project. (see section 3.2 Implementation Status).

Table 1 below indicates that 89% of all expenditures and commitments were processed at Headquarters, usually by TCE. Local outlays effected by the office in Amman are limited to account 5020 - Locally Contracted Labour and 5023 – Training (for which they represent 100% of all expenses).

Table 1: Expenditures per organizational unit and FAO account type

Account	FAO Rep office in Amman	HQ Emergency Division	HQ Technical	HQ Admin. (Administrative and Finance Department)	Total
5011 Salaries Professional		773,992	72,764		846,756
5012 Salaries General Service		238,307			238,307
5013 Consultants	172,283	292,064			464,347
5014 Contracts		347,078			347,078
5020 Locally Contracted Labour	164,792	289			165,081
5021 Travel	72,160	604,653			676,813
5023 Training	72,896				72,896
5024 Expendable Procurement	36,755	1,559,337			1,596,092
5025 Non Expendable Procurement	16,544	2,841,606			2,858,150
5027 Technical Support Services		117,728			117,728
5028 General Operating Expenses	280,455	67,692	965	4,878	353,989
5029 Support Costs	57,112	478,310	5,173	341	540,936
5040 General Overhead Expenses		994	165		1,159
5050 Chargeback		287			287
Grand Total	**872,997**	**7,322,336**	**79,067**	**5,219**	**8,279,620**

Expenditures per FAO Account Type



The share of expenditures classified under account 5023 - Training appears very low (3%) but this is an artefact which reflects the automatic accounting of various training-related costs under other accounts such as "5013 - Consultants", "5014 - contracts" and "5021 – Travel", depending on the *type* of expenditure rather than their *purpose*. For instance, Letters of Agreements are always recorded under "5014 - contracts", even when they are with training institutions. Fortunately, expenditures related to training have been carefully compiled in the financial systems by way of a "baby project"[7]. The total of all expenditures related to training is of US$ 816,270, or 10% of all project costs.

Similarly, two baby projects were created to record all security-related expenses (amounting in total to US$ 838,642) and miscellaneous expenses related to the procurement of the Awassi sheep in Turkey (US$ 36,477 in addition to the cost of the sheep themselves i.e. US$ 451,125). The recourse to these "baby projects" allowed the project staff to report expenditures against UNDG ITF budget categories, which are totally different from the FAO chart of accounts. This explains the differences between data presented in Table 1 above, using FAO account structure, and the financial data presented in the final report for the project using the UNDG account structure.

Equipment procurement consumed 54% of all expenditures, almost two thirds of which being in non expandable equipment. A total of US$ 4,436,416 worth of equipment and livestock were procured, 67% through competitive bidding and 33% through sole source (direct) contracts, according to the project final report. Most of this was for livestock, the main AI center in Abu Ghraib and the feed laboratory (Table 2). Most of the procured goods were delivered in 2006. The main suppliers of the project are listed in Table 3.

[7] In FAO financial systems, "baby projects" are an accounting device allowing to keep track of budgets and expenditures for sub-projects or project components.

Table 2: Procurements

Goods & services	Total cost (US$)
AI center and related breeding	
Liquid nitrogen plants	945,019
Equipment for AI centre	745,114
Bulls	464,850
Sheep	452,500
Freight and insurance for livestock	264,833
Goats	81,590
Veterinary hormones for AI center	65,100
Laboratory equipment for AI centre	25,718
Feed concentrate supplement	13,928
Cattle obstetric sets and electro-ejaculators	9,046
Drugs and vaccines	6,560
Total AI center	*3,074,258*
Feed laboratory	
Equipment, glassware and supplies	1,007,857
Ultraviolet chamber	93,381
Chemicals	75,183
Equipment installation and training	35,947
Total feed laboratory	*1,212,368*
Livestock survey equipment	
GPS	9,584
IT equipment	77,255
Total livestock survey	*86,839*
Embryo transfer laboratory	*41,425*
Publications	*12,000*
Various freight and insurance	*9,526*
Grand Total	**4,436,416**

Table 3: Largest vendors / contractors:

Vendor / contractor	Goods and Services	Total Payments (US$)
Stirling Cryogenics & Refrigeration Bv	Liquid nitrogen production plants	945,019
Amman Cash Vendor	Travel costs, salaries and Amman office costs paid in Amman	832,572
IMV Technologies	Artificial insemination equipment & supplies	756,496
Elders International Australia Ltd	30 Holstein/ Friesian breeding bulls	464,850
Tigem Agriculture Enterprises, Ankara	1000 Awassi Sheep	451,125
Kuhne & Nagel A/S	Freight, insurance and transport of equipment	327,872
Amex Export- Import Gmbh	Feed laboratory supplies & glassware, explosion-proof refrigerator	264,688
Labsco Gmbh & Co Kg Laboratory Supply Company	Feed Laboratory supplies & glassware	257,101
Standard Chartered Cash Vendor	Travel costs, salaries and other services (e.g. installation costs) paid in Baghdad	226,590
Intech Srl	Laboratory equipment for Artificial Insemination Centre, feed laboratory supplies, ultra violet chamber	200,519
Chimica Omnia Srl	Feed laboratory equipment, glassware and chemicals	122,344
Baghdad Cash Vendor	Travel costs, salaries and other services (e.g. installation costs) paid in Baghdad	117,403
Nutris & Co Sa	Feed Laboratory supplies	111,002
Yiannakkis N. Antoniades & Sons Ltd, Limassol	200 Shami Goats	81,590

Regarding transport and insurance arrangements, the normal practice (to have the good procured, shipped and delivered at final destination under Delivered Duty Unpaid terms) was applied. However, as a result of the worsening security situation, less and less suppliers were willing or able to ship into Iraq, as it became increasingly difficult for them to find insurance companies that wanted to cover the risks. As a result, FAO often had no choice but to take charge of the goods ex-factory and hire a freight forwarder separately for the transport and delivery. In most cases, use has been made of a standing contract with the company Kühne & Nagel (see Table 1), resulting from a worldwide tender that UNICEF floated and to which also FAO adhered. Shipment through this company, which makes use of local forwarding agents inside Iraq, also includes adequate insurance of the goods.

3.2 Implementation status

The actual project implementation started in July 2004. Initially, the specifications of the supplies and equipments were finalized and tenders were analyzed together with the MoA. All necessary documents were forwarded to FAO Headquarters which – quite rightly given the size and complexity of the tenders – effected most of these procurements.

The most problematic component to implement was the Central Feed and Drugs Laboratory. Most of the laboratory equipment was delivered in 2005[8] and stored in the intended building in Abu Ghraib. Due to the poor security conditions there, the MoA changed the location of the laboratory to the Baghdad city centre where a construction of a new laboratory building started in February 2006 in a properly secured area, with funding from and under the supervision of the MoA. The construction was complete in September 2007, and all the equipment transferred there, but the building was soon occupied by coalition forces. The installation of the feed analysis equipment did not take place as planned. The FAO Iraq office has raised the issue several times with the highest authority in Baghdad. Several letters from HE the Minister of Agriculture and from the Minister's cabinet were sent to the US forces requesting them to evacuate the building. The Senior Deputy Minister of Agriculture was recently granted access to the building and found that most of the equipment was still safely stored in boxes. As of evaluation time, the building was still occupied by the military.

Reconstruction and equipment of the main AI centre (including the bull's barns, the embryo transfer department and laboratories) was completed in 2005. Liquid Nitrogen equipments worth US$940 000 arrived to Baghdad on 28 February 06 but had to be stored until the construction of the required building[9] by the MoA was finished (December 2006). The equipment was then installed and came into production in February 2007. Due to the prevailing security situation in Abu Ghraib where the livestock centre is located, MoA initially opted to install one of the liquid nitrogen units in Mossoul or Basrah, leaving only one operating liquid nitrogen plant in Abu Ghraib, but in the end the second unit remained in Abu Ghraib were it is kept as a back-up in case the first unit breaks down[10]. Further equipment (refrigerators, liquid nitrogen containers and protection clothing) was installed in AI centres at Governorate level.

[8] New items worth US$ 247,000 were later identified and delivered in December 2007.
[9] A separate building within the AI Center in Abu Ghraib.
[10] Mossoul and Basrah are to receive other liquid nitrogen plants funded out of the new project OSRO/IRQ/801/UDG - Modernization and Development of the Dairy Cattle Sector in Iraq.

Thirty bulls were procured from Australia[11], flown into Baghdad airport on 29 March 2006 and safely transported by trucks to their final destination, the newly-rehabilitated AI centre in Abu Ghraib. Three bulls later died of acute Enterotoxaemia; the rest are in good health conditions and started semen production in 2007 when the liquid nitrogen plant became active. Similarly, 201 Damascus (or Shami) goats (181 females and 20 males) have been flown in from Cyprus on 16 February 2006, and 1000 heads of Awassi sheep (89 rams and 911 ewes) were procured and flown in from Turkey to Baghdad on 20 and 21 June 2006. The sheep and goats were forwarded to the Abu Ghraib AI center (bulls) and breeding station (sheep and goats). The sheep and goats started breeding in September 2006. Second and third generations were later moved to two other breeding centers in Ninawa and Al Anbar Governorates. It should be stressed that these livestock procurements and air lift were extremely complex to organize technically and operationally.

Animal feed and drugs worth US$ 20,500 were procured locally for the above animals during the first 6 months upon arrival in Iraq. Drugs consisted of long action Antibiotics, Ecto-parasiticides and Multivitamins were also procured by the project.

Embryo transfert equipment was delivered from June to October 2007 to the State Board of Agriculture Research (SBAR), who for security considerations decided to receive the goods in their department in Baghdad centre (Kerrada In) rather than in Abu Ghaib. The equipment was later installed in SBAR premises in Abu Ghraib, a few hundred meters away from the AI Center.

Capacity building took place throughout the project implementation period. Due to security constraints, training was carried out outside Iraq. The list of the 12 training activities conducted or contracted out by the project is provided in the section 5 on project results.

4. SUPPORT BY GOVERNMENT, TECHNICAL AND OPERATIONAL BACKSTOPPING, PROJECT MANAGEMENT

4.1 Support by government/national institutions

The Ministry of Agriculture (MoA) was the line ministry responsible for project supervision and implementation on site. The project received good support from the MoA in Baghdad as well as in Erbil and from the main implementing partners (SCARS and SBAR).

The presence of a national project coordinator based in the MoA in Baghdad, who actively pursued his mandate to liaise with the Government and validate decisions about the project, seemed to have paid off. The MoA received, inspected, dispatched and installed all project equipment and supplies. Furthermore, the MoA conducted the national livestock survey and several workshops to support this national survey.

4.2 Technical and operational backstopping

Overall, the project received an adequate level of technical support from FAO Headquarters. Ten backstopping visits to Amman were made by different technical staff from FAO Animal Production Division at HQ[12]. Additional technical support from

[11] Australia was stipulated by the Ministry of Agriculture as the preferred country of origin for the bulls largely due to its freedom from BSE: Hand-Over Report - James Airey - 29 May 2005.
[12] Based on the number of back to office (BTO) reports supplied to the evaluation team from FAO HQ.

FAO came in the form of clearances for the tenders prepared by the project, emails and telephone conversations to discuss specific points.

Constant operational backstopping was provided by the Emergency Division (TCE) at Headquarters, which supervised most procurements and recruitments, and backed up travels and visas, a particularly important task given the high number of Iraqi trainees trained abroad by the project.

4.3 Project management

The project was placed under the purview of a Chief Technical Advisor covering both this (OSRO/IRQ/**407**/UDG) project and project OSRO/IRQ/**406**/UDG on veterinary services. The CTA prepared detailed and comprehensive mission (progress) reports every 6 months.

However and due to the insecurity prevailing in Iraq and the restrictions placed on UN staff movement in the country[13], the FAO management staff had to resided and worked in Amman during the entire length of the project. Even if activities were followed on site by a nationally recruited consultant who acted as the eyes and ears of the project CTA, the fact that the CTA had to manage the projects remotely, from Amman due to security issues, might have affected the implementation of the project and delayed some of its activities[14]. This also limited contacts between FAO and the MoA in Baghdad and Erbil. Despite the presence of an NPC in Baghdad, Iraqi respondent to the evaluation questionnaires (including MoA personnel) indicated that they wished for more direct interaction with FAO to solve problems related to equipment, selection of trainees, etc., and this frustration was shared by FAO staff.

Over the implementation period of the projects, 4 CTAs occupied this position[15]. This could have contributed to the changes in priorities noted above. Frustration with their inability to travel in Iraq, supervise work and witness progress on site was reportedly one important reason behind the high turnover of CTAs.

More broadly speaking, lack of security in Iraq was a very serious constraint, especially as so many of the activities were taking place in Abu Ghraib, a particularly unsafe location. Sadly, when the MoA tried to relocate the Feed Laboratory to a safer location in Baghdad city center, the facility they built was soon occupied by coalition forces...

> *Recommendation 1:* As a way to maintain a constant, independent channel of information open between project sites / beneficiaries and project staff, FAO should set up via one or several third parties (Iraqi companies or NGOs) a monitoring capacity within Iraq able to perform frequent monitoring missions throughout the country.

5. ACTUAL AND POTENTIAL RESULTS

The signed project document proposed 6 outputs. During project implementation, a new output was added, relative to support to the multiplication and distribution of small ruminant breeding stock (output # 7 below).

[13] International staff can be posted in Baghdad Green Zone and in Erbil. Only short travels within Iraq are permitted under protection from coalition forces.
[14] This issue was mentioned by the CTA in his regular 6 months reports and on the End of project report.
[15] The four CTAs are: Drs: Ray Webb, James Arey, Rod Kennard and Khaled Ben Khaled

Output #1: Central facilities and regional artificial insemination centres functioning and quality semen supplied timely and regularly to cattle producers.

The main AI centre at Abu Ghraib was rehabilitated and supplied with equipment and 30 improved Holstein-Friesian bulls from Australia. Three bulls subsequently died of Enterotoxaemia. The others have adapted well and were trained for semen collection, which started when the new Liquid Nitrogen plant came into operation (January 2007). All the equipment was reported in good working order[16]. In addition, regional AI centres were rehabilitated by the MoA to function as centres for semen straws distribution and insemination. All surveyed Governorate centers expressed satisfaction with the equipment and assistance.

One liquid nitrogen plant was installed in the main AI Center in Abu Ghraib and the other stored in Abu Ghraib as a back-up. The installed plant produced, in year 2007, about 7,750 litres. About 7,330 litres were dispatched to the main AI centre, regional centres and private clinics. Semen collections from bulls started in January 2007 and as of December 2007, 51,132 frozen semen straws were produced. The director of the State Company for Animal Resource Services (SCARS) mentioned that the rehabilitation of AI/semen production capacity had been excellent and that current production levels reach from 60 to 70% of 1980s' levels.

However, only about 4860 straws could be distributed to private veterinary clinics and governorate centres. Table 5 below shows the amount of liquid nitrogen and semen distributed to the different AI centres and private clinics during 2007. The straws are distributed free of cost.

Table 4: Distribution of liquid nitrogen and semen straws in 2007

Location (AI centre)	**Liquid nitrogen** (litres)	**Semen straws**
Remained at main AI center (Abu Ghraib)	3,280	46,272
Baghdad AI centers	410	?
Governorates AI centres	2,840	2,500
Private clinics	800	2,360
Total	**7,330**	**51,132**

This low level of semen dissemination may indicate that the service was just restarting in 2007 and the distribution system was being geared up. But the trend continued in 2008: towards the end of year 2008, about 20,000 straws were produced per month and only about 5,000 distributed to regional centers and private veterinarians. Even if it produces semen only 6 months a year for climatic reasons[17], the center can produce much more semen than it can sell or even give away for free. As of January 2009, there were 210,000 straws stored in the Abu Ghraib center, i.e. enough for from 3 to 4 years of utilization at present rates.

Some of the staff in governorate AI centre raised concerns regarding the availability of liquid nitrogen and the need to have more liquid nitrogen plants distributed throughout the country. Shortages of liquid nitrogen[18] and lack of transportation were mentioned to explain limited distribution of project benefits.

[16] Hot-stage microscopes (2), water distiller (1), artificial vaginas (13), water path, oven, incubator, refrigerator, straws celar, domino, imv integrated system, nitrogen tanks of different sizes.
[17] Form May to October, the heat constrains semen production.
[18] This shortage was at times mitigated by the recourse to oil refineries which produce N2 as a by-product.

It is manifest that FAO and the MoA lacked a clear marketing strategy for their product, one that could reach out to private veterinarians. While the MoA seems used to deal with Governorate parastatal AI centers, private veterinarians are more active in the field. They are motorized and operate under farmers call on farm sites, whereas Government AI centres deal only with animals brought to them. However, few of the private veterinarians interviewed by the evaluation team[19] had any knowledge of this service being available and used imported semen instead.

The survey undertaken as part of this evaluation indicated that governorate AI centres are active and appreciate the cold chain equipment provided (refrigerators, nitrogen containers of various sizes, small equipment). No major complaint was recorded. All semen sent by Abu Ghraib is tested for viscosity, spermatozoid count and strength, and quality is good. Staff from some of these centers complained of the lack of restraining facilities to facilitate insemination.

The number of AI performed by surveyed Governorate AI centers is provided in Table 5.

Table 5: Level of activity for surveyed Governorate AI centers

Governorate AI Centers	No of AI performed per month
Erbil	400 to 500
Basra	300
Al Mothana	220
Wassat	0
Dohuk	100 to 120
Missan	172
Taji	70
Al Fudhailiat	50

In dispatching semen straws, the Abu Ghraib staff reportedly implements a simple protocols to keep track of which bull served which region: one bull provides semen from one governorate for one month, and the system then rotates monthly. This system may not be enough to avoid in-breeding between future off-springs. Sperm may be used over several months by regional/local AI stations. Off-springs conceived through AI around the same period in the same year have a significant chance of being brothers and sisters. Unless farmers are aware of this, some in-breeding is likely between animals of the same ages.

Project staff claims 1.8 inseminations per pregnancy at Abu Ghraib. Out of the 17 farmers interviewed, 15 were very satisfied with the service and praised the high insemination success rate, while two (in Erbil) said they were not using the service because the semen was “expired” (i.e. dead). This could be Iranian semen rather than semen from Abu Ghraib, since according to the FAO coordinator in Erbil, the northern governorates under the KRG did not receive semen or liquid nitrogen from Baghdad as of early 2009. They import semen and liquid nitrogen from Iran.

Assuming that two-thirds of distributed straws are used for AI and that two AI are necessary for a successful conception, the 30,000 straws dispatched since 2007

[19] Many of the surveyors hired for collecting information in Iraq for this evaluation were veterinarians.

would have resulted in some 10,000 high potential calves, i.e. in two to three years 5,000 high potential dairy cows. However, the output (offspring) quality is yet to be determined when the produced calves enter the production stage.

The distributions of free drugs and subsidized feed that used to occur before the war are being missed by farmers. Interviewed by the evaluation team, the SCARS director insisted on resuming these subsidised feed sales as a way to entice farmers to use AI services. The evaluation team believes that it is not the responsibility of the state to provide drugs and feed, especially free of charge, and private veterinarians interviewed by the evaluation team indicated they were able to market AI on its own merits, without the need for additional incentives.

> *Recommendation 2:* Now that the capacity to produce high-quality semen has been rehabilitated in Iraq, FAO and the MoA should concentrate on advertising and disseminating this high quality semen through public and most importantly private operators. Private veterinarians should be viewed as strategic partners in these efforts to reach farmers with AI services, as they are the main service providers to livestock owners in Iraq nowadays. A dedicated outreach effort and an advertising campaign through media, leaflets, etc. are necessary to connect private veterinarians with AI production and storage facilities in Abu Ghraib and in Governorates. FAO may also wish to establish contacts with Governorate AI centers and professional veterinary associations to help advertise the new AI service.
>
> *Recommendation 3:* To study the efficacy of the used semen, the resulted offspring should be followed and production records adequately kept. Attention should be paid to avoid in-breeding as much as possible.

Output #2: Central Facility for embryo transfer technology functioning and embryo supplied to sheep and goat producers

Procurement of equipments for the embryo transfer unit was completed as planned. However, the limited equipment procured is currently stored in Abu Ghraib and not being used. In the completion report, the project CTA indicated that the development of the embryo transfer programme depends on the success of the AI programme and small ruminants' breeding programme. It is not clear to the evaluation mission how this component could realistically become successful under the present conditions in Iraq. The technology is complex and difficult to master. The equipment delivered so far was intended for preliminary research activities only. Theoretically more suitable for small ruminants, the technique is likely to be used only by the most modern and large cattle farming entrepreneurs in the country. In fact the MoA plans to enter in an agreement with two large commercial cattle farm to test the technology.

> *Recommendation 4:* FAO should cease to provide equipment support to embryo transfer technology in Iraq, and focus instead on making the much simpler AI technology deliver straws throughout the country for the benefit of the Iraqi people.

Output #3: Central laboratory for feed analysis functioning as the reference laboratory in Iraq for controlling quality and safety of feed raw materials and serving the needs of the feed industry, feed traders, research centres, universities and the whole animal production sector (both public and private) including poultry farms, fish producers, cattle and small ruminant breeders.

Most of the laboratory equipment was delivered in 2005 and stored in the intended building in Abu Ghraib, until the Government finished the construction of the new laboratory building in the Baghdad city centre and all equipment transferred there for installation. Before the equipment could be installed, the building was occupied by coalition forces.

As of evaluation time, the brand new building of the Feed Laboratory with all its equipment inside was still occupied by coalition forces, and the MoA officials could not access it. In March 2009, the Agriculture Deputy Minister could briefly access the building with the help of the USA Counselor for Public Affairs. Most of the equipment would be safely stored in boxes and hence not damaged.

The central feed laboratory received the most modern, sophisticated equipment because it was expected that it would become a reference laboratory for the entire region. So far these hopes were dashed by the realities of the conflict, but it may still be possible to make this component work provided the MoA and FAO escalate the issue to the highest level.

> *Recommendation 5:* FAO should continue to raise the issue of the occupation of the central feed laboratory with the MoA and should also explore other channels to help find a solution with coalition forces, such as the Special Representative of the Secretary General for Iraq.

Output #4: Technical and managerial staff appointed to operate the above artificial insemination services and laboratory facilities well trained for optimal operation of scientific equipment and adequate delivery of services

Capacity building in different areas related to AI, embryo transfer, laboratory techniques and livestock extension was a major activity in this project. The project delivered 12 training events and course to 107 staff from the MoA, as follows:

Feed analysis:

- Five feed laboratory technical staff attended a four-week refresher training course in July 2005 in the Desert Research Centre in Cairo on feed quality control techniques.
- Three senior Iraqi officials[20] attended a training course at the Royal Agricultural College (UK) from 08/02/06 to 28/02/06 organized with the International Feed Industry Federation. The course aimed to provide advanced training on critical quality requirements and safety issues to secure safe feed supply in Iraq.
- This course was followed by intensive training sessions organized by Wageningen University (Netherlands) from 02/03/06 to 29/03/06 with a focus on modern laboratory methods for assessing feed quality and safety.

[20] Dr Amjed Hameed Said, Mr Anmar Abdul Ghani Majeed, Ms Salfana Abdul Rahman Ismael, from the State Company for Animal Resources (Department of Feedstuff Quality Control), Ministry of Agriculture, Iraq.

Artificial Insemination:

- Three technicians were trained in the Netherlands (with Stirling, manufacturer of the nitrogen plants in Eindhoven) in November 2005 on the installation and maintenance of liquid nitrogen production equipment by the equipment manufacturer.
- In May/June 2005, a group of three livestock specialists and technicians was trained in France (with IMV Technologies in L'Aigle, a provider of AI equipment) on the latest procedures and techniques for the collection, processing and freezing of cattle semen, as well as on the use of artificial insemination equipment provided by the project.

Good practices in livestock, feed and meat industry:

- In September 2006, four senior staff from the MoA attended an FAO Regional Workshop in Cairo on good practices for meat, feed and livestock industries.

Small ruminants:

- In July 2005, five Iraqi livestock specialists went on a 2 weeks study tour on organization and development of the small ruminant sector in Morocco.

Extension:

- Two linked training of trainers courses took place in Syria and Morocco for a group of 20 Iraqi livestock extension specialists from all over the country, starting with a two-week training course organised by the Arab Centre for the Studies of Arid Zones and Dry Lands (ACSAD) of Damascus from 27 January to 11 February 2007, immediately followed by a course and study tour from 14 to 27 February 2007 with the National School of Agriculture (ENA) in Meknes, Morocco. The aim was to update the trainees' knowledge and skills in specific technical areas of livestock production disciplines and in extension planning and delivery. Following these extension trainings, the MoA organised 10 courses for 95 extensioners, and 3 course for 36 farmers.[21]
- The participation of one Iraqi MoA specialist in the 2007 World Buffalo Congress in Italy was facilitated by the project.

Embryo Transfer:

- In March 2007 a group of three Iraqi specialists went on a one-month training course with the Wageningen University in the Netherlands.

National Livestock Survey:

- 13 planners, 24 "trainers of trainers" and 10 data entry staff were trained in Jordan in January and November 2007 on methods, strategies and data entry and checking for the national livestock survey. The 24 Iraqi trainers then trained locally the 500 enumerators who conducted the survey.

Not much information is available regarding the trainees' selection criteria, except they were in general the staff supposed to operate the provided equipment. Only two of the trainings had an evaluation on file (the Wageningen feed laboratory training and the extension training in Morocco). Some trainees interviewed by surveyors

[21] Report from Dr Subhi M. Al Jumaily, Deputy Minister, MoA, 4/9/07.

indicated that the training periods were too short and/or the contents too theoretical. From this limited record, a certain fatigue with training abroad was perceptible, notably when it came to training subcontracted by FAO to other organisations or academic institutes.

Obtaining visas for Iraqi trainees emerged as a strong constraint to overseas trainees. One training course on laboratory methods for feed quality control in the Wageningen University (Netherlands) and the Royal Agriculture College, Cirencester (UK) had to be deferred from 2005 to February and March 2006.

The MoA in Erbil pointed out that training was performed almost only for the officials in the central and southern parts of Iraq and that none of the KRG MoA staff were invited to the training workshops. Available records indicate that:

- 3 KRG trainees took part in the Livestock extension training (Module 1 in ACSAD of Damascus, Syria and Module 2 in ENA of Mesnes, Marrocco); and
- 3 others participated in the training for the Livestock Survey held in Amman, Jordan.

Overall, the total share of trainees from the KRG amounts to 6% of the total number of trainees. Interviewed by the evaluation team, the director of the Baghdad-based State Company for Animal Resource Services (SCARS) indicated that more attention will be given to KRG training needs in the future.

More generally there were few training opportunities for governorate-level staff. This is because the training plan was designed in support of project rehabilitation activities, with the main topics being AI, embryo transfer, animal feed analysis and the likes, activities undertaken in or around Baghdad. However, representatives of all governorates of Iraq participated in the training programmes for the livestock survey, which is nationwide in scope, and in the two modules on livestock extension.

> *Recommendation 6:* If future funding prospects materialise and if the security conditions continue to improve, FAO should try and re-gear its training provision capacity towards more in-country training in order to make training events more client-oriented and relevant to local conditions.
>
> *Recommendation 7:* More emphasis should be placed on allowing a fairer share of training opportunities for staff working at the decentralized and/or governorate level, including those under the Kurdistan Regional Government.
>
> *Recommendation 8:* Capacity building should now reach the private sector since they play an important role in delivering AI services to farmers.

Output #5: Surveys and review studies completed and plans being drafted and agreed for the implementation of a long term national cattle breeding strategy taking into account the priorities for Iraq and well integrated into the regional context

The organization of a national livestock survey was an important priority for the Livestock Department. Basic statistics are necessary to make strategic choices and formulate a national livestock policy, yet the latest livestock census dated back to 1986. Therefore the livestock survey filled an important gap

Due the security constraints, FAO staff could not participate directly but provided preparatory planning and training to the MoA staff undertaking the survey in the field.

A livestock survey planning workshop was held from 7 to 9 January 2007 in Amman. Questionnaires were subsequently designed, a sampling plan drawn and 18 trainers of enumerators trained during several meetings and courses in Amman. GPS handsets, telecoms and computer equipments were also procured to equip all the Governorates as well as a central data processing centre. The survey involved some 500 enumerators. It is complete and was at the stage of data entry at evaluation time.

The livestock survey came across as the component most appreciated by the Government of Iraq because it will enable the design of new development policies for the sector. The last survey conducted in Iraq dated back to 1986. The latest one was conducted nationwide with the participation of 500 numerators trained locally through the project. This achievement resulted in the establishment of a data base which will be an important source of reference information for future development plans.

Updating the livestock development policies based on the new animal census was to be initiated by the project but will take more time than the project duration allowed.

> *Recommendation 9:* FAO should offer additional support to the MoA for data analysis, and later to start formulating development strategies based on such analysis.

Output #6: Sufficient number of livestock extension specialists with increased skills for identification, formulation and implementation of appropriate extension programs in the livestock sector.

Two linked training of trainer courses took place in Syria and Morocco for a group of 20 Iraqi livestock extension specialists from all over the country to update the trainees' knowledge and skills in specific technical areas of livestock production disciplines and in extension planning and delivery. The 20 trained staff have themselves provided 10 training courses to 95 officials from all governorate extension centers and continue to advice and provide technical guidance to farmers through local symposiums in the field of animal production. However, most farmers interviewed in the survey stressed that extension services by the Government are very minimal in Iraq at the moment. The project achievements in this component pale in comparison with the enormity of the task at hand.

> *Recommendation 10:* More emphasis should be placed on building up strong livestock extension services.

Output #7: Improvement of the livestock breeding capability of the Department for multiplication and distribution with the supply of small ruminant breeding stock:

The 911 imported Awassi ewes and the 181 Shami goats started mating in September 2006. Mating is since carried out successfully in three locations where the livestock has been dispatched (Table 6). The total number of females selected for reproduction was respectively 1,515 and 298 at evaluation time.

The overall performance of the Awassi sheep is as follows: Adult mortality less than 2%; Twinning 22%; Fertility 70%; Lambing 92%; Lambs mortality 10%. The first year performance of the Shami goats is as follows: Adult mortality 5%; Twinning 50%; Fertility 65%; Kidding 90%; Kids mortality 8%. All procured animals adapted well to the desert environment of Iraq.

Table 6: Female animals reported in reproduction as of December 2007[22]

Locations	Goats	Sheep (ewes)
Abu Ghraib National Center	216	735
Ninawa Governorate Center:	55	380
Al Anbar Governorate (new research center)	27	400
Total number in reproduction	298	1515

The second generation off-springs of Awassi sheep – a breed indigenous to Iraq and adapted to its environment – have been ear-tagged and started to be distributed to farmers for genetic improvement of herds in 2008. Beneficiaries are selected through the local veterinary services. They pay for the animal a price higher than the slaughter price and sign a written consent that he will not slaughter or sell the animal. Beneficiary records are reportedly kept at distribution point but the evaluation team could not access data regarding the number of animals distributed.

The Shami goats, also known as Damascus goats, are bred in Syria, Lebanon and Cyprus. Their behaviour in the country is still being studied, in particular their adaptation to summer heat reported as an issue by the Director of the Abu Ghraib breeding station. They are highly productive animals (6-7 litres a day) but they require good management and are usually bred in semi-extensive or intensive systems.

None of the interviewed farmers had any knowledge on this program, but they were all very interested and willing to receive improved sheep or goats.

> *Recommendation 11:* The distribution of improved animals should be conducted in a systematic way, with clear beneficiary selection criteria emphasising competence and access to feed, even at the risk of not helping the poorest farmers. The candidates should continue to have to pay a reasonable price (higher than the slaughter price, as current practice) and agree to submit to regular data collection and follow-up of the offspring.
>
> *Recommendation 12:* FAO and the MoA should undertake a follow-up study on the adaptability of the Shami race in Iraq.

[22] End of Assignment Report; 06 August 2007 – 22 December 2007; Khaled Ben Khaled/FAO.

Figure 1: the Awassi Sheep and Shami Goats in Abu Ghraib

6. SUSTAINABILITY

The project has sustainability potential. Sustainability is mainly in the hand of the MoA, since the infrastructure were provided to them. However, programs such as animal breeding and artificial insemination are of long term nature and need close and continuous supervision from FAO if they are to deliver the benefits expected of them. The following tasks remain uncompleted ay evaluation time:

- installation and operation of equipment in the central feed laboratory, because the building is still occupied and cannot be accessed;
- although semen production has been restores, the AI component still has to distribute significant quantities of semen to cattle breeders nationally;
- the embryo transfer component is not delivering "embryo to sheep and goat producers" as mentioned in output 2 of the project document; and
- the livestock survey is completed but its analysis to extract policy lessons is still to be done[23].

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Updating the livestock development policies based on the new animal census was to be initiated by the project but will take more time than the project duration allowed.

Capacity building is still needed and in high demand since the supported activities required skills that not easy to master. In the area of extension, the project offered fairly limited though useful training, and much more remains to be done to help Iraq rebuild its livestock extension services to farmers.

7. COST-EFFECTIVENESS

More than half of the project's budget went into the provision of livestock, equipment and supplies, a ratio which seems high enough for a reconstruction project. The project also delivered a significant training component and when one includes training costs, the percentage of deliverables reaches 63% of all project expenditure.

It could be argued that the project was fairly cost-effective overall because it mainly targeted re-storing long lasting and needed services such as AI and feed testing. However, in the case of the feed laboratory, a new building was constructed by the MoA and the equipments are of course brand new, making the operation more costly than a normal rehabilitation intervention. The laboratory premises are currently occupied by military troops and the laboratory has evidently had no effect whatsoever until now, a fact which by definition makes this component the least cost-effective so far. As for the Abu Ghraib AI center, it can only become cost-effective once semen distribution throughout the country justifies the investment. For the time being this is clearly not the case. It should be stressed that a cheaper alternative existed to the importation of live animals: that of importing frozen semen, as routinely done in

[23] The project document envisaged to "identify the major constraints and issues to be addressed in future development programs of the sector", something which remains to be done.

Jordan for instance. This option was apparently rejected because of the fear of importing diseases.

In-country training could in theory have been more beneficial and less costly, but this was not possible to arrange because of the security situation. Transport of equipment within Iraq was also expensive.

As explained above (2.4 Relevance), the embryo transfer component does not appear relevant to the current conditions prevailing in Iraq. The modest[24] resources spent on embryo transfer in this project could have been more beneficial if spent on training of field personnel and private AI providers (usually veterinarians) on how to maintain cold chain and administer AI, the instalment of a third nitrogen plant, or the procurement of trucks and other modes of transportation that may have uplifted the extension services.

8. SPECIFIC CONSIDERATIONS AND ISSUES

8.1 Gender equity in project implementation and results:

Both men and women had benefited from the activities of the project including its artificial insemination[25]. Some of the respondents to the survey were female staff of the various institutions supported by the project and they received training in and outside the country. However, the ratio of trained females to males is not available since the available records on training do not always show the gender of the trainees.

8.2 Cooperation with other agencies:

FAO has also sought collaboration with a variety of international institutions for institutional development and technical training. This includes Wageningen University in the Netherlands, the Royal Agricultural College in England, the Desert Research Centre (DRC) in Cairo, the Arab Centre for the Studies of Arid zones and Dry lands (ACSAD) in Syria and The National School of Agriculture (ENA) in Morocco. FAO furthermore liaised and stayed in close contact with the main development agencies involved in rehabilitation of the livestock sector and infrastructure and in providing technical assistance to the animal production sector. These agencies included USAID, AUSAID and other member of the international community.

9. CONCLUSIONS AND RECOMMENDATIONS

9.1 Conclusions

This was a fairly complex project, involving importation of live animals, the set up of a liquid nitrogen production plant, the resumption of AI services, the reconstruction of the Feed Laboratory with new equipment in a brand new building, a small component on embryo transfer, livestock breeding and the conduct of the first livestock survey since decades.

The project was implemented under very trying circumstances and the fact that most of the project components were successfully completed is a testimony to the hard work, commitment and creativity of project staff and partners. An illustration of this

[24] US$112,331 in total (equipment: US$53,536 + training in Lelystad, Wageninen: US$58,795).
[25] One female livestock owner interviewed at a regional AI centre was benefiting from the service.

hard work and commitment is provided by the story of how the 1000 sheep flown in Baghdad airport were successfully collected by MoA staff and trucked to Abu Ghraib in spite of the airport being walled-off behind numerous check points: it took a grueling 72 hours for all the trucks to pass these check point in and out of the airport.

Even if it was hard to predict at project design time that the country would experience such a high insecurity and slow pace of stabilization, it can be argued that the project objectives were too "developmental" for the period during which it was implemented. The project planners designed a project for the best possible circumstances. Besides, because of the conditions placed on the use of UNDG ITF funds, the first generation of UN projects after the war tended to be heavily oriented towards hardware and the rehabilitation of state infrastructure. As a result, the project invested into sophisticated operations which are yet to prove their utility in nowadays Iraq.

It is worth noting that the security problems experienced by the project were sometimes caused by coalition forces, e.g. the requisition of the Central feed Laboratory.

As a result of the above, the project development objective ("to restore the critical and essential government services in the animal production sector") was only partially achieved.

Training was rather ancillary in this project, focused on training the operators of the delivered equipment on the proper use and maintenance of said equipment. This modest objective was apparently achieved.

Now that such essential state infrastructure has been rehabilitated, an evolution of the FAO portfolio towards activities with more direct, tangible benefits to the people of Iraq appears desirable. Making sure that the AI service delivers through the channel of private veterinarians, improving milk collection around cities, supporting the backyard poultry sector are a few opportunities that if pursued, could deliver quick results and impact on people livelihoods and food security.

The new "Dairy Project" (OSRO/IRQ/801/UDG - Modernization and Development of the Dairy Cattle Sector in Iraq) is a chance for doing just that. The project document does include very promising ideas such as the creation of regional semen distribution centres, support to the establishment of milk collection systems, as well as the development of a new policy framework. However, the same project document also includes a provision to implement "embryo transfer techniques implemented for dairy cattle breeding", a component which the evaluation team considers unnecessary.

Finally, FAO will have to adapt its offer of services to the new situation created by the new US policy to gradually hand over security duties to the Government and withdraw foreign troops, initially from most urban areas (a step planned for June 30) and eventually from the country. The following recommendations are premised on the hope that this transition will proceed safely and result in a progressive improvement of the security situation in the country, allowing for a more diversified portfolio aiming at a resumption of developmental activities.

9.2 Recommendations

1. As a way to maintain a constant, independent channel of information open between project sites / beneficiaries and project staff, FAO should set up via one

or several third parties (Iraqi companies or NGOs) a monitoring capacity within Iraq able to perform frequent monitoring missions throughout the country.

2. Now that the capacity to produce high-quality semen has been rehabilitated in Iraq, FAO and the MoA should concentrate on advertising and disseminating this high quality semen through public and most importantly private operators. Private veterinarians should be viewed as strategic partners in these efforts to reach farmers with AI services as they are the main service providers to livestock owners in nowadays Iraq. A dedicated outreach effort and an advertising campaign through media, leaflets, etc. are necessary to connect private veterinarians with AI production and storage facilities in Abu Ghraib and in Governorates. FAO may also wish to establish contacts with Governorate AI centers and professional veterinary associations to help advertise the new AI service.
3. To study the efficacy of the used semen, the resulted offspring should be followed and production records adequately kept. Attention should be paid to avoid as much in-breeding as possible.
4. FAO should cease to provide equipment support to embryo transfer technology in Iraq, and focus instead on making the much simpler AI technology deliver straws throughout the country for the benefit of the Iraqi people.
5. FAO should continue to raise the issue of the occupation of the central feed laboratory with the MoA and should also explore other channels to help find a solution with coalition forces, such as the Special Representative of the Secretary General for Iraq.
6. If future funding prospects materialise and if the security conditions continue to improve, FAO should try and re-gear its training provision capacity towards more in-country training in order to make training events more client-oriented and relevant to local conditions.
7. More emphasis should be placed on allowing a fairer share of training opportunities for staff working at the decentralized and/or governorate level, including those under the Kurdistan Regional Government.
8. Capacity building should now reach the private sector since they play an important role in delivering AI services to farmers.
9. FAO should offer additional support to the MoA for data analysis, and later to start formulating development strategies based on such analysis.
10. More emphasis should be placed on building up strong livestock extension services.
11. The distribution of improved animals should be conducted in a systematic way, with clear beneficiary selection criteria emphasising competence and access to feed, even at the risk of not helping the poorest farmers. The candidates should continue to have to pay a reasonable price (higher than the slaughter price, as current practice) and agree to submit to regular data collection and follow-up of the offspring.
12. FAO and the MoA should undertake a follow-up study on the adaptability of Shami and Friesian races in Iraq.

Annex I: Terms of Reference
for the
Evaluation of Five FAO Projects Implemented in Iraq

20 March 2008

A. Background

Towards the end of January 2008, TCES requested PBEE to investigate whether, how and at what cost could five FAO projects implemented in Iraq be evaluated during the year 2008. The projects are the following:

- OSRO/IRQ/402/UDG - Assessment and rehabilitation of community irrigation schemes and restoration of irrigation water supply in rural areas (US$5.1 ml)
- OSRO/IRQ/403/UDG - Improvement of water supply and drainage provisions through the rehabilitation of pumping stations (US$25.1 ml)
- OSRO/IRQ/404/UDG - Assessment, emergency maintenance and rehabilitation of the community irrigation schemes and restoration of water supply in rural areas (nearly US$17 ml)
- OSRO/IRQ/406/UDG - Restoration of veterinary services in Iraq (US$8.7 ml)
- OSRO/IRQ/407/UDG - Restoration and Development of Essential Livestock Services in Iraq (US$8.5 ml)

All these were funded out of the UNDG-managed Iraq Trust Fund (ITF) as part of the International Reconstruction Fund Facility for Iraq (IRFFI)[26], and were prepared and approved rather rapidly in 2004, leaving ample flexibility during implementation to adapt the project objectives and priorities to a rapidly changing environment.

The **first three projects above (402, 403, 404)** are dealing with the same issues of irrigation and drainage. Agricultural production in central/southern Iraq relies almost entirely upon irrigation. However, salinization and waterlogging have affected most of the irrigation schemes built over the years between the Tigris and Euphrates rivers. The shallow water table complicates the management of salinity by restricting the downward leaching of salts through the soil profile. The construction in the 1980's of the Main Outfall Drain (MOD) collecting drainage waters and channelling them to the Arab Gulf was in response to the overall drainage problem. However, due to the sanctions and conflict during the last decade many connections of primary drains to the MOD were not implemented. The lack of maintenance of drainage canals and the operating problems on many of the drainage pumping stations during the last decades (including lack of electrical power during large parts of the day, poor design, lack of maintenance, and looting during the latest conflict) have contributed to further worsening of the drainage problem. In affected areas, yields of wheat and barley crops have decreased substantially. Important areas are not cultivated, affecting severely farmers' revenues and income generation. The Iraqi Ministry of Water Resources (MoWR), following its restructuring after the last war, has placed high priority in reclaiming irrigated agricultural lands from perennial flooding and salinity due to poor drainage.

[26] The IRFFI was launched early in 2004 by the United Nations and the World Bank to help donor nations channel their resources and coordinate their support for reconstruction and development in Iraq. The Facility has two trust funds for donor contributions, each with its own characteristics and procedures: the World Bank Iraq Trust Fund, administered by the World Bank Group and the United Nations Development Group (UNDG) Iraq Trust Fund (ITF), administered by UNDP on behalf of Participating United Nations Organizations. As of 30 November 2007, deposits in the UNDP ITF amounted to US$1.274 billion, most of it from the EU and Japan.

The **fourth and fifth projects above (406 and 407)** deal with the restoration of veterinary and animal production support services, which were much affected by looting in 2003. This situation increases the risk of occurrence and spread of contagious and infectious diseases, which could have detrimental effects on livestock-based livelihoods and on the supply of protein-rich food (milk, cheese, yoghurt, meat, eggs) to the population, thus endangering food security as well as food safety. The collapse of the livestock extension services and governmental breeding and artificial insemination programmes was reported to have serious consequences on the livelihood of Iraqi pastoralists and livestock or poultry farmers.

A summary of these projects as designed is provided in Annex 1.

The status of implementation of the projects can be summarized as follows:

OSRO/IRQ/402/UDG - Assessment and rehabilitation of community irrigation schemes and restoration of irrigation water supply in rural areas:

- Initially the project was located at Ramadi, for which FAO undertook a feasibility study and tender. This was subsequently changed to Hilla-Hashimiya at the request of the MoWR, resulting in substantial delay.
- A contract for excavation work on the main drain of the Hilla-Hashemiya system was awarded to an Iraqi company. By mid-2007, the total excavated materials amounted approximately to 1.7 ml m^3 which represent 85% of the total contract quantity. However, FAO ended the contract as the Al Shomally pumping station dewatering the drain broke down and was not being repaired by the MoWR. The contractor could not continue the excavation works and was charging the Organization hiring costs of the equipment. The contracted quantity of excavation is sufficient to drain out more than 90% of the irrigation schemes surrounding the Hilla Hashimiayh drain but would in any case be insufficient to complete the rehabilitation of the drain due to higher than expected levels of siltation.
- The component dealing with water user associations and the training of farmers were dropped considering the poor security of the area. These activities were also deemed less critical in the Hilla-Hashimia project than they were in originally-planned Ramadi.
- The following equipment was procured: one excavator, two tipper trucks, one fuel tanker, two water tankers.
- One training course on “Operation and Maintenance of Irrigation and Drainage Schemes” was held for 10 MoWR engineers at Cranfield University, England.
- No progress has been achieved yet on the installation of piezometers for monitoring the water table and salinity.

OSRO/IRQ/403/UDG - Improvement of water supply and drainage provisions through the rehabilitation of pumping stations:

- The project was originally intended to rehabilitate 125 priority pumping stations, a figure not based on precise assessments of each pumping stations. A complete and detailed status report for the first 12 priority pumping stations to be rehabilitated was later produced, and a risk management study completed in 2004 indicated that for all these, equipment to be replaced would have to be manufactured specifically, as original models were not in production anymore. This led to significant unit cost escalation. As a result it was subsequently agreed to rehabilitate only 12 stations, later reduced to 8, with work one additional station being conditional on further funding.
- The status of work is as follows:
  - Kirkuk pumping station: spare parts in value of US $ 1,180,511 have been procured and delivered.

- Mandali 1 pumping station: Replacement of pumps in value of US $ 3,815,836 have been delivered to site, installed and handed over to the MoWR .
- Al Sijilla, North Suwira and Al-Amiriyah: the pumps and other equipment have been delivered in 2007. MoWR have agreed to undertake their installation, in 2008.
- Salman Pak, Al Hussainyah and Hutaman: equipment was manufactured and delivered in 2007. While for Salman Pak installation of the delivered equipment will be performed by MoWR due to security situation, installation of the other two stations will be completed in 2008 by FAO.
- Al Shomally: survey report and tender for services completed. Rehabilitation of this station is subject to further funding.

- Formal training programme successfully completed.
- A pumping station database was designed and is being filled, covering all 305 pumping stations under the MoWR.

OSRO/IRQ/404/UDG - Assessment, emergency maintenance and rehabilitation of the community irrigation schemes and restoration of water supply in rural areas:

- The rehabilitation of the Hiran scheme (145 ha; 180 farming families) was completed early in 2006.
- The equipment for Mussaib pumping station (Drain 22) will be installed on site in early 2008. The rehabilitation of Mussaib Irrigation Scheme (3,000 ha; 2,500 farming families) is well under way and by mid 2007 95% of drain cleaning, 80% of the irrigation canal lining, 80 % of the road and 80% of the culverts had been completed.
- The originally planned work on Al-Thraima scheme was replaced under MoWR request by the supply of grouting equipment for urgent rehabilitation works at the large Mosul Dam, where foundations require continual grouting to maintain the dam's stability. The current machinery is old and unreliable and cannot keep pace with erosion under the dam. A purchase order for drilling rigs, spare parts and materials was placed in September 2006 and the rigs were delivered to site May/June 2007. MoWR will complete works using their own resources.
- Seeds and fertilizers in value of US $ 5.3 million were procured and distributed.
- The Kalar Irrigation Project rehabilitation remains indefinitely postponed, following a weak technical dossier for which both MoWR and AGLW requested major changes requiring detailed field studies, which were not practical under the deteriorating security situation. There were also inadequate funds in the budget to take implementation any further.
- Three aquatic weed harvesters and complete surveying instrumentation including ten survey stations, computers and plotters have been procured. Three Iraqi engineers have been trained by the manufacturer in the maintenance and use of the recently delivered harvesters.
- A total of 30 Iraqi engineers have attended and successfully completed 6 to 8 weeks training programmes in the Netherlands and Italy.
- Training of Water Users Associations is being undertaken in March 2008

OSRO/IRQ/406/UDG - Restoration of veterinary services in Iraq:

- Project funds were released late, only partially and in several installments, making planning difficult and leading to slowdowns and even a freeze on project activities from mid 2006 until mid 2007. Due to this long freeze in combination with the late availability of the last tranche of funds, an extension of the project until July 2008 was required and approved.[27]

[27] Despite the project being approved with a budget of 10.5 million US$, only 8.7 million were eventually given to FAO.

- Five training modules about change management were organized by FAO for Iraqi veterinary managers from the central Veterinary Services in Baghdad and from the border inspection posts.
- 25 veterinary publications covering many aspects of the veterinary science have been delivered.
- Equipment for Avian Influenza disease prevention, diagnosing and control has been delivered. FAO has facilitated and advised the MoA during the outbreak of HPAI in northern Iraq in 2006, and is currently (late February 2008) again doing so for a suspected new case in Basra.
- Review of disease control policies, and drafting of strategy papers. The HPAI preparedness plan as now prepared by the MoA will again be reviewed in May 2008. For Rinderpest, FAO is advising and assisting the MoA in its OIE application for a disease-free status.
- The foreseen construction of nine new veterinary clinics did not materialize. First, MoA requested to cancel the veterinary clinics since other funding sources were found for that, and to give priority to assistance to a national Brucellosis vaccination campaign. Then, due to the funding shortage at that time, procurement of the massive amount of vaccines had to be postponed, and was eventually replaced by support to control measures for the HPAI outbreak and for future HPAI prevention and preparedness measures.
- Almost 200 veterinarians from central, provincial and district level have been trained abroad (Jordan, USA, Australia, Morocco, Egypt, UK, Germany) on a wide range of veterinarian topics and disciplines.
- 2 Central and 18 Governorate veterinary laboratory hospitals have been equipped and are available for disease control and surveillance work.
- A national disease information system has been set up and equipped.
- A wide range of required goods was identified with and provided to the MoA Veterinary Department and the State Veterinary Company, such as seven cold stores, 15 refrigerated trucks, six pickup trucks, two forklifts, 100 motorcycles, a freeze dryer, seed strains for livestock vaccine production, reagents, veterinary field supplies, and veterinary laboratory supplies, chemicals and equipment.

<u>OSRO/IRQ/407/UDG - Restoration and Development of Essential Livestock Services in Iraq:</u>

- 30 Holstein Friesian bulls were imported from Australia and have started production of high quality semen, which is being distributed in liquid nitrogen for artificial insemination in the district veterinary centres nationwide. One of the two procured liquid nitrogen plant came into production in February 2007, and staff was trained on its installation and maintenance at the supplier's premises in the Netherlands. Due to the prevailing security situation in Abu Ghraib where the livestock centre is located, MoA has decided to install the second liquid nitrogen unit in Mosul or Basra. Training courses on artificial insemination were given in France and Morocco.
- 1000 Awassi sheep from Turkey and 200 Shami goats from Cyprus were procured and the construction of the required Livestock Breeding Center in Abu Graib, Baghdad, finished by the end of 2006. Both have produced already two generations of offspring for distribution, and part of the increasing breeding flock has also been transferred to the Mosul Breeding Centre.
- Similarly, the MoA changed the location of the Central Feed Analysis Laboratory from Abu Ghraib to the Baghdad city centre. Construction of the premises was completed in the second half of 2007. All the planned equipment has already been delivered and some final additional requested equipment was procured and will be delivered in the first half of 2008. A company was contracted for installation, training and maintenance. Staff has been trained on feed analysis techniques in the UK, the Netherlands and Egypt.

- Two training of trainer courses on extension, husbandry and small ruminant production took place in Syria and Morocco for a group of 20 Iraqi livestock extension specialists. This group of trained staff on its turn has delivered ten training courses for 95 field staff from all governorates extension centers and three courses for 36 farmers have been conducted. Various local symposiums in the field of animal production (calf fattening, artificial insemination, etc.) have been organized.
- A 3.5 week training course on bovine embryo transfer technologies and applications in genetic improvement was also delivered to three Iraqi veterinarian specialists in Wageningen University, the Netherlands. Necessary equipment to put this technology into practice has been provided to the Abu Graib livestock centre.
- In order to support the implementation of a national livestock survey (a top priority of the MoA/Livestock Department), a planning workshop was organized followed by a training course on survey techniques, interviewing, data collection, data analysis, etc. All required communication, GPS and computer equipment has been procured and delivered to the MoA which is planning to start the survey in 2008

B. Purpose of the Evaluation

The five projects have all been formulated together and will all come to an end at various points in 2008. They also deal with the same thematic area: rehabilitation of agriculture support services and infrastructure, and would hence benefit from being evaluated as a cluster.[28]

The evaluation is intended, as the projects draw to a close, to provide accountability to and issue recommendations for the Government, FAO and the donor on the further steps necessary to consolidate progress and ensure achievement of projects objectives. Any further need for external assistance should also be identified.

C. Scope of the Evaluation

The mission will assess the:

Project identification, design and planning issues:

a) Quality of project design; clarity, consistency and realism of the project's inputs, activities, outputs and objectives, including specification of targets, identification of beneficiaries, prospects for sustainability, realism and clarity of institutional and managerial setup, feasibility study and assessment of risks;

b) Appropriateness of subsequent changes in project locations or technical options;

c) Relevance and technical soundness of the projects as designed and later amended to the rehabilitation and development priorities of the Government of Iraq and the target population.[29]

[28] It should be noted that a sixth project, OSRO/IRQ/702/UDG – Rehabilitation and Maintenance of Traditional Irrigation Schemes in Resettled Areas, could also be included in the current evaluation in order to review the work of FAO on smaller, farmer-managed irrigation schemes in addition to state-managed ones.

[29] The evaluation should take into account the fact that the original project design was rushed in view of the launching of IRFFI and the immediate need for project proposals. This, as well as evolving requirements from the Iraqi authorities and a fast deteriorating security situation, necessitated significant modifications in project design. Therefore, more attention should be given to the relevance of the projects as amended than to the quality of the original design, recognised as rather weak.

Project management:

d) Efficiency and adequacy of project implementation modalities; in particular, assess how the project teams managed to ensure project monitoring and oversight in spite of having to operate from Amman, Jordan due to the adverse security situation in Iraq.

e) Availability and timeliness of funds from the donor and the Government (as applicable) and its consequences; extent of national support and commitment; quality of administrative and technical support by FAO;

f) Efficiency of implementation: quantity, quality, cost and timeliness of FAO and counterpart inputs and activities;

g) Effectiveness and use of monitoring and self-evaluation for project steering and adaptive management;

Project results and impact:

h) Project results, including a full and systematic assessment of outputs produced to date (quantity and quality as compared with workplan and progress towards achieving the immediate objectives).

i) Degree of utilisation of significant equipment procured under the projects, notably the installed pumping equipment, aquatic weed harvesters, the cattle semen production plant, laboratory equipment, etc.

j) Assessment of the number of counterpart staff trained, effectiveness and sustainability of human resource development activities for counterpart ministries, usefulness of such technical training, study tours and change management training courses.

k) Assessment of the number of beneficiaries[30] and of their degree of vulnerability; equity issues in the distribution of projects benefits, e.g. female-headed households vs. male-headed ones, small-holders vs. large land owners.

l) Impact of the projects, e.g.:

Livestock and veterinary projects:

- impact on the capacities and capabilities of veterinary and AI services, on production levels and rural livelihoods, and (to the extent possible) on the sanitary situation of livestock in the country and on food safety;

Irrigation schemes and pumping stations rehabilitation:

- impact on the area put under cultivation (including through ad hoc, farmer-built system extensions, which appear to be numerous), on production levels, on farmer's livelihoods and food security, and (to the extent possible) on water quality downstream (reduction of pollution of water for human and livestock consumption?);
- progress achieved towards the creation or capacity building of water users associations; participation of farmers in operation and maintenance of the rehabilitated irrigation systems; policy lessons in this regard;

General:

- impact on the capacities and capabilities of the various national implementing partners, in particular within Government.

[30] The project documents were prepared by technicians with little attention devoted to social and economic dimensions. The number of beneficiaries is generally estimated based on technical ratios, e.g. seven persons or one family per hectare of land rehabilitated.

m) To the extent possible, cost-effectiveness, project cost per beneficiary, economic profitability and sustainability of the projects, notably of the rehabilitated irrigated schemes. Are these costs reasonable and can the schemes be sustained economically, without the recourse to state or international assistance?

n) Prospects for sustaining projects' benefits after the termination of the project.

o) Prospects for the replication of the projects in other regions, if applicable;

Based on the above analysis the mission will draw specific conclusions and make proposals for any necessary further action by Government, FAO and/or the donor to ensure sustainable development in these areas, including any need for additional assistance in general and specifically with respect to activities of the individual projects prior to completion. The mission will draw attention to any lessons of general interest, e.g. on the relevance of similar rehabilitation projects in a country suffering from severe insecurity, or on how to manage and monitor projects in insecure countries.

D. Proposed Methodology

The methodology is premised on the fact that the international evaluators will most likely *not* be allowed to travel inside Iraq, except perhaps in the North of the country. Even national consultants will find their capacity to move within the country severely limited. This may have implications on the type of information that can be collected, its quality and the time needed to collect information. Some flexibility in conducting the evaluation will have to be built on in the process.

The general approach proposed is therefore to combine an evaluation mission by international consultants (and/or FAO staff) to Amman, Jordan, with as many means of independent verification as possible. The following tools are recommended to this end:

- Preparatory work by the Amman Office would consist in informing the relevant Iraqi counterparts about the evaluation, as well as collating all necessary documentation and lists / contacts of beneficiaries.
- One or several[31] missions by international consultants (and/or FAO staff) to Amman, Jordan, in order to interview project staff, review project documentation, and meet with counterparts from the Government of Iraq who will have to be flown in. If a trip to northern Iraq is possible, a visit to the Erbil governorate would prove particularly useful to verify service provision in the field, e.g. veterinary services and the rehabilitation of the Hiran irrigation scheme.
- A survey of selected projects sites by independent teams would be the best way to ascertain progress and results. Three Iraqi teams would probably be needed, each operating in a broad region: north, centre, and south. These teams could visit rehabilitated irrigation schemes and interview farmers groups there. They could also try to interview beneficiaries of the veterinary and artificial insemination services as well as the recipient of the goats and sheep, at least if lists of beneficiaries can be made available for these projects and components.[32]
- These national surveyors, with the assistance of farmers, could photograph and sketch the visited rehabilitated irrigation schemes, indicating where are the main infrastructure that were rehabilitated, the farmer-constructed sub-schemes, the cultivated and non-cultivated land, and where are the low-lying, water-prone areas.

[31] The international consultants will have to meet at various points in time (for preparation, discussion, triangulation and reporting) with their national surveyors/consultants.

[32] Tracking and interviewing a sufficient number of users of veterinary and AI services could prove a significant challenge, depending on the quality of book keeping in vet clinics and the AI centre. Another factor is transhumance: some of the clients could be quite mobile. The livestock element of the survey will be dropped if it proves unfeasible.

These sketches will prove useful to interpret satellite images but also might constitute useful, quick-and-dirty documents in their own right to gauge impact.

- Satellite imagery of selected project sites where an impact can hopefully be evidenced from such images, i.e. for irrigation and drainage projects that have started delivering benefits by early 2008. The sites of Hiran, Hilla-Hashimia, Al Mussaib and Mandeli have tentatively been selected based on implementation progress, and a review of available images and costs is underway thanks to FAO/NRCE (see Annex 2). On the images accessed so far, free standing water and saline areas seem to be easily identified (Annex 3). The best period of year for taking the "before" and the "after" pictures would probably be spring, as it is the period of year with both the highest chances of flooding and the greatest vegetative growth.
- Email or telephone survey of Government staff having undergone training, so as to assess the quality of the training and the degree to which it was useful to the staff in question; the extent to which the current "brain-drain" in Iraq has affected capacity building efforts could also be assessed through telephone interviews.

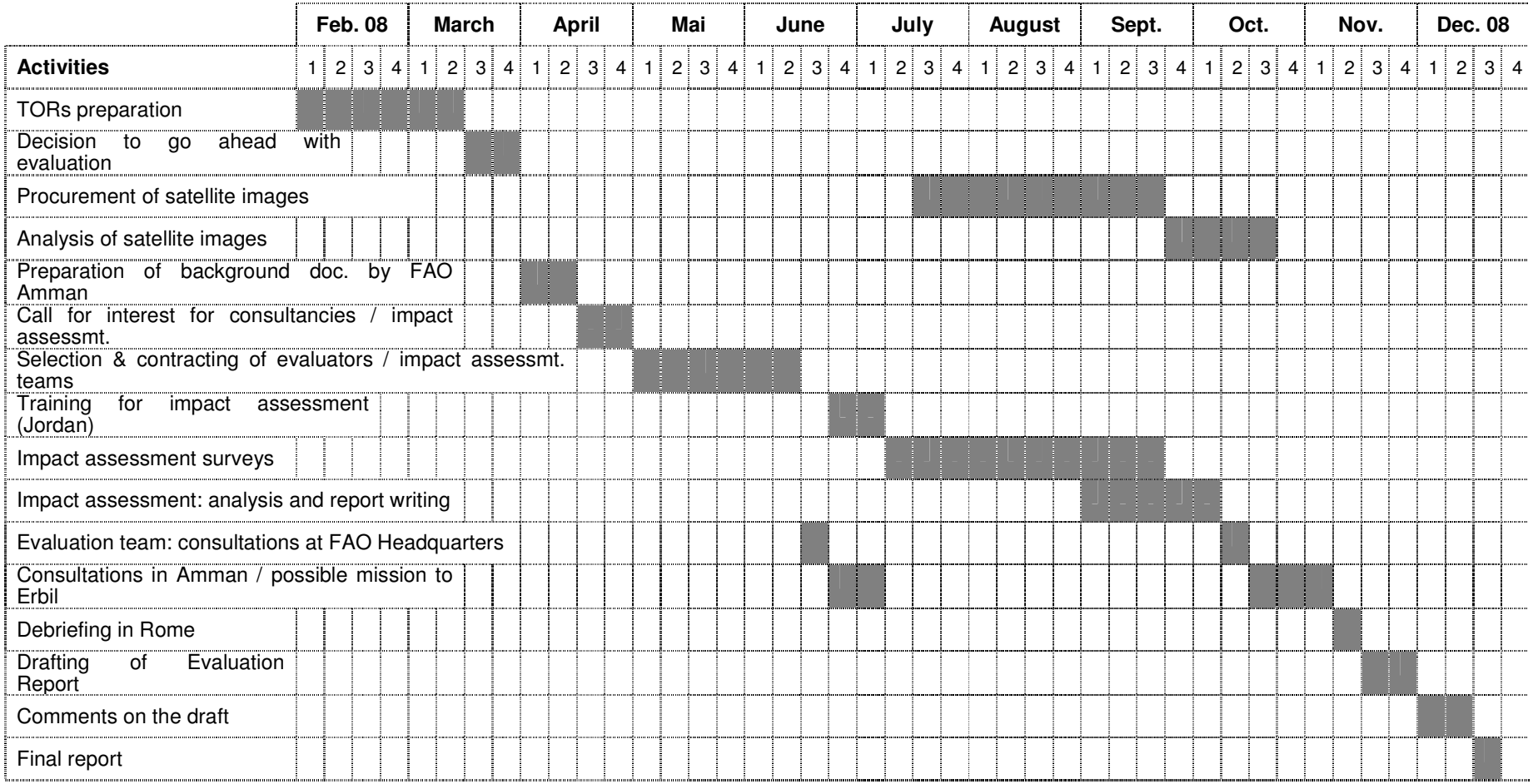
E. Human Resources for the Evaluation

The following consultants and staff resources are envisaged:

- Evaluation Team Leader: a specialist in evaluation of agriculture rehabilitation programmes, possibly a staff from PBEE or an independent consultant (50 days in Rome, Amman and possibly Erbil). Knowledge of Arabic would be an asset.
- Irrigation Specialist: an international consultant with experience in large-scale irrigation projects and equipment, tasked with the assessment of all the available data about projects 402, 403 and 404 and with the evaluation of their technical quality and likely impact (25 days, mostly in Amman and possibly Erbil).
- Livestock Specialist: an international consultant, possibly a veterinarian with experience in both animal health and artificial insemination programmes, tasked with the assessment of all the available data about projects 406 and 407 and with the evaluation of their technical quality and likely impact (25 days, mostly in Amman and possibly Erbil).
- Remote Sensing Specialist: an international consultant who would be hired by FAO/NRCE for the analysis of procured satellite images (tentatively set at 15 days pending NRCE estimate).
- National Survey Coordinator: an independent consultant of Iraqi nationality, he or she will be in charge of coordinating the field surveys, controlling data quality, and reporting on the survey and data entry process. He or she should be able and willing to travel to all parts of the country. If that is impractical for security reasons, one survey coordinator could be hired for the central regions around and south of Baghdad, while another coordinator deals with northern areas. This solution would be sub-optimal though as it could increase surveyor bias (60 days in total).
- Surveyors: an estimated 15 surveyors would be hired (20 days each). Ideally, all the surveyors should be trained in Amman by the Team Leader and the National Survey Coordinator. If visas cannot be obtained for 15 people, then only two or three supervisors could be trained in Amman. The teams should be equipped with digital cameras and with GPS handsets in order to ground-truth satellite images, e.g. identifying water-logged land in some irrigation schemes.

The Survey Coordinator and the Surveyors could of course be contracted through the same consulting company.

F. Timetable


Feb. 08
March
April
Mai
June
July
August
Sept.
Oct.
Nov.
Dec. 08
Activities
1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4 1 2 3 4
TORs preparation
Decision to go ahead with evaluation
Procurement of satellite images
Analysis of satellite images
Preparation of background doc. by FAO Amman
Call for interest for consultancies / impact assessmt.
Selection & contracting of evaluators / impact assessmt. teams
Training for impact assessment (Jordan)
Impact assessment surveys
Impact assessment: analysis and report writing
Evaluation team: consultations at FAO Headquarters
Consultations in Amman / possible mission to Erbil
Debriefing in Rome
Drafting of Evaluation Report
Comments on the draft
Final report

G. Reporting

The evaluation is primarily addressed to FAO (and notably TCES), to the Government of Iraq, and to the UNDG ITF Steering Committee.[33]

A draft version of the report will be prepared by the Team Leader and presented to FAO/TCES. Based on comments received from FAO colleagues, PBEE will then prepare a second draft for broader circulation to and discussion with the Government of Iraq and the ITF Steering Committee.

The procedures for the UNDG ITF request individual project reports. However, these five individual reports will use some common material especially on management issues (funding, planning, monitoring, etc.), since the peculiar form of management of FAO Iraqi projects reflects the security conditions in the country and hence applies equally to all projects.

[33] Important donors of the ITF could also be included in this group of primary stakeholders.

Annex II: List of Reviewed Documents

– Stocktaking Review of the International Reconstruction Fund Facility for Iraq. Volume One: Summary Report Draft Report, JANUARY TO NOVEMBER 2008. Volume Two: Project Performance Reports, October 2008 - Scanteam

– Memorandum of Understanding Between The Participating UN Organizations and The United Nations Development Programme regarding the Operational Aspects of the UNDG Iraq Trust Fund, January 2004

– End of Assignment Report - Khaled Ben Khaled, period 06 August 2007 - 22 Dec. 2007
– End of Assignment Report - Khaled Ben Khaled, period 25 January - 11 July 2007
– End of Assignment Report - Khaled Ben Khaled, period 16 May 2006 - 10 January 2007
– End of Assignment Report - Khaled Ben Khaled, period 14 February - 30 June 2008
– Hand-over Report, Rod Kennard, Livestock Project Manager, February 14 2006
– Hand-over Report, James Airey, Livestock and Veterinary Projects Coordinator, 29 May 2005
– Handover Notes, Raymond Frederick Webb, Project Manager, 21 May -19 Nov. 2005

– Project document for project OSRO/IRQ/407/UDG / C5 – 10
– 6-monthly progress reports and final completion reports for same

Annex III: Persons Met and Interviewed

FAO:

Fadel El-Zubi	FAOR
Dr Hilal Mohammed	CTA Veterinary and Livestock Projects
Rajan Chhabra	Assistant FAOR Programme
Anwar Jahfar Ahmed	FAO Coordinator in Erbil
Dr. Khaled Ben Khaled	ex-CTA for 406 and 407

Government:

Baghdad:

Basem Al-Adhadh	Director of Animal Health, MoA Director, State Company for Animal Resource Services

Erbil:

Anwar Omar Qader	Director of Planning, MoA
Abd Ameer	Director of Monitoring, MoA
Ibrahim Mustafa	Director of Veterinary Services, MoA
Bahman Hasan Ali	Director of Pharmaceutical Stores, MoA
Rifat Hidayat	General Director for Livestock, MoA
Ramadan Mohd	Director for Livestock, MoA

AI Centers in Governorate Hospitals:

Dr. Faris Ibraheem	Director, Abu Ghraib AI Center
Dr Kamel Herash	Assistant to the Director, Abu Ghraib AI Center
Dr. Abas Jameel	Chief, Animal Health Unit, Abu Ghraib AI Center
Dr. Mohammad Mashhadani	Veterinarian, Abu Ghraib AI Center
Dr. Amer Bahjat	Veterinarian, Abu Ghraib AI Center
Dr. Salah Khaleel	Director, Fadeliah AI Center
Dr. Iman Shaker	Veterinarian, Fadeliah AI Center
Dr. Mshtaq Azizi	Director, Basra AI center
Dr. Majeed Abadi	AI chief, Basra AI center
Abdalameer	Store manager, Basra AI center
Abdelkareem Tomah	Responsible for vaccination, Basra AI center
Mohammad Hamdan	AI technician, Basra AI center
Abdelkareem Zahra	Director, Al-Mothana Governorate Veterinary Hospital
Kareem Hamadi	Director, AI unit in Al-Mothana
Mohammad Mohammad	Veterinarian, Al-Mothana
Jamal Nader	Director, Erbil AI Center
Dr. Monadhil A. H. Kareem	Director, Taji Veterinary Hospital
Dr. Noori Falih Naseef	Veterinarian Consultant, Taji
Mohammad Ziyara Mushjal	Agriculture Senior Advisor. Taji
Dr. Mohammad Akram	Artificial Insemination Officer, Dhok
Dr. A. R. Sami Ahmed	Senior Insemination Artificial Officer, Dhok
D. Raheem Rasn Abu Dakka,	Director, Missan Veterinary Hospital
D. Ahlam Abdel Globe	Director, Artificial Insemination Division,
D. Jamil Hussein	Veterinarian, Missan
Sabah Abdul-Hassan Kazem	Senior Artificial Insemination Officer, Missan
Dr. Mothafar Dawood	Director, Wasit Veterinary Hospital
Dr. Iman Abdul Rasiq	Assistant Director, Wasit Veterinary Hospital
Dr. Mohammad Bzoon	Director, Livestock Division, Wasit
Dr. Sadiq ja'far Issa	Director, Artificial Insemination Division, Wasit
Dr. Khaleel Amin Wajid	Director, Nasiriyah Veterinary Hospital
Dr. Majid Khadhim Ghaseeb	Veterinary & Administrator, Nasiriyah

Moahmmed Sajit Abdul Ridha	Artificial Inseminator, Nasiriyah
Adnan Nasir Husein	Artificial Inseminator, Nasiriyah

Breeding Stations:

Hamoud Ejel	Director, Abu Ghraib Breeding Station
Nizar Khalel	Director, Al-Dowar Breeding Station
Ahmad Taha	Director, Physiology Laboratory, Abu Ghraib Breeding Station

Central Veterinary Diagnostic Laboratory (Sheik Omar):

Dr. Fahim Daher	Director, Health & Food Safety Dept.
Dr. Diaa Owni	Assistant director, Health & Food Safety Dept.
Dr. Nidal Sudani	Director, Pharmaceutical Control Dept
Dr. Ali Hamood	Assitant Director, Pharmaceutical Control Dept
Mohammad Ahmad	Laboratory technician

Others:

Dr. Hydar Mahmmoud	Private veterinarian