



Uruzgan Livestock Development Strategy



Gerrit Holtland
November 2009

TABLE OF CONTENTS

ACKNOWLEDGEMENT	4
EXECUTIVE SUMMARY	5
1 INTRODUCTION	6
2 URUZGAN, THE CONTEXT	7
2.1 Population.....	7
2.2 Ethnic composition.....	7
2.3 Political tension and security.....	9
2.4 The economy	10
3 AGRICULTURE IN URUZGAN	11
3.1 Climate.....	11
3.2 Natural resource base	11
3.3 Land use.....	12
3.4 Land ownership	13
4 THE LIVESTOCK SYSTEM	15
4.1 Number of livestock	15
4.2 Livestock management systems	17
4.3 Fodder and feed production.....	19
4.4 Production and productivity	23
4.5 Processing and marketing	27
4.6 Poultry	30
4.7 Private services: VFUs	31
4.8 Conclusions: constraints and opportunities in the livestock system	33
5 STAKEHOLDERS IN LIVESTOCK DEVELOPMENT	34
5.1 Government	34
5.2 Community Development Councils	35
5.3 NGOs	37
5.4 Capacity building efforts	39
6 POTENTIAL IMPROVEMENT LIVESTOCK CHAINS	40
6.1 Introduction	40
6.2 Feed-banks.....	41
6.3 Milking goats.....	44
6.4 Poultry	46
ANNEX I NATURAL RESOURCES AND LAND USE	49
ANNEX II: MILK PRODUCTS	50
ANNEX III POULTRY IN AFGHANISTAN	51
ANNEX IV LIVESTOCK DISEASES IN URUZGAN	53

ACKNOWLEDGEMENT

Many people have assisted in designing this livestock development strategy for Uruzgan. A first group of people are international experts; Anton van Engelen and Wim Tondeur deserve to be mentioned first here. Their knowledge of Afghan livestock issues proved very valuable. Others were John Bonnier, Henk Jansen, Ton Bokkers, Lou Cuipers, Raymond Briscoe, John de Wolff, Gordon Bremer, Otto Wijers and Euan Thompson. A second group are the Afghan experts within DCU: the staff of DCA, ZOA and DCU was very helpful and open; especially Dr. Zekria Achmadzai of DCA, Dr. Sarwar Gizabi the DCU coordinators in Kabul and Dr. Ghulam Moqtadir, DCU coordinator in Terin Kowt. Next people of many organisations proved willing to talk about the issues that arise when one wants to address livestock development in Uruzgan. Lastly I wish to thank the Cordaid staff: Albert van Hal in The Hague, Dr. Amin in Kabul and Haji Quadratullah in Terin Kowt. You made me feel welcome and comfortable. Finally the programme coordinator, Waheedullah Rahimi, was the one who accompanied me all the time during our field work. He proved very dedicated and capable. The way he is able to facilitate a dialogue on complex issues with a room full of farmers was impressive and motivated both the farmers and me. I hope to be able to continue the pleasant cooperation with all these people in the next phase; the only phase that matters: the implementation.

EXECUTIVE SUMMARY

The livestock systems in Uruzgan consist of two main components: Kuchi moving around with herds of small ruminants in communal areas (pastures, mountainous areas) and settled farmers with irrigated land who keep sheep for fattening and cattle for plowing, manure, meat and milk for home consumption. Goats are less attractive for settled farmers as they are destructive and less profitable. All have some poultry for eggs and for meat.

The main issue in the system is to find a proper balance between the available fodder and the number of animals. This balance differs much from one year to the next. In good years (as 2009) there is a lot of fodder and many settled farmers fatten lambs; the demand for sheep is high and they are imported into Uruzgan. In poor years, this can be reversed: fodder and feed is imported to Uruzgan and more animals, including sheep, are exported.

The main constraints to the livestock system are:

- Lack of fodder and feed: particularly in winter, when animals are only fed with wheat straw soaked in water and a little maize. This very poor diet leads to:
 - Loss of body weight of animals which has to be recovered later
 - Low birth weight of calves, lambs and kids which then grow slow as well
 - Low milk and meat production.
- Lack of capital: poor families have no animals or they have to sell them at a low price to satisfy more urgent needs
- Poor veterinary services and a nearly total lack of extension services.

On the positive side: marketing does not appear to be a problem for meat and eggs. Based on the constraints four opportunities to improve system have been identified:

- Improve winter feeding via Feed Banks operated by village livestock associations
- Assist poor families with lamb fattening to generate income
- Assist poor families to satisfy their nutritional needs with milking goats
- Develop a commercial egg production system via an out-growers scheme of semi-intensive poultry units.

The most complicated interventions are the Feed Banks and the semi-intensive poultry units. Economic simulations indicates that both are economically attractive and sustainable. In the case of Feed Banks most attention will be focused on assisting farmers in setting up and managing the associations. To enhance the chances they will be linked to successful CDCs. In the poultry sub-component training in technical skills will be crucial.

Fattening lambs and keeping milking goats are normal activities in Uruzgan; the programme wants to assist poor families with loans so that they can also profit from these activities. In the case of lambs the loan come from the village livestock shura's. In the case of milking goats the programme provides the initial animals who's off-spring is then passed on to the next generation of beneficiaries.

The programme will focus on permissive areas; first in Terin Kowt and a little in Dehrawood; if successful it will be expanded in Dehrewood and Chora. Twenty percent of the budget is allocated to Ghilzai Pashtun in order to ensure they get an equal share of the support.

1 INTRODUCTION

This livestock strategy paper was made for Cordaid as part of their work in the Dutch Consortium for Uruzgan (DCU) which implements the programme ‘Improving basic services and capacity building in Uruzgan’.

Cordaid aimed to “develop a “livestock-chain” strategy for Uruzgan, with Cordaid staff in The Hague and Kabul and with partner organisations”. Three missions were fielded to design this strategy. The first (April 2009) focused on understanding the DCU context and the actors operating in the area; the second (July) focused on understanding the livestock system. After these missions a draft strategy was designed that was presented, discussed and adjusted in meeting with the relevant stakeholder during the third mission (Sept./Oct.).

The key-concept was ‘livestock chain strategy’. This refers to a value chain based approach to livestock development. A value chain is “an alliance or network of independent enterprises, within a (vertical) chain of activities, that competes on a specific market defined by consumers and outlet”. Livestock value chains cover all activities from input supply, production, processing, wholesale and retailing to final consumers. Generally we distinguish between primary actors in the value chain (farmers, butchers, etc.) and support actors (extension workers, NGOs).

A livestock chain approach stresses the commercial and market aspects of the livestock. It differs from the approach used so far in Uruzgan by most projects and NGOs which focus on the *needs of farming families*. In practice they focus on improving the production by working on restocking (providing chicken, sheep and dairy cows to farming families for free), and by improving animal health services (Village Field Unit). In the approach proposed here the focus is on *improving the productivity* in the value chain and on using *market opportunities*.

Identifying *opportunities* is much more complicated than identifying *needs*. Unfortunately limited information is available on many aspects of the livestock chains in Uruzgan. Also in this exercise very little information could be collected on wool and carpets, cashmere, bee-keeping, the role of camels, horses and donkeys etc. Even the possibilities to explore the livestock system of Kuchi were very limited due to security reasons. So in this first stage of the programme all efforts were focused on understanding the core elements of the main livestock value chains (cattle, sheep, goats and chickens) :

- Inputs supply: feeding the animals
- Production and productivity: fertility, animal health and yields
- Processing and marketing of milk, meat and eggs
- Support systems: veterinary services and extension, education and research.

When these elements are described and understood, the strategic questions are:

- What are the constraints in the livestock system?
- What are the opportunities to increase the income from the livestock sector?
- How can farmers be assisted to grab these opportunities in a sustainable way?
- How can the interventions be embedded in the local institutional environment and culture?

2 URUZGAN, THE CONTEXT

2.1 Population

Uruzgan is the border between South and Central Afghanistan; it borders the northern portions of Kandahar and Zabul, in the east it neighbours Ghazni, Helmand in the west, and in the north Day Kundi. In total some 375.000 people live in Uruzgan. The next table provides the details.

Population by districts (2006)

District	Men	Women	Total	Households ¹	CSO, 2009
Tirin Kot	57,409	52,303	109,712	16,993	93.200
Chora	37,666	36,093	73,759	10,198	46.500
Dehrawood	26,473	24,245	50,718	7,087	50.000
Shahid Hassas*	24,383	24,129	48,512	5,286	50.000
Khaz Uruzgan	19,650	18,238	37,888	6,469	13.500
Gizab**			54,000	7,754	
Total	165,581	155,008	374,589	53,787	311.900

Source: CSO/UNFPA Socio Economic and Demographic Profile (data on 2006)

* Shahid Hassas is often referred to as Char Cheenah

** The population of Gizab is unclear; other estimates are substantially higher. The number of families in Gizab is estimated by the mission by assuming that the family size is the same as in the other districts.

Tirin Kot is the largest district, followed by Chora. Together they cover half the population. An average family size of seven leads to an estimated number of 55.000 families. Some 60% of the people are under 18 years of age (even 64.5 % in Dehrawood). Just over 3.5% of the population lives in the main towns of Tirin Kot, Dehrawood, Khas Uruzgan and Gizab.

About 10% of the population are Kuchi; in winter they number about 37.000 (1.5% of all Kuchi) and in spring, an additional 1,400 Kuchi households migrate into Khas Uruzgan and Tirin Kot from Kandahar.

The latest date of the Central Statistical Office (CSO) on *settled* population in 2008/2009 show a total of 311.900 people in Uruzgan (except Gizab). In these data Tirin Kot has only 93.200 inhabitants and Chora only 46.500. In some districts the population increased: Khas Uruzgan has 13.500 more people and both Shahid Hassas and Dehrawood 5.000 more. The total number is about 8.000 less; the explanation is unclear.

2.2 Ethnic composition

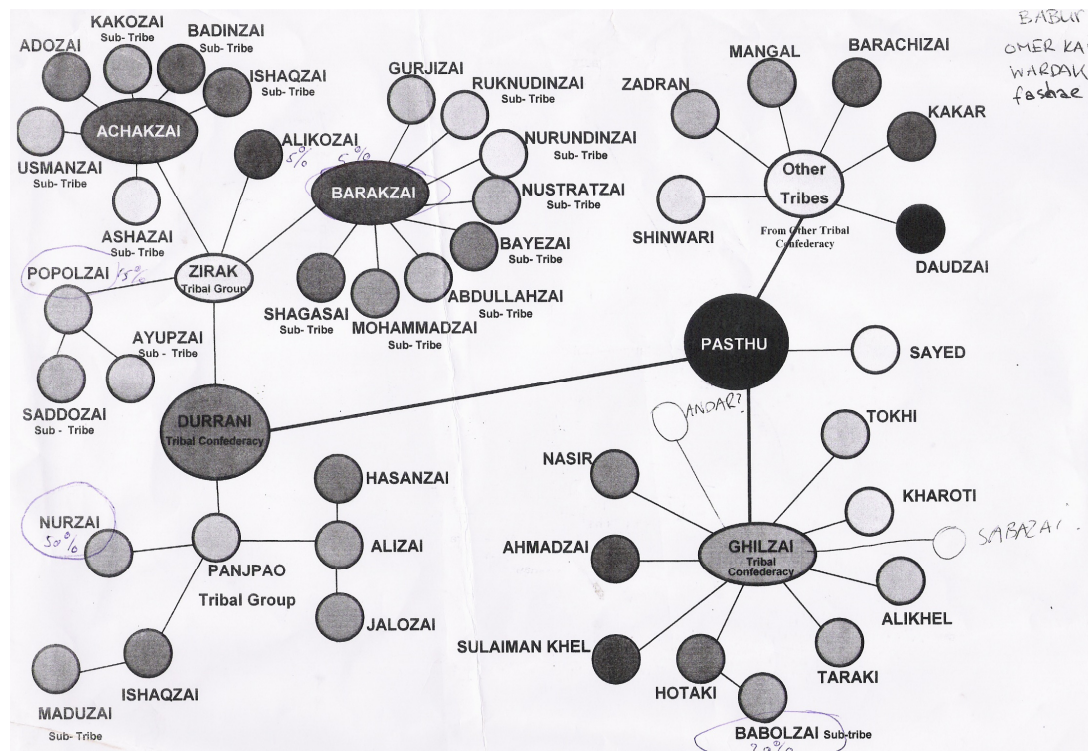
The majority of people of Uruzgan are Pashtun; they are not the original inhabitants however. The area used to be controlled by Hazara until the 19th century when they were forcefully replaced in two waves of the 'pashtunisation' process orchestrated by the Pashtun kings of that time. In that process many Hazara left for Quetta, Pakistan, (still the largest Hazara community outside the country) while others remained and moved northwards to today's Dai Kundi. The fact that Pashtun are sunni Muslims and Hazara twelver Shiites added more fuel to the ethnic tension between these two groups.

The long term antagonism between Pashtun and Hazara was the reason to create a separate province of Dai Kundi in 2004. In order to ensure that it had sufficient inhabitants to qualify

¹ The data on household number come from MAIL, 2009.

as a province Gizab district was added to it; yet the majority is Pashtun there and recently this district has been returned to Uruzgan.

Within the Pashtun majority a few important sub-tribes have to be distinguished. The next graph shows the overall structure of the Pashtun.



The main distinction within the Pashtun is that between Durrani and Ghilzai. The next table shows the estimated percentages of the different tribes and sub-tribes in Uruzgan

The estimated share of the population of different ethnic groups in Uruzgan

	Terin Kowt	Chora	Dehra-wood	Shahid Hassas	Khas Uruzgan	Gizab	Average percentage
<i>Durrani</i>	55	98	75	100	73	78	77
Popolzai	30	30	15				17
Barakzai	15	25	5	10	8		12
Nurzai			50	60			15
Mohamedzai	5						1
Achakzai		43		20	65	78	29
Alokozai	5			10			3
Alizai			5				1
<i>Ghilzai</i>	35		20		1	2	13
Hottak			20				3
Tokhi					1	2	0
<i>Hazara</i>	3	2	2		25	20	7
<i>Others</i>	7		3		1		3

Source: TLO, 2006. Uruzgan survey

Durani Pashtun are the vast majority; and within their ranks Achakzai are dominant; followed by the Popolzai, Nurzai and Barakzai. With 13% Ghilzai are a minority, as are Hazara (7%).

A special word is needed about the Kuchi: Pashtun with a nomadic lifestyle: 74% are short-range migratory and 26% long-range. Almost all are partially migratory, with 25% of the households staying behind in the winter areas when the others migrate. The summer areas for the short range migratory Kuchi are Chora and Khas Uruzgan. Traditionally the main summer grazing area for long range Kuchi is the so called 'hazarajat' in the districts of Ajiristan, Malistan and Shahrستان in Dai Kundi. Since 2002 the Hazara no longer allow Kuchi to graze there; so they shifted to Khas Uruzgan or to neighbouring provinces like Ghor. The exact impact of this conflict on the grazing areas and movement or the number of animals could not be determined in this study. One Kuchi leader said that they are dealing with this sensitive issue in a very prudent way, but what this means remains unclear. Kuchis in Uruzgan rank among the least educated Kuchi population countrywide, with one of the lowest literacy rate and very poor access to health and education services.

2.3 Political tension and security

Uruzgan suffers from a number interdependent conflicts at different levels. At international level ISAF forces are fighting with Taliban and Al-Qaida elements. At national level the government is fighting with the Taliban and other opposition elements; while at the same time trying to reconcile with the more moderate among them.

A very knowledgeable local resource person said that in Uruzgan 3% of the Taliban are internationals, 10% are Afghans who are religious motivated and the rest (87%) support them for opportunistic or for personal reasons. The latter are local rivals of the most powerful player in Uruzgan, Jan Mohammed Khan (JMK). His position illustrates the complexity of the situation. As ally of Karzai² he is supported by the national government and US-forces. To the Dutch and other international players he is first and foremost the person responsible for serious atrocities committed after the fall of the Taliban. His victims were not Taliban, but local Ghilzai Pashtun, his traditional rivals who are now fighting alongside the Taliban.

There are tensions inside the Durrani sub-tribe as well. First of all the most powerful person, JMK follows his own agenda, even if it differs from the government agenda. Secondly the Popolzai dominate the political institutions and have divided all key-positions in the government among their tribes-men. This alienated other Durrani; particularly larger sub-tribes like Achakzai, Nurzai and Barakzai. Achakzai live in the rather isolated northern districts (Khas Uruzgan, Gizab) that the government can not control effectively. Nurzai are concentrated in Dehrawood where they challenge the Popolzai and related tribes. Barzakzai live very much alongside the Popolzai (in TERIN KOWT and Chora) and some of them cooperate with the Popolzai and some don't.

In any case the strongest opposition comes from the Ghilzai; and especially those who live along the main roads from Terin Kowt towards Chora and Khas Uruzgan effectively manage to obstruct people from travelling and therefore they block economic progress.

In Uruzgan generally three levels of security are recognised; permissive areas where development actors can operate; semi-permissive areas where village leaders have indicated that they are willing to cooperate with development actors and non-permissive areas that are hostile and where the risks is too big for development actors to operate. In Terin Kowt the main permissive area is the one dominated by JMK: Terin Kowt-town, the area towards Dehrawood and the valley on the left of that road. Dehrawood town is generally safe and its near surroundings as well; Chora town is rather safe, but traveling the Chora is often not.

² See Bette Dam, 2009. Expedition Uruzgan

2.4 The economy

The National Risk and Vulnerability Assessment (NRVA) asked in 2005 what the main source of income was for the households. The next table provides the answers.

Sources of income reported (Uruzgan)

Source of income	Rural (%)	Total (%)
Agriculture	42	40
Livestock	37	38
Opium	5	5
Trade and services	14	14
Manufacture	2	2
Non-Farm Labour	16	18
Remittances	10	10
Other	2	2

Source: NRVA, 2005

Agriculture is a major source of revenue for 40% of the families; while 38% derive some income from livestock. Some 18% of the households earn income through non-farm related labour and slightly less through trade and services (14%). In total some 3.000 people work for the government, or some 5% of the families. In Terinkot this will be substantially higher; probably well over 10%.

With such small amount of land available it is no surprise that the NRVA in 2005 reported that 45% of the households have problems in satisfying their food needs at least 1-3 times a year and a further 30% face this problem 3-6 times a year. Only 21% never had any problem and 5% reported to have many problems with food shortages. More than one-third (38%) of the population is estimated to receive less than the minimum daily caloric intake necessary to maintain good health and 80% has low dietary diversity and poor or very poor food consumption.

Small industries are very scarce. They exist in only nine out of the 506 villages and seven of them are in Terin Kowt. Honey, silk, karakul skin, dried sugar, and sugar candy are the main industrial products of the province. There are 1 or 2 ice factories in Terin Kowt. Handicrafts are produced in all districts except Dehrawood; Khas Uruzgan and Terinkot are more involved in handicrafts than others. Rugs are produced in Khas Uruzgan, Chora and Terinkot, jewelry in Terinkot and Khas Uruzgan and shawls in Khaz Uruzgan.

The basic transport infrastructure in Uruzgan is well developed, with 61% of roads in the province able to take car traffic in all seasons, and 34% able to take car traffic in some seasons. However, in a small part of the province (5%) there are no roads at all. The infrastructure in Gizab is poor as well.

3 AGRICULTURE IN URUZGAN

3.1 Climate

The climate in Uruzgan is subtropical and continental. The actual weather depends on elevations of the mountainous terrain³. In Annex I some more details are given; here it suffice to say that rainfall is very low (300-400) mm and concentrated in winter (snow). Summers are hot (25-35° C) and dry. Dry-land farming is very risky and in practice only irrigated land is permanently cultivated.

Winter are rather harsh, with day temperatures just above zero and night temperatures just under zero. At higher altitudes temperatures are even lower and many areas can only be used for summer grazing for six months.

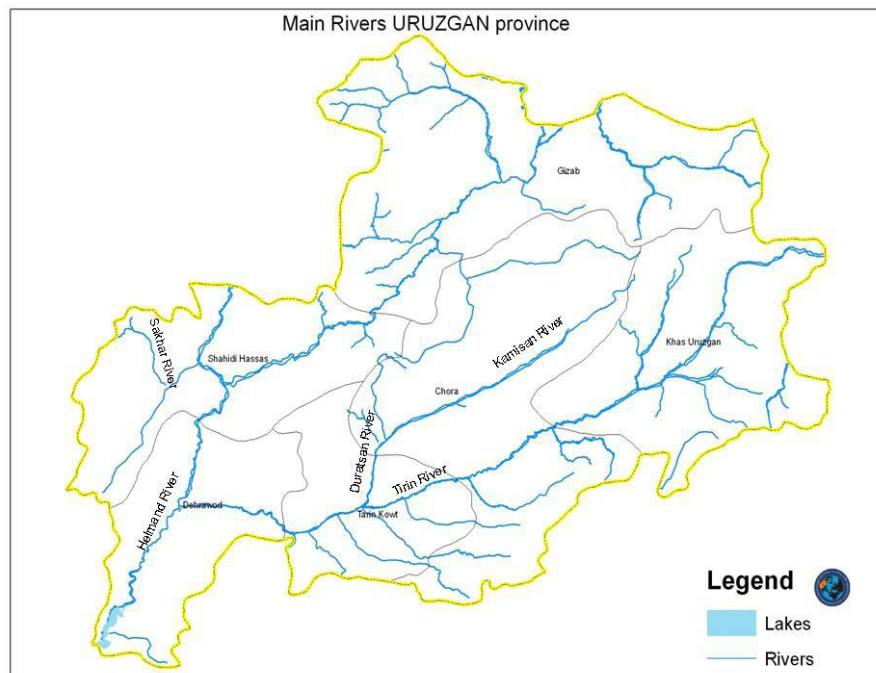
3.2 Natural resource base

Uruzgan covers an area of 32.000 km² at the southern foothills of the Hindu Kush; 47% is mountainous, 31 % hilly and 21 % flat. The highest summits (up to 2,778 m) are in the north. The south is relatively flat. Tarin Kowt, the capital in the south, lies at 1200 m.a.s.l..

The main rivers that can be used to irrigate agricultural lands are:

1. Helmand River – from Gizab via Char Chinu (Shahid Hasas) to Dehrawood
2. Teri River – from Khas Uruzgan via Tarin Kowt to Dehrawood joining Helmand river
3. Darwishan or Chor River – from Chora to Tarin Kowt joining Teri River in Tarin Kowt
4. Khalaj River – from Gaizab to Dehrawood joining Helmand River
5. Tamazan River– from Daikundi to Gaizab joining Khalaj River and finally the Helmand.

Map: The districts of Uruzgan and the main rivers

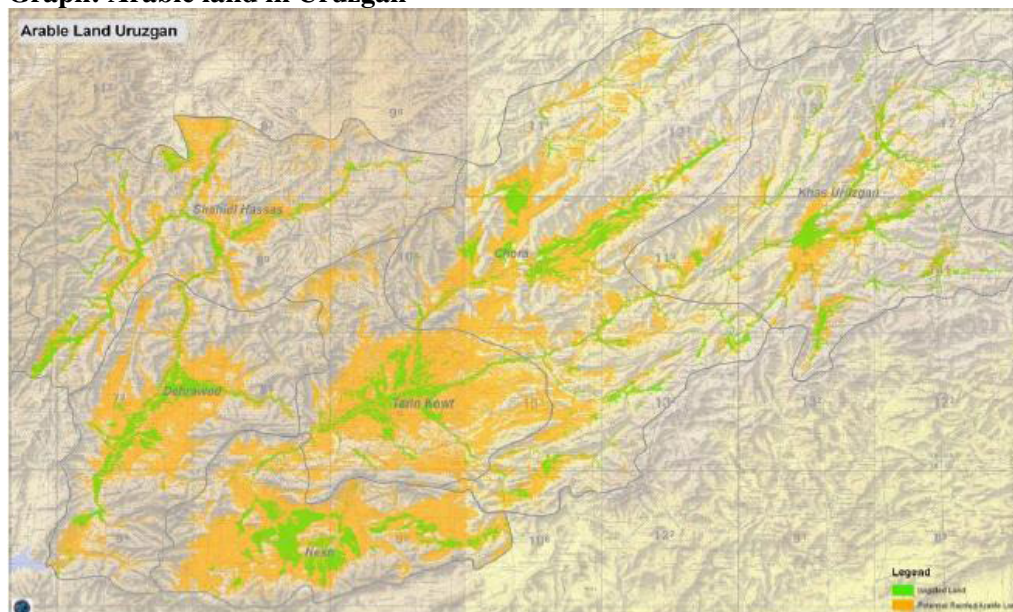


³ The information in this paragraph is from a background paper of DGIS on Uruzgan

3.3 Land use

The following map shows the land use in Uruzgan: green areas are irrigated; yellow are lower valleys with pastures and possibilities for rain-fed agriculture (in good years).

Graph: Arable land in Uruzgan



Source: ISAF/TFU/PRT, 2008. *Agriculture, Livestock and Natural Resources Management in Uruzgan*.

The data on the area of arable land available is confusing. The PRT briefing notes estimates that there are 80.000 ha of irrigated land and 40.000 of rainfed land in Uruzgan. Notes from the GTZ-project give the following numbers for the three main districts:

Land availability in three districts

District	Total land (ha)	Arable land (ha)	Arable land family (jerib)	Arable land p.p. (jerib)
Terinkot	161,935	7,530	0.44	0.34
Chora	330,209	9,401	0.74	0.64
Dehrawood	193,772	6,185	0.87	0.61
Total	685,916	23,116		

Source: GTZ project notes

If it assumed that on average 0.5 jerib of arable land is available per person, the total arable area would be 37.500 ha. So it seems the PRT briefing notes are too optimistic; maybe these data are based on a time when Uruzgan still included today's Dai Kundi province.

The farming system is fairly homogeneous throughout the province. Poppy is the main cash crop; except in the neighbourhood of Tiran Kowt. The exact coverage is hard to know; some estimates go up to 50% in some areas. Of the legal field crops wheat is the most important one followed by maize, beans (including lentils), cumin, rice, potatoes, onions and vegetables (tomatoes, cucumber, melon, watermelon etc.). The latter are important cash crops; as are the most common crops in the many orchards: almonds and dried apricots ('chakapara' fruits that dry on the tree). Other crops in garden plots include fresh apricots, peaches, apples, pomegranates and grapes. The production of industrial commodities is very small: cotton, sugar, sesame, tobacco and olives are scattered throughout the province.

No exact data are available on the area under each of these crops. Visual assessments from the plane suggests that the irrigated area can be subdivided in areas with sufficient water where a double cropping system of wheat and maize is dominant and areas with less irrigation water (higher on the river banks) where a single wheat crop is combined with less water demanding crops as legumes (beans, lentils, chickpea, etc.). Higher on the river banks one finds orchards (mainly almonds and apricots) with an undercover of grasses or even cereals or leguminous crops. There is some form of specialisation in the districts: rice is coming mainly from Dehrawood, Terinkot and Charchino, potatoes mainly from Khaz Uruzgan, and melon and watermelon from Dehra wood. Almonds from Uruzgan are famous and have a good market in Kandahar.

Most households fertilise their land: 29 % with animal manure, 16% with human excreta, two thirds of the people use fertilisers(67% Urea (av. 253 kg) and 41% DAP (av. 129 kg). Some 64% of households with access to fertilizer use this on field crops, 15% on garden plots and 21% on both fields and gardens.

The main market for Uruzgan farming products is Kandahar, from where it is further traded. The marketing as such is very poor, Kandahar businessmen buy their products directly in the villages, often using agents.

3.4 Land ownership

Like in many other parts of Afghanistan land ownership is a complicated affair. In par 2.2 the conflict over access to summer grazing areas between Kuchi and Hazaras has already been explained; it is a major political issue; in Uruzgan as well as at national level. When it comes to arable land, there are 3 categories of land owners: big land lords (> 100 jerib), medium land owners (10 - 100 jerib) and small land owners (1 - 10 jerib). Next there are many landless farmers working for these land owners. Different arrangements are used:

Labourers work for the land owner who provides them with shelter/housing and pays them whatever has agreed upon (on monthly or yearly basis) at harvest time.

In a *bazgari* (or partnership) the land owner gives his land in partnership to a farmer to work on it on the basis of agreement to give one-third, one-fourth, or one-fifth of the harvest to the farmer who cultivates the land of the owner. The ratio depends on the share of expenditures. When the owner covers all expenditures (fertilizers, seeds, tractor, fuel for irrigation etc.) and the farmer is only working, the owners get 4 or 5 shares and the farmers 1 or 2 shares. These arrangements are commonly referred to as share-cropping.

In *Ijara* (or lease) the farmer rents or leases the land for 1-2-3...5 years for a fixed sum of money or amount of product to be cultivated in the land (e.g. 100 kg of wheat/jerib/year). The farmer pays for all expenditures.

Families can operate in two modes at the same time; people can cultivate both their own land as well as work as sharecropper for someone else. The main decisive factor is whether one has his own house; if this is not the case one has to rely on a family willing to accommodate you in exchange for your labour. This labour is then poorly paid. Once having a house the next step to a better life is to have a pair of oxen; those who can do the land preparation get a much better deal as share cropper. The ultimate step to improve ones life is to become land owner. Land is said to cost about 8.000 USD per jerib ⁴(Ross et al. p. 20); a number

⁴ Ayubi et al., 2008. page 20

confirmed during the field work. No data on land transactions in Uruzgan are available, but at national level it is believed that virtually all land that is sold, is sold to people who already have land. Generally the poor are selling their land to the rich⁵.

There are few data on land ownership. The NRVA found that 38% of the households in the province own or manage agricultural land or gardens⁶. This is amongst the lowest in the country and an indication of the feudal character of society. According to the same study only 15% of the households have access to rainfed land and the average size was 5 jerib/family. For irrigated land the figures are higher: 70% has access to irrigated land and the average size was 4.2 jerib. All these data exclude Gizab. Assuming there are 55.000 families, the total area is 40.000 ha (7.700 rainfed and 32.340 irrigated). This is in line with the GTZ-data for the three main districts. Next some 49.000 households are reported to have a garden plot of 2 jeribs. This brings the total area of cropped land to 60.000 ha.

In Gizab a survey among 40 households (with 364 members) reported that 58% owned land, 12% was share cropper and 30% was absolutely landless. The 28 families with land, owned 122 jerib or 4.4 jerib/family or 0.34 jerib/cap.. Of the 122 jerib of crops, 84 jerib was under wheat, 20 with maize, 10 with onions and 7,5 with potatoes.

⁵ Alden Wily, 2004. Looking for peace on the pastures. Page 15.

⁶ NRVA, 2005. Table A 53.

4 THE LIVESTOCK SYSTEM

In the chapter first the data on the number of animals are discussed (4.1) and the two main livestock systems described (4.2) before the core-elements of the value chains are analysed: the inputs of fodder and feed (4.3), production and productivity (4.4) and processing and marketing (4.5). All this focuses on ruminants; mostly cattle, sheep and goats. Then par. 4.6. deals with all poultry issues, before the support systems are described in par. 4.7 and conclusion draw in the last paragraph: 4.8.

4.1 Number of livestock

Uruzgan used to be very rich in terms of livestock, every household owned a number of animals for family use. The drought of 1999-2004 however had a devastating effect on the livestock population; it is said that around 30-40% of the animals were lost due to a lack of pasture and fodder. The next table shows the number of animals in 2003 in the districts that constitute today's Uruzgan:

Number of livestock per district in FAO 2003 census

	Cattle	Sheep	Goats	Other rum.*	Total LU*
Tirin Kot	49,020	64,492	43,699	23,594	94,252
Chora	11,578	26,270	22,434	7,145	28,464
Dehrawood	54,686	35,919	38,842	18,531	88,169
Khas Uruzgan	24,898	57,085	40,200	10,448	54,803
Shahid Hassas	9,631	17,293	15,622	4,181	20,395
Gizab	19,771	31,473	58,591	8,230	46,014
Total	169,584	232,532	219,388	72,129	332,097

Source: FAO livestock census, 2003

* Other ruminants refers to horses, donkeys and camels. LU= Livestock Units; a way to calculate the total number of animals in a standard unit that equals one cow

In the NRVA of 2005 the number of animals was assessed as well. There Gizab was not included in Uruzgan. In the next table the FAO data and the NRVA data are compared.

Comparing FAO 2003 census data with NRVA 2005 data on Uruzgan (excl. Gizab)

	Cattle	Sheep	Goats	Other rum.*
FAO census on settled farmers	149,813	201,059	160,797	63,899
NVRA Settled	137,625	277,625	157,750	40,125
NVRA Kuchi	9,324	37,629	23,643	8,325

The data on cattle fit fairly well; the slight reduction of 8% might very well reflect the impact of the drought that came to an end in between the two assessments. The number of goats remained stable while the number of sheep increased with nearly 20% for the settled farmers. As we will see thorough this report, sheep seem to be the most attractive animals from an economic point of view. The reduction of other ruminants (camels, horses and donkeys) is also an indication of the difficulty of maintaining large animals at time of drought.

The NRVA data illustrate the differences between settled farmers and Kuchi: while Kuchi have 6.6 small ruminants per head of cattle, for settled farmers this is only 3.2. When Kuchi have larger animals, they prefer this to be transport animals (camels, horses, donkeys): the ratio between cattle and transport animals is 1.1 for Kuchi and 3.2 for settled farmers. The next table, based on NRVA data, illustrate these differences as well.

Percentage of households in Uruzgan owning livestock

Species	Kuchi	Rural	Average
Cattle	56	72	71
Oxen	33	41	40
Goats	56	45	46
Sheep	67	60	60
Horses	17	10	11
Donkey	44	36	37
Camel	39	3	6
Poultry	64	65	65
All species	83	76	77

Source: NRVA, 2005

Note: "rural" means "settled farmers"

We see that the percentage of families having ruminants is similar to the percentage of households having access to irrigated land. Surprisingly the percentage of settled families having cattle (72%) is higher than those having goats (45%) or sheep (60%). We also see that the Kuchi have much more often transport animals (camels, horses and donkeys) and more small ruminants (esp. goats); settled farmers have more cattle and oxen.

Obviously not all families have animals. According to the livestock census in 1998 in Uruzgan 16,440 families had no livestock; in 2003 this was slightly reduced to 15,366 (a reduction of 7%). At that time (2003) 8,523 families only had poultry. This means nearly 24.000 families, or 44% of all families did not have ruminants. According to NRVA data 23% of the families have no livestock at all and nearly 30% has no small- or large ruminants. In the next table the ownership per type of animal is specified.

The NRVA reports on the flock size as well: for those families that have animal they found the herd size to 3.1 heads of cattle; 10.7 sheep, 8.0 goats, 1.5 donkeys, 2.4 camels, 2.8 horses and 10.5 chickens. This data fit fairly well with the data of the FAO census.

The next table gives some more insight in the number of working animals and chickens.

Number of selected livestock species per family

	Cows	Preferred ploughing animal	Draft animals	Donkeys	Chicken
Tirin Kot	1.7	0.8	1.9	1.5	18.8
Chora	1.0	0.7	1.8	1.2	12.5
Dihrawud	1.2	0.5	0.9	0.6	13.0
Khas Uruzgan	0.9	0.7	1.9	1.3	4.8
Shahid Hassas	0.9	0.5	1.2	1.1	9.4
Gizab	0.8	0.6	1.2	0.8	5.4
Average	1.1	0.63	1.5	1.10	10.6

Note: the averages are simple average calculated by the author; so not weighted;

Source: FAO livestock census, 2003

During the FAO census 22% of the cattle in central Afghanistan was male: 15% mature bulls and 7.4% oxen. The latter means 12.500 oxen for Uruzgan. With two oxen needed to plough, only 6.250 of the 46.000 families (14%) is able to do the land preparation by themselves. As other animals are used for ploughing as well (bulls, horses, camels, donkeys). the number of 'preferred ploughing animal' per family is 0.63 (nearly 29.000 or 14.500 pairs). All in all

some 30% of the families can do the land preparation. The NVRA came to 19,700 oxen⁷ owned by 40% of the families. Probably there some bulls have been counted as well, as the total number of cattle was the same as in the FAO census. Taking these data together: about one third of all families is able to do the land preparations by animals. This is important for share-croppers as in this way they get a better deal (50:50) when sharing the harvest. At the same time in Terin Kowt the number of tractors is high and much of the land preparation seems to be done by these. Probably this is the same in the centres of Dehra Wood and Chora while ploughing by oxen is more common in upland areas and distant districts.

The average number chickens is 10, with a marked differences between Tirin Kowt, Chora and Dehra Wood on one side and the other district on the other side. This might be a response to a more lively market for eggs in these more densely inhabited areas.

In the context of the DCU small survey among 40 households were done in Uruzgan (Tirin Kot and Dehrawood) and in Gizab. The survey in Gizab registered that 70% of the families used animals for transportation (27 donkeys, 16 cows, 6 camels and 1 horse). Nine families (22%) owned 1-2 cows for milk production (at the time of the survey, November 2008, 3 of them produced 2 litre/day). Seventeen families (42%) owned 207 small ruminants (63% females); so 12.2 per family with small ruminants, 5.2. per family and 0.57 per capita.

4.2 Livestock management systems

There are two main livestock management systems:

- an extensive grazing system in which animals are kept on communal pastures and waste lands. The most suitable animals for this are goats, sheep, camels, horses and donkeys. This system is used by the Kuchi most of whom have a semi-nomadic lifestyle.
- an semi-intensive feeding system in which animals are kept and fed in- or near homesteads in irrigated areas. The most suitable animals are cattle and sheep. The cattle are multi-functional, providing manure, meat, milk and draught power to its owner. Sheep are fast growing animals that provide wool and meat (with good prices). Goats can be used as well but are more difficult to control.

Of course this distinction is not 100% strict; farmers living in the village among irrigated field will keep their animals most of the time inside their compound ('qala') or tethered outside it; yet sometimes they can take it for a walk to grazing along irrigation canals or ditches. And some animals in the extensive system will be tethered as well from time to time and fed by the farmer and her family.

In winter the systems are coming very close together: those roaming around with their animals in the hills and mountains come to their permanent houses and will stable their animals like the settled farmers do. They might only be slightly difference in the sense that the type of winter feed that they can offer to their animals will be poorer.

In the overall livelihood system there is a clear task division between the two sub-systems: the extensive system takes primarily care of the multiplication; especially of small ruminants. The intensive system fattens the animals before they are marketed and slaughtered.

The overall productivity of the system depends on the amount of fodder and feed available; particularly in the winter when the animals have to be stall fed for 3-4 months. As the amount of feed differs tremendously between the years (depending on the weather) and between the

⁷ Table A 71 on page 158 and Table A 67 on page 154

different areas (grazing area versus irrigated area) it is of crucial importance to adjust the number of animals in time to the amount of fodder available. This is particularly important for the extensive farmers as their supply of feed is more instable than that of farmers in irrigated areas.

The adjustment is done in two periods: before winter one has to sell off all animals for which one does not have enough feed. This is a difficult decision as one never knows how long and severe the winter will be. Keeping too many animals can mean that they all suffer towards the end of the winter off malnutrition. They will lose weight, get sick easily, they might get an abortion and they will not get pregnant. On the other hand: keeping too few means selling more animals for a low price in autumn, while one has less animals next spring when cheap fodder becomes available on the communal lands.

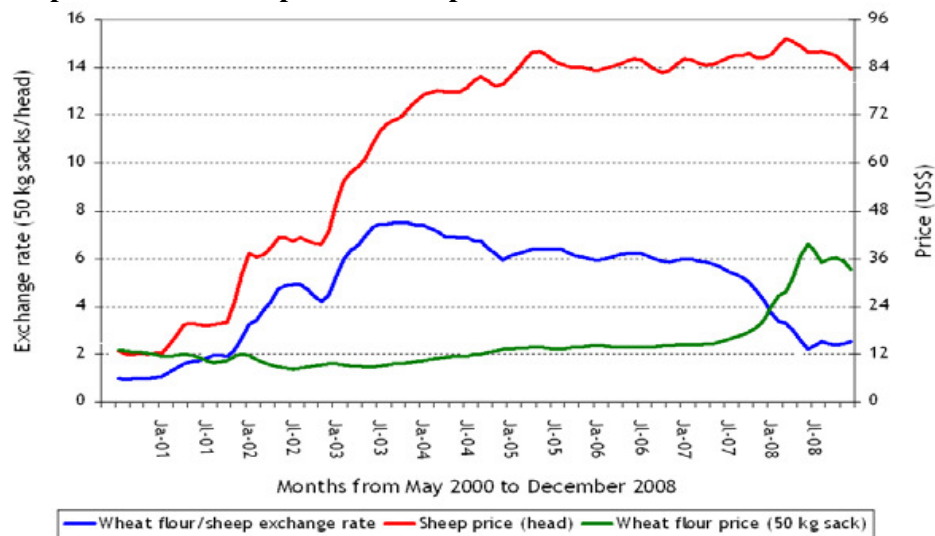
Spring is decisive as well: for intensive farmers the question is how many animals they can purchase (or keep) for fattening. This refers mostly to sheep. Extensive farmers have to decide how many animals will be able to survive on the summer grazing grounds. Often in spring all are eager to have a maximum number of animals and prices are high.

Next to the intimate relationship between the two systems in Uruzgan, there is the exchange of animals between Uruzgan and other areas. In years of good rainfall more fodder and feeds is available in Uruzgan and additional animals are imported to make better use of these; in other years the reverse is the case. So while in summer 2009 sheep were imported (even from far away areas like Kunduz) in other years they can be sold. It is also possible that some animals are imported while others are exported; while sheep were imported in 2009, goats were exported. This means that the capacity of the extensive system to produce young goats was too large for the intensive system to absorb; or formulated in another way: when the intensive farmers have sufficient feed they prefer to fatten sheep rather than goats.

On top of all this, fodder and feed are moved around as well. In 2009 some farmers in Uruzgan have done well, so they are able to buy fodder from other areas; e.g. maize from Helmand and wheat straw from Kandahar. Farmers, especially Kuchi, are even importing fodder from Pakistan. Others sold fodder; some even to Zabul, Ghazni and Kandahar.

A special sub-system is winter fattening schemes of migrants; people who worked in summer in construction schemes in Kabul return home for winter together with some sheep and the fodder needed to fatten them. In this way they make optimal use of the labour in the family in the winter season; in spring they sell the animals (except one for home consumption).

On top of the balances between the extensive and intensive livestock systems and between provinces, there is also a balance between crop- and animal production. The next graph shows the long term ratio between prices of livestock and wheat. It changed dramatically over the last eight years. While in some years one sheep equals 2 bags or even less of wheat flour; in other years it was up to 6-7 bags. The low prices in the first half of the decade show the severe drought that forced livestock owners to sell animals at any price. In 2008 the sheep prices remained stable but wheat prices increased sharply due to general shortages on the world market. In 2009 wheat prices in Uruzgan halved while prices for meat remained stable or increased slightly.

Graph: ratio between prices of sheep and wheat flour

Source: Thomson, 2009. He modified data from WFP-VAM

4.3 Fodder and feed production

The basis of any livestock system is feeding the animals. When we talk about ruminants, four sources of feed are found in Uruzgan:

- grazing areas, either communal pastures in the mountains or road- and channels sides and waste areas on river banks near villages.
- fodder crops: alfalfa (a perennial crop) and Persian clover (annual crop). As leguminous crops they fix N; so they enrich the soil and need limited fertilisation
- crop residues, mainly straw of wheat and barley and maize leaves (maize stalks are burnt)
- concentrate: 50% of the maize grown as a second crop, is used for livestock. Also barley and oats are used for animal consumption.

Grazing areas

The productivity of grazing areas depends mostly on the rainfall. It can be enhanced by some soil conservation works like small check dams or ridges. Unfortunately little is known about the productivity of the grazing areas in Uruzgan. What is clear is that the traditional grazing area of Hazarajat is not accessible for Kuchi's since 2002. This means that neighbouring areas (Khas Uruzgan; Ghor, Zabul) might face the risk of overgrazing and, consequently, erosion. On the other hand the number of animals has been reduced dramatically during the drought in the first half of this decennium. What the balance is at this moment is hard to assess. Next to this, any assessment is complicated as any balance will be a dynamic one between the number of animals, the weather and the vegetation (seed bank etc.)

Fodder production

In irrigated areas, mostly double cropping is practiced with wheat as spring crop; maize is the most popular second crop. Persian clover is a potential second crop as well. Alfalfa is a perennial leguminous crops that is either grown in pure stands or intercropped in the early stages of orchard development.

As a perennial crop Alfalfa ('*rishka*') can produce large amount of high quality fodder for many years; generally the first five years are most productive. At the time of planting farmers apply manure on it; later they sustain the productivity with 2-4 rounds of DAP per year.

Farmers claim they can cut it monthly or 6-7 cuttings per year (at lower altitude). Sutte mentions the same⁸. DCA says it can only be cut 3 times; maybe this refers to higher altitudes (>2000 m). Farmers said that projects introduced new alfalfa varieties, but none of these were better than what they have. One jerib of established alfalfa is rented for 30 - 40.000 Kalder⁹ per year. One cutting can be sold for 5-6.000 Kalder (suggesting 7 cuttings is feasible).

Persian clover ('*shaftal*') is very popular as it is sown in autumn and can be harvested 2-3 times in spring and summer; afterwards it is still possible to sow a second crop (e.g. maize). It is well suitable for hay making. Afghanistan (particularly Ghazni area) harbours some very nice varieties which, according to Sutte, are superior to Pakistan varieties. Farmers said that new varieties were introduced in Uruzgan that they considered an improvement over traditional ones. If sufficient irrigation water is available *shaftal* can also be grown as a second crop after spring wheat; it's seeds being broadcasted under the standing wheat. Farmers say *shaftal* is hardly ever sold.

The area devoted to fodder production is very limited, as people prefer wheat for food security as well as for income. Farmers estimated the gross margin of one jerib with wheat followed by maize as a second crop at 63.000 Kalder. Of course growing wheat and maize does involve some more cash costs (e.g. fertiliser) as well. Poppy and orchards generally lead to higher incomes as well. Additional disadvantages of alfalfa are that it requires a lot of water and it makes the farmer less flexible in his crop planning. It is estimated that the area under fodder these days is some 5%; down from some 10% in the traditional farming system. In the focus groups discussions farmers from Terin Kowt claim that more alfalfa is grown in distant districts like Khas Uruzgan. This could not be verified.

Crop residues and straw

The most important source of animal feed in quantitative terms is wheat straw; also straw of barley and oats is used. There is an active market in wheat straw, some is exported to Kandahar. With rather modern wheat varieties used the grain/straw ration is about 1 (so for every kg of wheat leads to one kg of straw a by-product). In 2009 the price is 15 Kalder/man, while in 2008 it was nearly double: 25 Kalder/man.

Maize and other concentrates

In the FAO livestock census of 2003, 8.5% of farmers in Uruzgan reported to produce maize, against 24% at national level. Another 26% reported to purchase maize. In summer 2009 the price of maize concentrate in Uruzgan was 60 K/man; farmers expect the price to come down to 50 K/man at harvest time (Oct.) and from there it will double to 100 in winter. Generally maize is cheaper in Helmand and Kandahar, so farmer try to purchase it there for winter. The next table, based on FAO-mail price bulletins supports this.

Retail prices (Afs/kg) of maize and wheat in Uruzgan and neighbouring provinces (2008-2009)

	Oct.	Nov.	Dec.	Jan.	Feb.	Mar	Apr.	May	Jun	Jul	Aug.
<i>Maize</i>											
Uruzgan	25	23	28	22	20	19	19	15	16	18	16
Helmand	16	11	11	11	18			10	10	10	11
Kandahar	19	19	18	17	18	11	11	11	12	12	12
<i>Wheat</i>											
Uruzgan	31	31	29	26	25	25	25	24	22	19	18
Helmand	30	30	30	23	22	22	22	20	18	15	16
Kandahar	31	31	30	28	26	23	23	20	17	15	16

Source: FAO-MAIL Agricultural Commodity porce Bulletin from the FAO website

⁸ Sutte, 2000. *Hay and straw conservation-for small scale farming and pastoral conditions*. FAO, Rome

⁹ In Uruzgan the Kalder is the monetary unit; actually it is a Pakistan rupee. 80 Kalder or Rupee = 1 USD.

These prices can not be compared directly with prices mentioned above as this concerns retail prices of maize for human consumption; above farmers talk about maize for animal consumptions (including cobs etc.). Yet, the data show a price increase of 50% (from 16 Afs./kg in summer to 24 Afs./kg in October – January (and probably February)). The table shows that prices in Helmand and Kandahar are much lower. Part of the difference can be explained by transport costs: 2 Afs./kg from Kandahar or Helmand to Terin Kowt.

Some calculations on feed production and requirements

Despite the limited data available we can make an educated guess on the overall balance between fodder and cows. This balance is simply achieved by multiplying the average number of animals to be fed with the amount of feed they need and compare this with the average area a farming family has with the average yields in terms of animal fodder.

As for the number of animals we assume that a farmer on average has 3 cattle, 8 small ruminants and 1 other large ruminant (horse, donkey, camel). The amount of fodder and feed they need depends much on the size of the animal and its stage in the life cycle (young, mature, pregnant, lactating etc.). Uruzgan farmers indicated in focus group discussions that their cows need 10 -12 kg of feed per day. This is confirmed by this table from Roe (2009).

Measured hand-fed rations per head of cattle in different areas of Afghanistan

Season	Alfalfa & Clover	Grasses	Hay	Bread	Oil seeds (& cakes)	Barley	Bran	Maize seed/straw	Straw
Autumn	1.62			0.73	0.52	0.06	0.06		2.72
Winter	5.83	1.55		0.01	0.01	0.15		0.05	1.99
Spring	2.66	0.25	0.78		0.06	0.50	0.01	2.4	2.21
Summer	0.07				0.03	0.01	0.17	0.40	1.32

Source: Roe, 2009. *Challengers and Opportunities for Strengthening Licit Agricultural Livelihoods*

This table gives the amount of feed provided by the farmer; it excludes grazing by animals on pasture, stubble fields etc. So the rations in spring and summer are much lower than in winter. The crucial data are however those on the situation in winter. When nearly all animals are fully hand fed. We see that in winter per cow nearly 9.5 kg is given. Slightly less than the 10-12 kg estimated by Uruzgan farmers, but it is generally of much better quality than in Uruzgan; especially in Terin Kowt where the vast majority of the feed is wheat straw which is a much poorer feed than the alfalfa and clover that dominates the winter ration in this table.

The table is not very clear on the amount of concentrates, particularly maize that is used. In autumn and spring they use 0.5 kg of resp. oilseeds and barley. In spring they add 2.4 kg of maize seed/straw; but it is not clear what the ration between seeds and straw is. Farmers in Terin Kowt claim 40 man of maize is needed per head of cattle to get them through winter. This equals 2 kg/day; in the absence of quality feed like alfalfa and clover this substantial higher amount is indeed needed to balance the very poor quality of the dominant wheat straw.

All in all, it is assumed that per animal 10 kg of fodder and 1.5 kg of maize is needed to get them through winter. With a winter of 90 days this means 900 kg of wheat straw (200 man) and 135 kg of maize (30 man). As the average herd has 4 large ruminants, the total amounts needed is 3.600 kg of wheat straw and 540 kg of maize.

The next table shows that in winter small ruminants are given about 1 kg of feed, mostly alfalfa as well as major portions of grasses and maize seed /straw

Season	Alfalfa/ Clover	Grasses	Hay	Bread	Thorns/ Leaves	Barley	Bran	Maize Seed/straw	Straw
Autumn	0.31				0.03	0.07			0.56
Winter	0.39	0.28						0.27	0.02
Spring	0.21		0.07			0.06		0.21	0.09
Summer	0.01				0.05	0.01	0.01		0.28

Source: Roe, 2009. *Challengers and Opportunities for Strengthening Licit Agricultural Livelihoods*

In Uruzgan farmers said 5 man of maize is needed to get one small ruminant through winter. This equals 250 gram per day for 90 days. Next they say they need 20 man for fodder per head (10% of what cattle need). With 8 small ruminants, an average farmer needs a total of 700 kg of wheat straw and 180 kg of maize.

So the total need is 4.300 kg wheat straw and 720 kg maize. This is the minimal amount for pure winter feeding; the tables from Roe show that also in spring and autumn substantial supplementary feeding is needed. The FAO survey in 2003 found that supplementary feeding is done for 6.3 months per year in Central Afghanistan.

How much fodder and feed can the average farmer produce? With on average of 4.2 jerib per family of irrigated land and a garden of 2 jeribs¹⁰, one can assume that on average three jerib (0.6 ha) is cropped with wheat¹¹. With a yield of 2 tonne/ha¹² and a grain/straw ration of 1:1.25 each family has 1.500 kg of wheat straw. We assume two of the three jeribs are double cropped with beans or maize for animal production. We calculate with maize here. Two jerib of maize with 2.5 ton/ha and 50% (farmers assessment) to be used for animals, gives 250 kg of maize seeds (incl. cobs). Another 500 kg of leaves is suitable as fodder.

All in all a farmer can assemble 2 tonnes of poor quality fodder and 250 kg of concentrate. If all maize is used for animals, the concentrate can be doubled to 500 kg. Although these are only rough estimates, it is clear that even an average farm can not feed the average herd, even if this herd grazes as much as possible on stubbles, weeds, irrigation canals and waste lands. This means the situation is worse for the many farmers who have less irrigated land and substantial orchards that produce less fodder (although tree prunings can be an important source of rather good quality fodder for small ruminants in autumn). Indeed there are indications that the number of animals per family is lower in areas with many orchards, like Chora. During fieldwork most farmers expressed the need to buy winter feed; even in favorable years as 2009. In years of drought this is much more; for example in 2002 and 2003 resp. 86% and 81% of farmers reported to purchase supplementary feed (data of the FAO census). Roe (2009) reports the same: 70% of all livestock owners purchase fodder and feed.

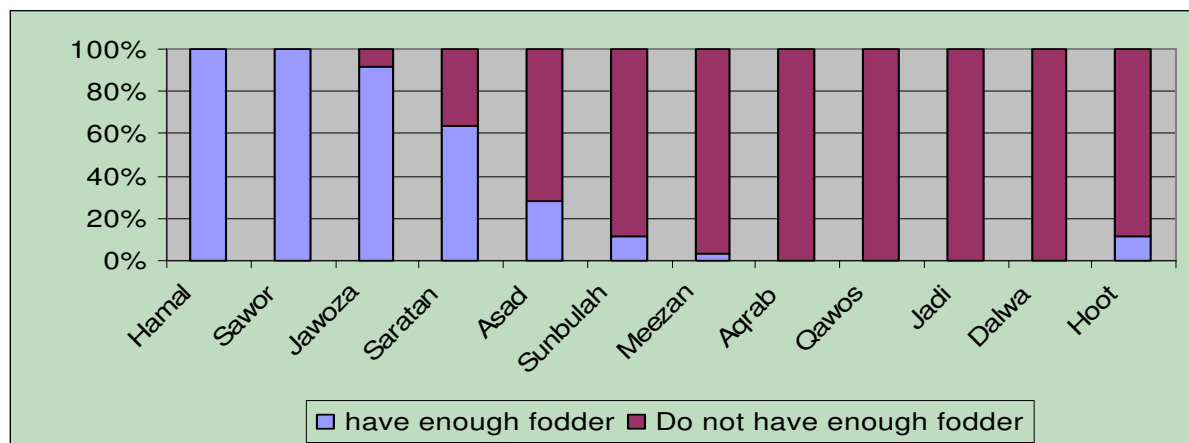
The next graph from the DCA livestock baseline information on Uruzgan shows that *all* farmers claim not to have enough fodder for four months per year; the winter months¹³.

¹⁰ NRVA, 2005 data on Uruzgan

¹¹ See: PRT socio-economic briefing, May 2009.

¹² Assessing average wheat yields under widely different circumstances is not easy; but the mission feels that the reported av. yield of 1.13 tonne/ha is not realistic.

¹³ See DCA, 2009. Livestock Baseline information - Uruzgan



Finally, the above is a purely quantitative exercise; things get worse if one realises that wheat straw is of too low quality for cattle to survive on. If cattle is fed on dry straw only, even the amount of fodder that a cow is able to take in (physically) will not be sufficient allow for any (significant) milk production. Uruzgan farmers are well aware of this problem and try to increase at least the palatability of the straw by soaking it in water and adding some maize flour to it. When talking about smaller animals like sheep and goats, the quality is even more important. They need quality feed; therefore their feed ration in winter contains more maize than that of cattle.

4.4 Production and productivity

Cattle

It is very difficult to determine the productivity of animals in Uruzgan. Farmers do not measure yields; virtually all milk is used for calves, home consumption or home processing. Farmers (actually the women) milk their cows three times per day: in the morning they get about half of the daily yield, and at noon and in the evening one quarter. As no details on Uruzgan are available, the following data from Ghazni and Herat are used to give an indication of the milk production in Uruzgan as well.

Table: Dairy productivity in neighbouring areas

	Ghazni	Herat
Age of cow(years)	4.6	5.5
Age at first parturition(years)	3.1	3.7
Estimated number of parturitions	1.6	2.3
Actual number of parturitions	1.4	1.9
Calving interval (months)	28.0	15.1
Expected lactation length(months)	7.6	10.8
Peak milk yield (litres/day)	5.0	4.3
Age of youngest calf(months)	3.1	3.5
Age of bull calf at sale(months)	21	26
Price of calf at sale (Afs)	13,285	10,000

Source: Thomson, 2009

A rule of the thumb is that the total lactation yield of cows is 200 times the peak yield. In this case this would lead to some 860 – 1000 litre per lactation. At national level most authors also estimate the milk yield at 750-1000 litre per lactation. The DCA survey in Uruzgan among 40 farmers reported average maximum milk production of 4 l./day. Again in the same

range: 800 l/lactation. Unfortunately in most cases it is not known whether milk consumption by the calf is included or not. It is assumed that these figures represent the net available milk for the family. Based on a yield of 800 litres and a price of 40 Kalder/l, the milk of an average cow is worth 32.000 K/lactation (400 USD).

Although milk production is very low, the biggest problem is the long inter-calving period (the time between two births). A CNFA survey in Afghanistan in 2002-2003 showed that 60% of adult female cows produced milk in the year of the survey¹⁴. In the table above cows in Herat give birth every 15 months; those in Ghazni only once in every 28 months! And the first birth only comes after 3 – 3.5 years. We have seen that in Uruzgan only 1.1 (or 33%) out of the 3.2 cattle a family owns are cows. Data on the herd composition in central Afghanistan (incl. Uruzgan), show that the 50% of the herd were mature cows and 44% was older than 3 years. Yet the number of animals younger than 1 year was 18%. This suggest a very low fertility (or all calves are sold immediately). Indeed the percentage of cows calving per year was only 36%! No data are available on Uruzgan, but one can safely assume that calving intervals of 18 - 24 months are quite normal. A number of causes for this can be identified:

- When cows are sick or malnourished, they do not come in heat and even if they do they show less signs of it. Malnourishment can be caused by a general lack of fodder or by the lack of specific mineral like K, P or Selenium.
- Not all farmers are able to detect when cows are in heat; this is partly caused by the fact that detecting heat is more difficult when cows are kept in a small group in the backyard of a house
- There are insufficient bulls in the village, as it is not attractive to keep a bull because people do not pay for the services of the bull. In Tarin Kowt farmers said they pay 500 Kalder per service and another 500 when it was effective

The poor nutrition of the animals is most likely the most important cause. Farmers do agree with this notion; although it is not clear whether the other causes come into play as well. Some farmers called for more bulls in the village.

It is clear that due to the poor feeding the growth rates of animals is very low and often the animals are stunted (e.g. this was observed on the livestock market in Tirin Kowt). So the efficiency in terms of meat production is low. Elsewhere farmers tried to fatten bulls (near Kabul), but the conclusion was: *The growth capacity on intensive feeding of the local breed animals was not high enough to justify the intensive feeding*¹⁵.

Thomson (2007) however provides a different example: *A farmer in Selimi market purchased six month old calves for 6,000–7,000 Afs, fed them for 12 months and sold them for 14,000 Afs. He made a profit of 2,000– 3,000 Afs after feed costs. Just five or six farmers in his village grew and finished animals but many others would do so if they could get credit to purchase animals and feed*¹⁶.

As Thomson rightly points out finishing calves and sheep is a risky affair as prices ratio's can change quickly when rains are better or worse then expected. When all expect sufficient fodder in summer, prices of animals can remain high in spring, even when supply is high. If rains are then interrupted a shortage of quality fodder can be manifest quite quickly and prices of sheep will drop (as people loose confidence they can be finished properly). Those having calves usually have more money and take a longer time perspective; so they can wait till autumn when prices can rise again.

¹⁴ From: ALTAI, 2007. ASMED Phase 1. Market Information.

¹⁵ Source: ADB, 2006

¹⁶ Thomson, 2007. Marketing of livestock. Page 17.

Sheep

Data on sheep productivity in Uruzgan are scarce as well. Again we start with data collected elsewhere.

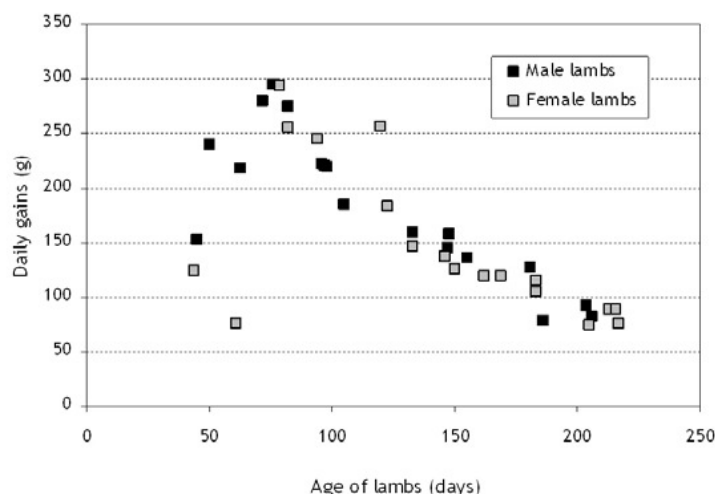
Table: Productivity of sheep in Nangahar

Parameter	Average	Range	N
Number of does owned per family	1.3	1 - 2	10
Mean age of doe in August 2008 (years)	3.4	1.5 - 6.0	10
Age of doe at first parturition (months)	1.7	1.5 - 2.0	7
Actual number of parturitions	2.5	1 - 5	10
Estimated lactation length (months)	5.5	2.5 - 8.0	10
Estimated peak daily milk yield (litres)	1.8	1 - 2	10
Kid mortality to 2 month sold (%)	22	0 - 50	10
Mean age of kids at death (months)	3.5	0 - 6	4
Age of last doe to be sold (years)	13.9	6.0 - 48.0	8
Price of doe at sale (Afs)	1,682	1,000 - 2,250	8
Mean age of kids at sale (months)	8.5	6 - 12	23
Price of kids at sales (Afs)	1,656	708 - 2,167	23

Source: Thomson, 2009

The fertility in this herd was quite OK, with one parturition per year and of prolificacy of 1.5 (so on average 1.5 lambs per parturition). The mean age of the last doe to be sold was 13.9 months, a surprisingly young age, the main reason being a need for cash. Kids ranged in age from 6 to 12 months at sale, and they had an average sales price similar to that of the last doe sold. Thomson assessed the mortality rate of 22% as too high, although he also recognises Schreuder et al. reported high mortality in kids. A more detailed questioning of owners by Thomson about the progeny of each doe, suggested a mortality rate of 11 percent. Data in Roe, 2009, suggest a mortality rate in 2006 of about 20% for goats and even 30% for sheep!

Lamb fattening is attractive for settled farmers. Thomson reports on lambs that were monitored from March until August. The next graph shows the result.

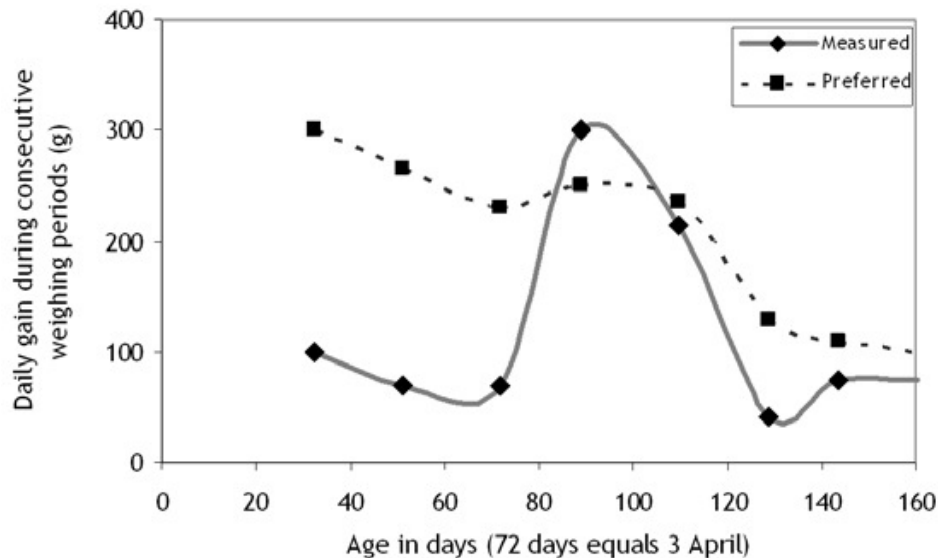


Daily gains range from 200-300 gram (both male and female) in the first 100 days¹⁷. After this gains are getting less because the gain increasingly includes fat, which has a much higher energy density than the lean-body mass (muscles) that constitutes the initial growth.

¹⁷ The low values in this period are of 3 lambs that were sold at 50 days, maybe due to sickness (note of Thomson)

Many lambs are sold at reaching 3 months of age or even earlier as farmers need the cash. Thomson remarks that although selling young lambs lowers the potential added value, it creates an opportunity to convert ewes' milk into yoghurt, which adds much-needed protein to the family diet. Surplus yoghurt is converted into butter and air-dried yoghurt (qurot), which can be stored for use in winter, sold when cash is needed, or both.

These data and others in Thomson's report show that management matters; lambs of some farmers gain 50% more weight per day than lambs of other farmers. The next graph explores these differences: it shows the daily gains of lambs in villages in Ghazni Province.



Source: Thomson, 2009. *Research and Development for Better Livestock Productivity*.

The graph shows that before day 72 (3 April) the measured gain per day is much less than the preferred gains (gains based on an optimal scenario). This is due to the low milk yield of ewes, caused by their poor feeding. The rapid gains in April coincide with the spring growth of pasture; this allowed lambs to recover some of the growth lost earlier. Thereafter daily gains were low, since the pastures start to dry up. The area between the measured and preferred curves shows the additional daily gains that can be expected in an improved production system. A rough estimate could be that lambs can gain an additional 8 kg (40 days x 200 gr/day). With mutton meat at 220 Kalder/kg, this represents a market value of 1760 Kalder or 22 USD.

A farmer in Urugzan explained how he fattens lambs. He bought rams from Kuchi to fatten them in summer and sell them in autumn. He has two systems;

- buy 1 year old rams in early spring (Febr.) for 3.000- 4.000 Kalder. Fatten them for four months and sell them in June at 7.500.
- buy rams of 3-4 months in June for 2.800 Kalder and fatten them until autumn. He hopes to sell them for the double price: 5.600 Kalder.

He needs 8 man of maize per head for fattening (equals 0.3 kg/day): this costs 640 Kalder, and some shaftal and straw. The price of straw is 15 Kalder/ man, so maybe another 360 Kalder is invested in roughage. So his gross margin was 3.000- 4.000 Kalder and his direct costs for feeding only 1.000 Kalder. Indeed a very profitable exercise: 25 – 40 USD per animal. This is similar to the 33 USD profit Thomson (2006) found for fattening lambs for five months (from mid-June to mid November).

Sheep produce milk as well; a small survey by DCA found that they give 1.9 l/day (similar to the 1.8 found in Nangahar). With a lactation of 160 days this would be 300 litres. It is not clear how much of this is for the lambs; probably they already had their share. Farmers in focus groups discussions said only Kuchi have milking sheep. Settled farmers focus on fattening sheep.

Goats

Data on goat productivity are even more scarce. The main value of goats is their capacity to survive in harsh environments; their meat value is limited as the price per kg is lower and so is their capacity to grow fast. They do however constitute an important source of milk; in Kandahar 15% of all milk and yoghurt on the market is from goats¹⁸. The small DCA survey among 40 farmers showed that lactating goats produced 3 l/day (maximum); Thomson gives lower yields of a few goats that were closely monitored. One 'improved' goat managed to get 3 l/day, but the others ranged between 2 -2.5 l/day. The length of the lactation is another major determinant; generally goats have a longer lactation period than sheep: of up to 200 days (6-7 months). The milk of the first 75 days is for the kids; with a yield of 1.5 l./day for the remaining period total lactation yield is 200 litres. This is much higher than the ADB report (2006) with an overall yield of 60 l/year per head; with 80% does and one lactation per year this is 85 litres per lactation.

In Uruzgan there is a small number (people say a few hundreds) milking goats. These are Sistani goats that people took with them when they returned to Uruzgan from exile in Pakistan or other provinces in Afghanistan. People claim can produce a maximum of 5 l./day and have a lactation of 7 months. A conservative estimate of their lactation yield would be 375 litres (150 days of 2.5 l./day). The price is said to be 8.000 -12.000 Kalder (100 – 150 USD). Their bodyweight is 8-10 man (36-45 kg); about double of the local goats.

This is in line with Fitzherbert¹⁹: *So-called 'American' milking goats are popular as they are inexpensive to feed compared to cows, they lactate for up to eight or nine months, and are capable of producing 3–4 or more kg of milk a day at the peak compared to possibly 1.5 from the native goats.* Note that the type of milking goats Fitzherbert refers to is different (read: potentially more productive) than the type of milking goats people in Uruzgan have.

Farmers in Uruzgan told that some of them were trained in collecting and cleaning cashmere, but that finally no buyer turned up.

4.5 Processing and marketing

Milk

Milk ('*sheede*') is normally not traded. People drink at home or give it away. Most people do not know the price of milk. Even the unit of expressing the price of milk is unclear. Some use 'paw' for this (3 kg) other 'man' (4.5 kg). Selling milk is not considered 'halal' by some Muslims and it was forbidden under the Taliban regime; yet during fieldwork farmers denied that it was not allowed to sell milk. It was simply hardly done. To add more value the milk is heated and a yoghurt culture ('*maya*') is entered to make yoghurt ('*maste*'). This makes the product tradable, although the price is not much higher.

By shaking the yoghurt for 8-10 hours in a clay-jug, (locally called '*jak*', *Kuchi use goatskins for this*) or by using a separator, one gets butter ('*kuch or ghor*' in Pasthu; '*maska*' in Dari)

¹⁸ ALTAI, 2007. ASMED Phase 1. Market Information. Sector Analysis: milk and yoghurt

¹⁹ Fitzherbert, 2007. Livestock Feed and Products. AREU. Page 32.

and buttermilk ('*shrombe*'). The butter can only be conserved for a few day (3) and often it is turned into ghee ('*zer chari*') by heating it further so that it clarifies. This can be stored a long time, but it is not traded as it is considered bad for one's health (the fat increase blood pressure). So only hard working people eat it (e.g. Kuchi). Buttermilk is a very popular; with some water added to it, as well as some herbs (e.g. Mint).

Yoghurt can also be transformed into a product locally know as '*chakka*'. It is simply put in a hanging bag of cloth so that all liquids drain off. It has a good market in Kabul, but locally it is not popular. Locally people dry it and then make small balls or rolls of it: 'qurot'. This is the most tradable dairy product: it can be stored for a long time and people like it. It is the main dairy product of Uruzgan and exported to Kandahar and on to Pakistan.

Making butter by separating the butterfat form the fresh milk is rarely done as it leads to very expensive butter; rather than separating the butterfat, most people dilute it by adding water to the milk. Once that is done, it makes no sense so try to concentrate the fat again. So butter is very rarely made; only in some rich families that can afford to use their own full milk.

The few data available on dairy consumption and markets stem from a survey in 2007²⁰; it shows that in Kandahar people consumed 0.31 litre of fresh milk per week; 23% of this was from small ruminants; 15% from goats and 8% from sheep. Yoghurt consumption was 0.61 litre per week; 22% of this was from small ruminants: 14% form goats and 8% from sheep. Of those eating yoghurt, 59% said they made it themselves (from fresh milk they bought) while 34% bought it form a 'corner store'. These probably refer to Kandahar town and only to those who buy milk, so nothing can be concluded about total consumption. Still it is an indication of the importance of yoghurt in the consumption and marketing and of the importance of small ruminants.

Prices of dairy products are hard to get. A major problem is that no standard are used in the trade. Yoghurt in Terin Kowt seems to range from 200 K/paw (a local unit of 3 liters) in summer to 400 K/paw in winter. The price of qurot is more stable: 800- 1000 K/man.

The limited fresh milk sold in Tirin Kowt, fetched 200 K/paw (= 3 litres) in summer 2009; in winter it is 250 K/paw. Milk powder from Ireland, sold in Terin Kowt centre costs 450 K/kg; with a normal dilution of 1:8 this is 56 K/kg. The FAO price bulletin does not give a milk price for Uruzgan but for Helmand and Kandahr it ranged from 39 - 44 Kalder/liter (summer 2009). In villages outside Terin Kowt the price is 170-180 K/paw.

In Terin Kowt virtually the only market for dairy products are the restaurants. There are some 30 of these in town. The biggest has a turnover of 40 – 50 l/day; most are limited to 10-15 l/day. So the total restaurant turnover could be some 400 - 500 l/day. In winter it will be less; so maybe the annual turnover could be some 100.000 liter; for this some 100 -150 cows are needed.

According to ADB (2006) 100 liter of milk will give 3.5 kg of butter and 8.5 kg of qurot. In Uruzgan, this would give an income of 470 (= 3.5/4.5 x 600 K/man) for the butter and 1.700 Kalder (8.5/45 times 900 K/man) for the qurot: in total 2.170 Kalder for 100 liter of milk; or 0.27 USD/l or 13.5 Afs/kg. This is some 25% higher than calculated in 2006 by van Engelen. (ADB, 2006; p. 24). An income of 22 K/liter is similar to the 20 Kalder/l. Kuchi demand for summer-milk collected from them in the mountains.

²⁰ Source: ALTAI, 2007. ASMED Phase 1. Market Information. Sector Analysis: milk and yoghurt

Meat

Selling off (small) ruminant follows the season: in early spring they reproduce (cows are much less seasonal and in this way complementary) and as high quality fodder becomes available farmers keep as many small ruminants as possible for 3-4 months when the growth rates are reducing due to lower quality fodder. So in summer farmers sell off the (semi-) mature rams; also because they need cash. Then in autumn farmers have to assess sharply how many animals they can keep in winter; old or (potentially) less productive animals have to be culled as otherwise they would eat valuable fodder in winter without repaying it with milk or off-spring in spring. So it is of utmost important to assess correctly in autumn whether animals are pregnant or not. Those which are not, are to be culled.

Surplus animals in Terin Kowt can be taken to the livestock market on every Monday and Thursday. This market has been removed from Terin Kowt-town to a site on the outskirts; traders rightly complain about this as there is no shade and no proper water (the pump produced too salty water for the animals). The association of livestock traders has pleaded on several occasions with local authorities for a more appropriate place, but so far no results. One of the problems of the butchers is that authorities like the ANA (Afghan National Army) tends to build up huge debts with them; one mentioned 4.000 USD as an example.

Eight licensed butchers are working in and around the Terin Kowt-market; they would like to have a separate place as butchers, but the municipality has not provided them with space. Two or three more people operate without a licence. Four licensed butchers slaughter cattle; the others only small ruminants. The actual slaughtering is usually done at the home of the butchers after which the carcasses are taken in the butchery. In summer 2009 the biggest one sold 4 sheep per day, 2 cows and 2-3 goats. During Ramadan this can be even higher, while in winter it is much lower.

The main supply is from the livestock market; from November till February the local supply dries up and animals are coming in from Helmand. Butchers finish off the animals at home; for example sheep are fed for 4-5 weeks in which they gain 1 kg per week. The live-weight of local sheep goes up to 12 (54 kg). The carcass is 7-8 man (31-36 kg). Like all meat, mutton is always sold as a mixture of meat and bones. In summer and autumn it is sold for 340-350 Kalder/man (222 Afs./kg; the FAO price bulletin reports 227 Afs./kg); in winter and spring it is 300-310 Kalder/kg (190 Afs./kg). So the value of the meat of a mature sheep is 12.000 Kalder. The head and the feet are sold for 200 Kalder and the intestines for 300. The price of sheep ranges from 8.000 (summer; 5.000 Afs.) to 12.000 (winter/ spring) Kalder. This seems a contradiction: in summer mutton is more expensive while the animals are cheaper. Indeed market prices are very hard to interpret; also as the Afghan market is integrated with the Pakistan market for animals and meat with its own dynamics based on weather and fodder availability. One possible explanation is that in summer animals are smaller, as they are generally younger.

The market price of cattle ranges from 20.000 Kalder in summer to 30-35.000 in autumn. Spring and winter are intermediate. The average live-weight is 40 man (180 kg) and the carcass is 30-32 man (140-150 kg). The price of beef ranges from 200 Kalder/kg in winter to 250 in summer (156 Afs./kg; close to the 148 Afs./kg reported in the FAO price bulletin). Again margin in summer are much higher: selling 140 kg for 250 Kalder/kg gives 35.000 Kalder; so the purchase price of 20.000 leads to super-profits.

Interestingly the price pattern of goats differs from the others: in summer they are 7.000 Kalder and in winter only 5.000. Their live-weight is 5 man (23 kg) and the carcass 4 man (18 kg). This is sold for 330 Kalder/kg.

In any case prices are slightly below the prices mentioned above, because 2009 was a good year. The price of mutton is relatively higher in Uruzgan than elsewhere. This can be caused by a shortage of sheep (in 2009 sheep were imported in Uruzgan) as well as by the fact that when prices drop, the prices of the most preferred meat will drop less than of other types of meat. All prices fit well in the national prices as illustrated in the next tables, which also shows the large differences between the different types of animals and the different places.

Prices of livestock in between April 2006 and 2007 (prices in Afs. per animal)

	Kunduz	Batikot	Ghazni*
Cattle			
Castrates (oxen)	23,400	24,306	20,833
Bulls	13,729	19,742	27,750
Cow (non-pregnant)	12,740	19,474	19,958
Cow (pregnant)	19,145	23,966	20,020
Cow with calf	19,321	22,574	19,880
Goats			
Castrates	3,140	3,296	n.a.
Bucks	2,293	3,454	3,145
Doe (non-pregnant)	2,319	2,690	2,313
Doe (pregnant)	3,100	3,811	2,083
Doe with kid	3,491	4,581	2,443
Sheep			
Castrates	5,448	nd	nd
Rams	5,349	5,363	6,494
Ewe (non-pregnant)	4,575	3,701	6,063
Ewe (pregnant)	4,947	4,604	4,240
Ewe with lamb	5,700	5,182	4,330

* Prices in Ghazni averaged over 11 months starting July 2006

Note: 1 Afs. = 1.6 Kalder

Source: Thomson, 2007, page20

Prices of red meat of butchers (per city 8 butchers interviewed)

	Mean	Herat	Jalalabad	Kabul	Kunduz
<i>Price in 2008</i>					
Beef (no bone)	167	198	138	166	166
Buffalo (no bone)	153	176	120	163	n.a.
Mutton (with bone)	198	190	193	216	193
Goat (with bone)	192	188	193	215	171
Fat from fat tail	190	143	195	175	247
<i>Prices in 2007</i>					
Beef (no bone)	150	164	125	164	149
Mutton (with bone)	173	178	185	161	166

Source: Thomson, 2009

4.6 Poultry

In Uruzgan per household 10 chickens are kept. The average in the three main districts is substantial higher; possibly as there are more marketing opportunities for eggs there. As this are all data available on poultry, we have to rely here on general data on Afghan. Local Afghan chicken produce between 30 and 90 eggs annually; very few of these can be sold as many are needed to reproduce the flock (based on a 80% hatching rate, 60% mortality of chicks and 50% of mortality of adults 10 eggs result in only 1.2 new chickens) and the most of the remaining are used in the family.

Afghanistan is by far not self-sufficient in poultry meat nor in eggs (see Annex III for details). This counts for Uruzgan as well. In Uruzgan the main importer of poultry meat and eggs explained that until four years ago he imported only live chicken from Pakistan; since then frozen meat from the USA and Brazil has become the major source. He imports this in boxes of 50 kg and supplies it to local butchers. One reason for the change is that while previously one chicken from Pakistan was 40 Kalder, now it is 130-140 Kalder. He still gets some live chickens from Kandahar/Pakistan. Mortality on the road is 10%.

Mature cocks sell in Terin Kowt at 600 - 1000 Kalder in summer; in winter prices are 100-150 kalder lower; or 200 – 240 Kalder/kg (125-150 Afs./kg live weight); imported frozen chicken meat was sold for 680 Kalder/man or 150 Kalder/kg (95 Afs./kg); at the end of September 2009 the trader wanted to increase this to 800 Kalder/man or 178 Kalder/kg (111 Afs./kg). This seems reasonable given the fact that the FAO bulletin mentions a price of 94 Afs./kg at the border town of Spin Boldak; yet the government was inclined to refuse the increase (the final outcome is not known). Local hens of 1.5 – 2 kg are sold in the villages for 400-500 Kalder. Imported spend hens from Pakistan (1.5 kg) fetch 350 Kalder on the Terin Kowt market.

The trader sells 200 kg of chicken meat per day in Terin Kowt. Next he supplies wholesalers in Dehrawood (1.500 kg/week), Chora (160 kg/week) and Nesh (in Kandahar; 450 kg/week). The turnover during Ramadan is much higher. Total import can be roughly estimated at 3.5 tonnes per week or 175 tonnes per year. This is 0.5 kg per capita per year; well below the national average (see Annex III).

Eggs are imported as well; especially in the period September – April and even more especially at Eid. During Eid some 200.000 imported eggs are sold. Most come from Iran and Pakistan. Annual imports of eggs is estimated at 2-3 million (a very rough estimate indeed); this is 6-10 eggs per capita; similar to the national average of 8 (Afghanistan imported 250 million eggs in 2006 for some 30 million inhabitants²¹) less than the Imported eggs costs 8 Kalder on the Terin Kowt bazaar; local eggs sell for 10 Kalder in the village and up to 15 kalder on the bazaar in Terin Kowt.

Several projects have tried to improve chicken production in Uruzgan; in June 2008 GSE distributed 8000 chicken amongst 500 vulnerable families in Terin Kowt. Each family received 14 hens and 2 cocks as an alternative means of agricultural livelihood. AHDO did a similar exercise both in 2008 and 2009. None had a lasting impact. The main issues seems that the number of chicken is too low to provide an incentive for farmers to focus on egg production. With a few animals the efforts to get them vaccinated and to market the eggs are relatively high; also the selection of beneficiaries is a major problem. It is difficult to apply strict selection rules and ask a serious own contribution of benefiting families when it concerns a few chicken that people expect to die soon from Newcastle Disease.

4.7 Private services: VFUs

Livestock is crucial for Afghanistan and so are veterinary services. DCA, member of DCU, is responsible for supporting the veterinary services in Uruzgan. Their need assessment for DCU-II explains the background of these services as follows:

Two and a half decades of war critically degraded the veterinary infrastructure and professional resources of Afghanistan. As a result, provision of veterinary services, both in the private and public sector, suffered severely. However, there have been

²¹ FAO, 2006. Working group on 'community-based food security and nutrition interventions

numerous efforts to restore clinical veterinary service in the private sector. Through the 1990s this was done as an emergency relief effort and since the end of the Taliban regime in 2001 as a sustained development effort. At present, the VFU system is becoming more robust and represents an increasingly strong private sector clinical service delivery system for Afghanistan. There are five main implementing organizations whose VFUs, when taken together, provide coverage in every province and most districts in the country: Afghanistan Veterinary Association (AVA), Dutch Committee for Afghanistan (DCA), Partners in Revitalization and Building (PRB), Mercy Corps (MC) and MADERA. There is currently a considerable emphasis on successful privatization of the VFU system, with VFU staff providing care on a fee-for-service basis with sufficient cost recovery to re-supply themselves with vaccines and medicines, while salaries and vaccine subsidies are being phased out.

At the same time, the public sector veterinary service is reformed and restructured to provide an enabling environment for the private sector, and to refocus government efforts on public veterinary functions: regulation of vaccines and medicines, inspection of foods of animal origin, prevention of diseases transmissible from animals to humans, and the control of highly contagious transboundary livestock diseases such as foot and mouth disease, which can adversely affect the entire national livestock resource and thereby the national economy.

In Uruzgan AVA has set up a system of Veterinary Field Units, with support of Mercy Corps. At the time of writing the following staff was available:

District	VFU	Paravets	AI point	Lab	Total staff
Terin Kowt	1	3	1	1	5
Dihrawud	1	4	1	(1)	5
Chora	1	3	1	1	5
Char Cheeno	1	1	(1)	1	2
Shahid Hassas		2			2
Khas Uruzgan	2	3	(1)	(1)	3
Sa Boglal		3			3
Gizab	1	4	(1)	(1)	4
Chinarto	0	2	1		3
Total	7	25	7	6	32

Note: (1) means that this tasks is performed by a paravet

Source: DCU office Terin Kowt

This is a very dynamic situation as paravets (or Basic Veterinary Workers, BVW, with a basic training of six months provided by either AVA or DCA) and others often change position, leave the area or simply stop. The next table show how many farmers used the veterinary services.

Estimated use of veterinary services in 2008

District/ VFU	Number of Farmers	Number of vaccination	Treatments per month
Terin Kot	300	1.300	840
Dihrawud	120	900	560
Chora	90	950	420
Char Cheeno	120	1.200	310
Khas Uruzgan	155	105	623
Gizab	60	1.200	489
Chinarto	0	0	0
Total	845	5.655	3.242

Source: DCA, 2009. Livestock baseline information Uruzgan.

These are estimated collected during the DCA baseline collection process; and the number most likely reflect the situation for 2008. The next table provided the data for the year 2007. More detailed information can be found Annex IV, here the totals per VFU are provided.

Veterinary services provided in 2007

	Terin Kowt	Abbordard	Zearat	Chora	Gezab	Naik Abad	Total
Vaccination	2.530	0	715	1.743	0	0	4.988
Treatment	15.085	1.448	6.522	7.328	11.776	11.072	53.232
Treatment/ month	1.257	121	544	611	981	923	4.436

Source: Ayubi et al. 2008

It seems that in 2008 the provision of veterinary services stagnated. When the data on Terin Kowt and Chora are compared, the actual number of vaccinations and treatments in 2007 was nearly 50% than the estimated numbers in 2008 (which might be even inflated). The lower numbers are compensated at Uruzgan level by an increase in number of VFU's. One complicating factor is that many project try not to subsidise services, but in the end they (are forced to) do (so) in order to protect their investments. Another aspect is that farmers complain about the quality of the services. DCA is supporting the VFU within DCU, and one of the first steps to be taken in the present livestock strategy is to come to an understanding with them on how to secure sustainable veterinary services.

4.8 Conclusions: constraints and opportunities in the livestock system

Looking at the livestock system, the major conclusions are:

- Most cattle is kept for subsistence purposes (milk; qurot), for draught power and manure and as an asset (saving). Small ruminants are kept for meat and milk; sheep have a high commercial value.
- Chicken are 'small change' of the family. Meat and eggs are highly appreciated but productivity is low, especially due to the high mortality.
- Livestock prices fluctuate tremendously in response to all kinds of parameters: weather in Uruzgan and elsewhere (up to Pakistan), the balance between fodder on pastures and feed from irrigated land, prices of wheat (world markets), timing of Ramadan, imports of meat and eggs, etc.
- Poorer families have no animals, but would like to have some to cover their own nutritional needs (esp. milk). Constraints for these families include a lack of capital to purchase the animals and the fodder needed to feed them.
- Marketing of milk is generally not done. Marketing of meat and eggs is not a problem; particularly sheep meat and eggs are in high demand.
- The main bottleneck in the ruminant system is the lack of (quality) winter feeding. This is the root cause for a number of productivity constraints: low milk yield, low fertility, inefficient meat production, high incidence of diseases etc.
- The bottleneck with poultry is the lack of specialisation; a more commercial approach is needed to break the vicious circle of low input - low output.
- The support services are very weak. Extension hardly exist; veterinary services are being build up with difficulties

5 STAKEHOLDERS IN LIVESTOCK DEVELOPMENT

The enormous amount of free-hand outs, the large number of aid-organisations, their sometimes arbitrary way of selecting beneficiaries and the culture of distrust among (sub-tribes) all contribute to the fact that Terin Kowt has become a town of jalousie and gossip. It proved virtually impossible to get any organisation saying something positive about any other organisation. The relation between farmers and government is also very often tense. In all meetings farmers stressed that they neither trusted the government nor the NGOs. Somehow CDCs are perceived as the most reliable development partner. This might be caused by the fact that most farmers the mission met were 'malek' and member of a CDC. On the other hand; in the few cases the mission was able to speak to ordinary farmers, they really wanted a CDC to be established in their village. In any case, it is very important to understand the perspective of the different stakeholders in livestock development.

5.1 Government

At provincial level the governor office is the highest authority concerned with development issues; hence with livestock as well. The Provincial Development Council, chaired by the governor, has been created to coordinate all development actors and activities; including the agricultural sector. It is supposed to be a platform for coordination and cooperation for government, civil society and donor-funded projects. In practice it is still in its initial phase. The mission joined one of its meetings; it offered a few key-player to tell the others what they were doing. No meaningful exchange of information or ideas took place; leave alone efforts to coordinate or cooperate. Still it is very useful platform; also to present, explain and discuss the livestock strategy proposed here.

From the government side the first stakeholders is the Department of Agriculture, Irrigation and Livestock (DoAIL). It has six units²²:

- Extension unit: 1 qualified staff from Kandahar University. About 15 are being trained in extension work by FLAG/DAI/USAID.
- Administrative Unit: eight staff; four are trained in administrative matters
- Cooperative Unit, Plant Protection Unit and Government Property Protection Unit: all have no staff. Nor do the Veterinary Unit and the Forestry Unit.
- A well qualified advisor to the Director arrived in 2008 with a one-year contract.

So in total there are twenty staff members and twenty vacancies. Two staff members are qualified, incl. the Director. Recruitment of more (qualified) staff is difficult due to low salaries and security concern. The well-qualified office manager of Khas Uruzgan was killed by the Taliban. Presently DoAIL has three offices (in Terin Kowt, Dehra Wood and Chora), most of the time these are unmanned.

In a meeting with the director, his advisor and the head of the livestock sector, they indicated that DoAIL likes to work on the following issues:

1. Genetic improvement via breeding and Artificial Insemination. They like to run a government dairy farm where they do some breeding and produce milk for the Terin Kowt market. Like the Bolan farm in Lashkagar in Helmand.
2. Improve the poor veterinary services: they work on a clinic. More and better veterinarians and better drugs are needed.

²² Info from : ISAF/TFU/PRT, 2008. *Agriculture, Livestock and Natural Resources Management in Uruzgan.*

3. Lack of fodder due to:
 - a. Poor irrigation. The area under irrigation can be enlarged by 40%; 20% by improving infrastructure and 20% by new infrastructure
 - b. Wild bushes can be used better
 - c. Maize silage making, on asphalt under the ground and covered with plastic. It should be well pressed and 50 cm of soil on top. However there is no experience in Uruzgan.
4. Housing and deep wells for Kuchi

There is a state research farm in Terin Kowt: Karna Farm of 1200 jerib is leased for 200 kg of wheat /jerib; the wheat is income for DoAIL. The GTZ project has planted some trials, but as the area is not 100% secure, little is and can be done with this. Recently GTZ provided some technical assistance to make better use of the farm (improve the irrigation etc.).

As Uruzgan is predominantly an agricultural province, DoAIL is an important player in the planning platforms in the province. DoAIL itself holds monthly meetings with all actors implementing agricultural projects in Uruzgan. Next to this, a Technical Working Group has been formed under leadership of the FAO as a platform to exchange information. It has been created on request of Cordaid and meets in turns in Kabul and Terin Kowt. It is meeting regularly, focusing mainly on an informal exchange of information.

Many NGOs complain about the functioning of DoAIL; it is seen as passive and incompetent. DoAIL from its side, stated explicitly that it does not see any positive impact of any NGO activity. The FAO/AHDS tried to reconcile the positions by hiring DoAIL staff to monitor their livestock rehabilitation project; it did not seem to work. While FAO/AHDS state that the DoAIL officers reported positively on the project; government officials are very negative on the same project. This is just one example of opportunism in Uruzgan.

At present there is no agricultural education in Uruzgan. In March 2009 the Afghan and Dutch government signed a MoU to strengthen the national Afghan agricultural education and training system and one of the concrete objectives is to establish an agricultural school with attached practical training centre in Uruzgan. In the ongoing inception phase (April 2009 – Oct. 2010) this will be “prepared through staff training and redevelopment of an agricultural school with training centre in Uruzgan”. This is indeed urgently needed; very few people from Uruzgan have been trained in agriculture (see below).

So far the mission cooperated well with the advisor and the livestock expert of DoAIL. The latter participated in the two workshops and his contributions were well appreciated.

5.2 Community Development Councils

Like in the rest of Afghanistan the government, in the form of the Department of Rural Rehabilitation and Development (DRRD), started to set up Community Development Councils (CDC) in Uruzgan. In such councils consists of elected villages leader; mostly elders that form the traditional village council (shura) and some representatives of different social groups, e.g. women and youth.

The CDC are democratically elected, which is a major step forwards compared to traditional village councils which is more informal and based on power relations in the area.. The main engine behind the CDC has been the National Solidarity Programme (NSP) of MRRD that offers new CDC's a development budget (based on a fix amount per inhabitant of the area), which is generally used to improve the basic infrastructure of the village (e.g. a small hydro-power plant or a bridge etc.).

The next table shows the state of affairs in NSP in Uruzgan as per 31 march 2009

District	Facilita- ting Partner	FP field staff	Number of communities				Number of proposals		
			Contract for FP	Mobilised	CDC elected	Plans developed	Submitted	Approved	Completed
Terin Kot	ADA	27	120	119	114	100	163	163	46
Chora	ANCC	17	80	55	39	39	0	0	0
Khas Uruzgan	ADA	11	40	40	40	40	24	21	9
Shahidi Hassas	ANCC	0	80	0	0	0	0	0	0
Dehrawood	ANCC	16	80	80	52	52	0	0	0
Total		71	400	294	245	231	187	184	55

Source: NSP website

Progress has been very limited. One explanation is that the progress that ANCC made was not incorporated in the table due to administrative failures. Still, even in Terin Kowt only 46 projects have been completed, while the intension was to work in 120 communities. Although in this table ADA is performing better than ANCC, it has been discharged of its tasks by DRRD. The reasons seem to be a mixture of lack of progress, poor quality staff and allegations of corruption. ANCC is still functioning although the director of DRRD was very critical on their performance as well²³. ANCC has taken over the NSP coordinators from ADA and it still works on getting CDCs going. The mission received a full lists of all 120 villages in Terin Kowt; on this list 61 were assessed of having a good CDC and 59 as have a poor CDC. The latter probably means that the CDC does not really exist.

During fieldwork some farmers complained about their village leaders. In one case because they did not start a CDC; in another case because they monopolised aid for themselves and their families. On the other hand, the village leaders invited to the focus group discussions and workshops were all enthusiastic and cooperative. And they kept coming back to discuss more and more details. They were also not immediately asking for better deals (e.g a lower own contribution) and their suggestions on what to do and how to organise things were very practical and sincere.

Invariably the farmers asked that neither the government nor the NGOs should be asked to implement the programme. They trusted very few outsiders if any and they agreed that strict monitoring will be needed.

At district level the CDC are united in a District Development Assembly (DDA). Whether these are actually functioning is not clear; probably in Terin Kowt and Derhawood they do to some extend. The programme should support this organ as it provides a platform in which elected leaders can deal more effectively with government organisations. A more traditional institute that functions above village level is the so called 'quami shura' or 'mahali shura' consisting of leaders who represents their tribes. Their tasks and responsibilities are not formalised but it seems they can play a crucial role in mediating in conflicts and settling disputes.

²³ Interestingly the same director was very positive about ANCC towards RNE. At the same time, in the ZOA report on Capacity Building ADA has been assessed as capable to train CDC while ANCC was assessed as 'might have' such capacity.

5.3 NGOs

Many NGOs are active in agricultural development in Uruzgan. Only the most important ones for our livestock strategy are discussed here²⁴.

AHDS / FAO

With Dutch funds the FAO supports AHDS²⁵ in implementing an agricultural programme. They distribute a range of agricultural implements and seeds, but also plastic tunnels for vegetable production and also cows. They work with 1.000 farmers in three districts: Terin Kowt, DW and Chora. They have 4 extension workers and 3 supervising staff members; one is a vet. The salary of the extension workers is 200 USD; they also pay a 120 USD topping up to 3 government extension workers who are supervising the work in the villages. They have always reported positive on the work done in the monthly meetings they have; only last year when some inputs of the '808' project arrived too late, the DoAIL complained. AHSD says they monitor the farmers; but data are not yet available.

One of their activities was to purchase cows at the local market and give them to needy families, against a 30% own contribution of the farmer. This seems a very risky approach; first of all these animals are actually brought to the market because the system can not sustain them: the farmer has no fodder anymore and/or the animal is sick. Indeed fieldwork showed that sick animals were passed on. On top of that such a programme is prone to corruption as people can easily pay 305 and then pass the animal on to others; this was also found during fieldwork.

PRT/ DoAIL

The Provincial Reconstruction Team (PRT) works closely together with the local authorities to stimulate economic development. One of their partners in this is the Department of Agriculture irrigation and Livestock (DoAIL). In 2008 the Dutch PRT provided 70.000 USD to provide feed to Surkh Murghab and a similar amount was planned to be used by DoAIL from national funds. How this worked out is not clear. In general PRT offered emergency aid in the form of agricultural inputs (seeds; small equipment etc.).

GTZ (Uruzgan Provincial Development Programme; UPDP)

With RNE funding GTZ is implementing a range of activities; from road construction to setting up an almond chain. In the area of animal production they are not very active; they do improve water management sometimes (e.g. improving catchment's area management and improving karezes); they provide Technical Assistance to DoAIL on making better use of their research farm. They have no specific livestock activities.

GSE/ Bluegreenworld/ANCC

In 2008 GSE distributed 8.000 chickens to 500 families in Terin Kowt. Each family received 14 hens and 2 cocks. Results are unknown; most likely most chickens were eaten. In March 2009 Blue Green World introduced fodder beet as a new potential fodder crop. It provided seeds to a few dozens farmers (via ANCC); yet it is unclear whether they even bothered to sow these. ANCC sowed some in their compound, but the result is not impressive.

At the time of writing Blue Green World work on a new poultry project. They want to import mother hens from the high productive Silverneck breed from the Netherlands, hatch the eggs in Terin Kowt and distribute laying hens to women. Also the necessary equipment (incubators) and feed will be imported (with military planes).

²⁴ More details can be found in Annex V

²⁵ Partner organisation of Cordaid in providing basic health care in Uruzgan (BPHS)

TLO

The Liaison Office (TLO) is a new player in the area of agriculture development. They will implement the USAID funded Alternative Development Program (ADP) in Uruzgan. The plans of this 2 –years program are among others to train 1,100 individuals in agricultural productivity, put 2,000 hectares of farm land under improved natural resource management, and facilitate the sale of 50,000 USD of agriculture products outside the province. For the latter element price information will be collected.

ZOA

As member of DCU, ZOA works on improving and rehabilitating the irrigation system (next to issue like shelter and sanitation). They work on an overall plan; they assess that Terin Kowt actually has a lot of easily available water resources. Presently only 20% of this is being used. Planned activities include ‘kareze’ reconstruction, the construction of wells and dams and some intakes for surface irrigation.

DCA

Within DCU, DCA is focuses on improving animal health in Uruzgan. The Implementing Partner is the Afghan Veterinary Association (AVA). Their main planned activities are:

1. Animal health:
 - a. Provide vaccines at discount rate
 - b. Provide quality veterinary rugs at cost price (excl. transport)
 - c. Monitoring and supervision of the VFUs; assist VFU to collect data on animal health (based on MAIL forms)
 - d. Training of BVW (Basic Veterinary Workers; mostly Kuchi)
 - e. Training of farmers on preventive action
2. Support to animal breeding
 - a. Artificial Insemination (provide semen at 100 Afs. to inseminators who sell it to farmers for 200 Afs).
 - b. Provide animal ID-cards for inseminated cows
 - c. Provide liquid N to the inseminators
 - d. Training on reproductive issues (AI, breeding)
3. Improve nutrition
 - a. Fodder banks: give wheat straw for free in winter and ask people to repay the same amount in summer
 - b. Silage making: chopping corn (incl. cobs), press it and cover with plastic
 - c. Training on urea treatment (25 kg of straw, 10 l. water and 1 kg urea; in a bag for a few weeks)

AHDO

In the context of DCU, in 2008 and 2009 AHDO worked as Implementing Partner of Cordaid on improving livestock production in Uruzgan. Basically they distributed 50 chickens per family. Unfortunately their management and implementation capacity was every weak and, based on two independent monitoring report, their contract was terminated.

NPO/RRAA

Also in the context of DCU, Cordaid hired NPO/RRAA for implementing an agricultural programme in Gezab. Most attention was paid to arable farming (wheat seed, fertiliser) but they implement a poultry programme as well. The mission was not able to see these activities but independent monitoring reports are positive.

5.4 Capacity building efforts

This paragraph is based on a recent report of ZOA, the DCU-member responsible for capacity building. The main activities for capacity building of government staff (civil servants) in Uruzgan are:

Regarding technical staff:

- Teachers are being trained by ADA and SC-UK
- Engineers of MRRD are being trained by the Australians
- Health staff is being trained by AHDS

UNDP runs its Afghan Sub-national Governance programme (ASGP)

- They strengthen the Independent Directorate of Local Government (IDLG). It falls directly under the President's Office, and they work also in Uruzgan.
- They strengthen the Independent Administrative Reform Civil Service Commission, which is also active in Uruzgan.

Asia Foundation supports IDLG as well

GTZ (with support from the Conrad Adenauer Stiftung) trains government officials. They provide a 11 days course on basic management. In 2009 10 officials are already trained, and the second batch of 10 was being prepared. The target is to train 40 in 2009.

ICMA (International City Management Association), funded by USAID, trains the municipality of Terin Kowt.

USAID and RNE fund a technical advisor in every ministry (mainly Afghans). Their tasks:

- They make action plans on Institutional Development Plans with 3 persons of every department, including the head
- They also train and coach in IT, filing systems, etc.

DAI, funded by USAID, implements the Local Government Capacity Development (LGCD) project in Uruzgan and other provinces in South and West Afghanistan. Project components are:

- Providing some furniture, and other basic equipment
- The Civil Service Commission Training programme (CSCT); implemented in Uruzgan by a local NGO: HDS (Human Dignity Society)
 - Basic Management training (3 months, 80 trained, 20 starting)
 - English 3months
 - Computer 3 months

This Civil Service Commission Training relates to the Independent Administrative Reform Civil Service Commission (IARCSC): if civil servants are trained and they pass a test, they qualify for a higher salary.

6 POTENTIAL IMPROVEMENT LIVESTOCK CHAINS

6.1 Introduction

Winter feeding is the main bottleneck in the system, so any improve should start from there. In theory a number of options are open to do so: introduce more productive fodder crops and new varieties, better storage technologies (silages/hay making), use more fertilisers etc. Most have been tried but have not yet lead to any practical result. The fundamental reason is that there is no institutional or social infrastructure to introduce technical innovations. New technologies have to be tested but there is no capacity to implement and monitor these.

So the approach chosen here is provide support to farmers in such a way that technical and social innovations are stimulated that are close to the present practices of farmers and to the practices of the NGOs. The support is framed in such a way that they can have a sustained impact upon completion of the project. However whether sustainability can be achieved within the present time frame of the programme can not guaranteed, simply as the environment in Uruzgan is generally uncertain.

In concrete terms the following interventions are proposed:

- support village level feed bank that allow farmers to purchase winter feed for a cheaper prices. Farmers are used to purchasing feed, the innovative part is that they do this together in a system that slowly becomes more formal and that strengthens the development orientation of the newly created CDC. The existing social infrastructure is used by following NSP systems and procedures.
- support poorer families with a loan to buy small lambs in spring that can be fattened in summer. This is not innovative; it is only a way to get more poor families gaining from the most profitable livestock activity. The loans will be provided by the livestock association and Islamic credit principle (of Muzabarat) will be used. In this way richer families support the poorer ones.
- support poorer households with milking goats to improve milk consumption in the family. This will be done via exchanging meat goats with milk goats or by a system of passing on the gift for those who do not have goats.
- Create a viable local egg production system, based on a commercial ‘outgrowers scheme’ by the egg-importer of Uruzgan. He will hatch laying hens and provide these to households with a semi-intensive poultry unit of 90 hens, who will sell back their eggs to him on a contract base.

Improvement are usually based on providing farmers access to technology, capital, markets and skills, or on improving cooperation among them. The next table show which of these are most important in the proposed interventions.

Key success factors for the proposed interventions

	Technology	Capital	Markets	Skills	Cooperation
Winterfeed		XX			XX
Lamb fattening		XX	X		XX
Milking goats	X	X		XX	
Poultry	XX	X		XX	X

6.2 Feed-banks

Principles

Winterfeed is the most limiting factor for the productivity of ruminants. Feed banks are based on two principles:

- feed is cheaper at harvest time than in winter
- buying feed together at harvest time offers the advantage of economics of scale; farmers can buy feed at lower prices and from longer distances as they share transport and other overhead costs. It also has the psychological advantages that families have to set aside money at harvest time.

How does it work?

Feed banks operate as follows:

- At harvest time (Sept.- Oct.) maize, cotton cake or wheat straw is bought for the normal market price. Farmers pay 30% of the price, the project the remaining amount. Farmers' leaders and NGO staff buy the feed together.
- The feed is stored in a store availed by the village or newly constructed by the programme.
- In winter the farmers buy the maize from the association for 30% of the prevailing market price. As generally prices have gone up by that time (people estimate this to be 50%), this payment is bigger than the first payment. So in total farmers pay between 60% and 75% of the price at harvest time. A farmer can buy only as much as he has 'pre-paid' in October. In case he does not use all the feed he bought, it is sold on the open market and the profit is shared between him and the feed-bank.
- In May the available money is given as a loan to poor families to buy lambs to fatten them. Islamic principles are used: in the so-called Muzarabat system the profit and losses of the activities are shared between the provider of the capital (in this case the association) and of the labour (poorer families).
- In Sept. – Oct. the lambs are sold and the loans repaid. With this money new feed can be bought.

Financial Feasibility

Initially the programme will subsidise the scheme, but over time the subsidy can be reduced as the system becomes profitable and self-sustaining. The next table show how that could work for a village with 200 farmers who, on average have 2 cattle and 4 small ruminants. We assume that initially only 20% of the HH with animals participate and every year this increases with 10%. The first instalment of farmers will increase from 30% to 50% over time and the second as well. The table is based on the moderate assumptions that per cow 100 man of wheat straw is purchased and 30 man of maize (both are 50% of the requirements for a 3 months winter). Per small ruminant 20 ma of wheat straw is needed and 5 man of maize. One man of wheat straw costs 15 Kalder at harvest time and 20 in winter; for maize this is resp. 50 and 65 Kalder/man.

The last assumption is that the average profit for lamb fattening is 600 Kalder/lamb. The 2-3 months old lambs are purchased of 2.500 Kalder and fed with 200 gram of maize per day or the equivalent of alfalfa. For six months this equals 36 kg or 8 man which costs 400-500 Kalder. The sales price is 5.000 Kalder; yet a mortality of 10% and some veterinary costs lead to an estimated gross income of 4.200 Kalder/lamb; or 1.200 net profit. This is shared between the FB and the farmer.

Based on these assumptions, the next tables was prepared. In this economic simulation model, the running costs for the FB have been included as well; per month 100 USD (8.000 Kalder) is budgeted which is increasingly paid by the FB (0% in year 1 till 100% in year 4).

Key data on the feasibility of a Feed Bank in a village with 200 HH

	% HH participate	Payment farmers		Project contribution	Income from feed	Nr. of lambs on loan	Income on fattening	End of year balance
		First	Second					
Year 1	20%	30%	30%	156,800	88,800	30	17,760	106,560
Year 2	30%	35%	40%	135,840	177,600	59	35,520	213,120
Year 3	40%	40%	50%	103,680	296,000	99	59,200	355,200
Year 4	50%	45%	50%	48,800	370,000	123	74,000	444,000
Year 5	60%	50%	50%	0	444,000	148	88,800	532,800

We see that after 4 years the Feed Bank has sufficient cash to pay everything themselves. The total project contribution has been some 525.000 Kalder, or 4.700 Euro. We also see that the amount of cash the FB has after five years (532.800 Klader) is higher than the amount of money provided by the programme (445.120).

Expected benefits

The next table give some data on how profitable the activity is for those who participate.

Profit distribution of a Feed Bank

Total income	Own contribution FB	Running costs FB	Profit farmers	Profit for lamb HH	Total profit of the FB	Profit /HH in feed
106,560	0%		140,000	17,760	157,760	3,944
213,120	25%	24,000	148,800	35,520	184,320	3,072
355,200	50%	48,000	116,800	59,200	176,000	2,200
444,000	100%	96,000	118,000	74,000	192,000	1,920
532,800	100%	96,000	108,000	88,800	196,800	1,640
			631,600	275,280	906,880	12,776

The total profit in these five years for all farmers participating in the feed bank is 613.600 Kalder or 7.900 USD. Families that participate from the beginning in the feed bank safe 160 USD on expenditures for feed. Families involved in lamb fattening earn 275,280 Kalder or 3.400 USD extra. How much this is per family depends on how many lambs are given to one family. Of course as the programme progresses over the years the gains per family are reduced (as the subsidy of it reduced), but the overall gains in the village increases slowly. In the whole village the additional income (or saved expenditures) is nearly 12.000 USD.

All these gains are only part of a bigger total gain that is due to the Feed Bank: animals will in a better shape and become more productive in terms of milk, meat and off-spring. We have seen in par. 4.4 that proper winterfeeding could lead to an additional gain of 22 USD per sheep. With 2 cows and 4 small ruminants a family could very well gain another 100 USD; bring the total annual gain per participating family to 260 USD.

Lastly, these data are based on prices in Uruzgan; if farmers' leaders are willing to invest time in getting the maize from neighbouring areas, this could generate additional income.

One issue that might need further fine-tuning is the balance between the profit of feed users and lamb fatteners. Generally (though not always) towards autumn the price of lambs will increase at the same time as the price of feed increases. If lamb fatteners repay their loans too late the feed bank has no money to purchase the fodder and feed; and vice-versa: if the lamb fattener have to repay too early their profits will be less than optimal. Farmers claim these

two systems can work alongside each other, but the prove of the pudding is in the eating. Proper timing is essential and while the project has to set up a simple price monitoring system to assist in the decision making process it should involve farmers as much as possible in the purchasing process so that they take responsibility for this aspect.

Feed Banks require substantial investments. In five years time the amount of wheat straw and maize to be stored triples from resp. 40 and 7 tonnes to 130 and 22 tonnes. This requires investments in new stores. Farmers and local NGO staff estimates the costs of these at 6.000 USD when the villagers contribute the labour. How to do this exactly has to be decided in the first step of the implementation; at that time also the responsibilities for the transport of the feed has to be decided upon. Other key issues will be where a store can be built and who in the village will take the responsibility to look after the security.

Institutional aspects

The Feed Banks have to be governed by the farmers in the village. Before this can be done, it is important that the programme itself learns how to handle all practical issues. Therefore in the first year the staff of the Implementing Partner will be responsible for managing the feed bank. Also as experience has shown that making farmers responsible for an organisation before it is clear how it will function is problematic.

When thinking about how the farming community can take over responsibilities one has to realise that many of them are illiterate and that the social infrastructure at village level is very limited. The best option seems to work with the CDC that have been created recently by NGOs in cooperation with the NSP programme of MRRD. They seem to represent the communities fairly well (although obviously some are used for private gains by a few leading individuals) and, equally important, they are part of a general set-up that links communities to the government (via DRRD). Lastly the CDC's are part of a standardised capacity building process; our programme will use this and avoid creating overlapping- or competing systems and procedures. Combining these elements it is proposed to hand over the responsibilities of running the feed bank to the village communities in gradual process:

- Year 1: Implementing Partner is responsible and the CDC's are trained
- Year 2: The CDC's are primarily responsible
- Year 3: Create livestock shura as sub-committee and open an own bank account
- Year 4: Formalise the livestock shura in a cooperative

This approach has the additional advantage that the monitoring system of NSP/DRRD can be used to assess the progress and to get additional information on the communities. This is by no means an easy issue. For example: during the mission to formulate this livestock strategy contradicting views were obtained on the progress in the NSP programme in Terin Kowt. Within a very short time span one person told some people that the progress in NSP was good and some other people that it was very bad.

This approach allows for the design a number of incentives for the communities:

- only villages where more than xx families participate, with yy tonnes of feed get support in building a new store
- only villages where xx % of all farmers properly paid for the feed will be allowed to manage the FB by themselves.

Although forming formal cooperatives can be seen as the ultimate aim of the programme, one has to assess time and again what the adding value of such formal institutions is in an environment like Uruzgan.

The mission was also able to get a table with 120 CDC's in Terin Kowt, their distance to town, the number of households in the village and a simple assessment of the quality of the CDC. It proved that about 60 of them (so 50%) was qualified as good. Of these 17 were close to Terin Kowt (10 km or less) and have more than 200 families. The 10 pilot villages for 2010 should be selected from these communities.

6.3 Milking goats

Principles

The primary aim of this component is to improve the nutrition in poor families. The principle method is to provide families that do not have cows with Sistani milking goats. This can be done in two ways:

- *By exchange*: those who have normal goats can exchange two of them for two milking goats
- *By Passing on the gift*: those who do not have goats are given two milking goats; in return they have to pass on the second, fourth and fifth female kid to another family. Those (who get two young does) return two young does as well.

Management of the goats

The next paragraphs are to a large extent based on the proposal van Engelen made for Cordaid in 2007²⁶. Dairy goats can give birth at the age of 14-15 months and the twinning rate is high. They should be kept under zero-grazing in a simple stable with an outside run. Traditional mud construction of a pen and shed would do, but the top of the mud wall should have vertical e.g. willow sticks to prevent the goats from escaping. Locally made car tire buckets for water and a simple mud block/brick feeder would complete the housing. The usual beaten loam floor, if sloping and higher than the surroundings is adequate.

Goats are highly selective in their diet. Alfalfa, Persian clover and green maize, are readily eaten, mixed with chopped clean mold-free straw. In winter the animals should preferably get alfalfa hay; this is available but generally not given in winter. Concentrate can be made from wheat/maize/old bread, salt and (to be imported) mineral and vitamin premix. Non-lactating goats will need up to 250gr of this mix per day; when in lactation this amount increases up to 500gr. On average annually 110 kg is needed per animal. Young kids need 20 kg per year. So in one lactation 150 kg is needed or 32 man; with a price of 100 kalder/man, this is 3.200 Kalder per year per lactation doe with kids.

For their well being goats should be at least 2 in a pen, as they are social animals. They should be kept separate from local goats and sheep to avoid transmission of diseases. They will need annual vaccination against anthrax/black leg, PPR (small ruminants' pest), sheep pox, pasteurellosis and enterotoxaemia. A contract with the local paravet and Veterinary Field Unit (VFU) is necessary.

²⁶ Van Engelen/ Cordaid, 2007. First reconnaissance work into the development of Livestock restocking projects in Uruzgan. Draft June 2007.

Expected benefits

Today's milking goats in Uruzgan are estimated to produce 375 l./lactation. With two goats this would be 750 litres; or 2 litre per day. Half of this can be used for home consumption; this is the main purpose of this intervention: to improve the diet of children in poor families. The other half can be sold or processed (into yoghurt, ghee, butter and qurot) and then sold. Assuming a shadow price of 22 Kalder/litre²⁷, this gives an annual income of 8.250 Kalder. This is enough to cover the cash expenditures for the concentrate of both does with kids. The remaining 2.000 Kalder (25 USD) can cover the veterinary expenditures estimated at 7.50 USD per adult and 5 USD per kid by Van Engelen (2007).

Obviously in the long run the sales of kids is a major source of income as well. Today the price of a Sistani goat is said to be 150 USD, compared to about 50 USD for local goats. So once families have repaid their debts they can earn substantial income from selling does.

In this calculation it is assumed that families manage to provide the goats with reasonable quality fodder themselves; this has to be proven by them at the onset. They need to have 0,5 jerib of alfalfa or the equivalent in other source of quality feed.

To start this enterprise, in which the women play a crucial role, participating farmers have to sign a contract, and agree to sow minimal 0.5 jerib of alfalfa in spring. During the growing season they are required to make alfalfa hay and store this for winter feeding of the goats in a secure place. They must construct a goat shed with a protected storage facility for hay. As most of families are poor and indebted, they could be given a preparation loan for the construction of the pen and to cover the period before the goats start giving milk. Those who already have goats can give them to the project as security (actually the project can sell these and provide the money to the family). As a local goat can fetch 4.000 Kalder, selling two will yield the money needed to construct the pen and store some alfalfa hay.

Beneficiaries will be trained in dairy goat management; especially hygiene, nutrition and disease prevention will be covered. Farmers will be encouraged to work together and form a goat breeders' club/shura as a support structure. This goat breeders' club/shura is responsible to maintain a goat flock book and appoint someone to be the "billy keeper". The clubs among themselves "rotate" the billies each year (after a veterinary check up) to avoid inbreeding. The group will get 2 billies for communal use. A management plan for these two billies has to be made between the group members (that is: who will keep the billies and how much is paid for their services).

Initially villages with well established VFUs will be selected. In principle the beneficiary selection should be done by the CDC/ livestock shura in consultation with others like the mullah and district authorities. In the first year the IP will play an important role.

The whole procedure has to be laid down in a protocol/contract between farmer beneficiary and implementing partner (IP), in which the farmer promises to take good care of the goats and follow all instructions. He will not sell any of the goats without informing the IP. From the side of the IP the farmer will be assisted with advice, alfalfa seed and some fertilizer, first year's veterinary supervision and treatments free of charge and 2 young goats. The goats (does and billies) will formally remain property of the project until all debts are repaid.

The goat breeders' clubs/shuras will form an umbrella organization, which will maintain a record of all goats. They will open a register for the crossbred goats, which after 3

²⁷ It is quite possible that goat milk gets a better price (it taste better and many health claims are attached to it).

generations' crossing will be considered purebred. The habit of keeping the goats in a zero grazing system should be a precondition for animals to be kept in the register.

Goat distribution

It is suggested to start with a trial with 50 goats and 6 billies, this means 25 beneficiary families, divided over maximum 3 groups (so there are 2 billies per group). The best time to start would be June: the animals are not pregnant and transport will be easier. This will be done in such a way that vaccinations against life threatening diseases (PPR, anthrax and blackleg) are done in quarantine and the others will be applied by the VFU's paravet contracted by the project. The Implementing Partner must therefore develop a facility, probably near Terin Kowt, where animals can be kept.

The IP will, with its veterinarian, closely monitor and supervise the farmers and goats during the first months. This will be done by the local paravet of the VFU, who will get on the job training and a performance contract from the implementing partner veterinarian. Before distribution of the goats the IP's veterinarian and the paravet have inspected the goat pen and the winter fodder store.

As still many parameters are unknown²⁸, a simple monitoring cum data collection system has to be designed to increase our understanding of the management and economic aspects of milking goat.

6.4 Poultry

Principle

The basic idea is to create a viable egg industry via an out-growers scheme. This means that a local entrepreneur (in this case the local egg trader and importer) supplies all farmers with all inputs (vaccinated chickens; feed) and buys all eggs from them on a contractual base.

How does it work?

The project will develop a business plan together with the entrepreneur. He will have a small incubator (400 eggs) and hatch eggs from laying hens collected in Kabul (or elsewhere) on a monthly base. It is assumed that 90% of these will hatch; as half are hens, per month 180 chicks are available. After 3 months he will sell them (vaccinated) for 320 Kalder each to 2 families that will rear these 90 chickens. The farmers get the feed from the entrepreneur and deliver the eggs to him, which he buys for 10 Kalder each.

Expected benefits

An economic simulation model has been made to assess the potential profit for farmers. Feeding is the key parameter; two options are explored. The high level option is that pre-mix is used; one bag of 50 kg costs 18 USD in Kandahar. With 3.2 Kalder/kg as transport costs and 10% overhead for the entrepreneur this is 1.760 Kalder in Terin Kowt. With this feed the hens are supposed to lay 72%; or 247 on average in one year (mortality: 12%). The second option is using local feed; for this a price of 15 Afs./kg is used (based on maize price quoted in FAO price bulletin for Helmand). The next table give the result.

²⁸ Also the choice for the Sistani breed could be tested; Gujara goats might be an alternative as well

Key-data on the economics of semi-intensive poultry production

Item	High	Low
Feed	Pre-mix	Maize
% eggs	72%	55%
Income		
Eggs sales	208,989	159,644
Manure	4,147	4,147
spend chickens	23,760	23,760
Total	236,896	187,552
Expenditures		
Pullets	28,800	28,800
Rearing feed (90 days)	31,363	21,384
Laying feed	144,540	98,550
Other costs	5,664	5,664
Total	210,367	154,398
Profit/loss	26,529	33,154
Percentage Profit/ Loss	13 %	21 %

Both models show a profit, with the low level alternative scoring best. Still these are only very rough estimates. On the other hand, AKDN reported good success with this approach in North Afghanistan²⁹. Monitoring of the farmers will be needed to be able to adjust the management in time.

The next table show how many eggs are produced daily when 400 eggs are incubated every month for 6 month per year (November- April; in summer the ambient temperature it too hot to hatch eggs successfully with local incubators). It is assumed that 90% of the eggs is successfully hatched; that every month 2% of these dies and that hens start laying after 6 months (with 60%) and continue to lay for one year (average 70%). The data are based on a first batch of eggs in November 2010 which allows for a proper preparation of the whole exercise³⁰.

Number of eggs produced per day from 1 incubator

Year	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov.	Dec
2011	0	0	96	205	320	440	558	666	669	656	630	596
2012	563	550	547	559	586	620	652	761	669	656	630	596
2013	563	550	547	559	586	620	652	761	669	656	630	596

The table shows that despite the 6 months interruptions the flow of eggs is rather constant, with some more eggs in the period Sept. – Jan. (when imports are highest). In this system the total annual production is 221.000 eggs. Per hen 203 eggs are laid; in between the assumptions used in the previous table. The mortality rate is a very important parameter in the system; if the rate is only 1% per month, the total number of eggs is more than 10% higher.

In such a system per month two new families are included; for six months per year. As a family looks after the chickens for 15 months and need one month to clean their henhouses, in total some 32 families can be involved. Obviously selection will be needed. The families should life near Terin Kowt and preferably close to one another. Two female extension workers will have to be trained to train women in managing the poultry unit.

²⁹ AKDN, 2007. The Poultry Sector: Creating Alternative Livelihoods in Rural Afghanistan

³⁰ In case the IP can organise an incubator very quick it might be possible to start in March/April 2010

In theory up to 10 incubators could be installed; this would lead to 2.2 million eggs per year. This means some 300 families would be involved. In practice it seems more realistic to work towards 5 incubators (2 in Terin Kowt, 2 in Dehra Wood and 1 in Chora) and 150 families. The next table shows the number of eggs per day if in 2011 and 2012 two additional incubators are started

Number of eggs produced per day from 1 incubator in 2010, 2 in 2011 and 2 in 2012

Year	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov.	Dec
2011	0	0	96	205	320	440	558	666	669	656	630	596
2012	563	550	738	969	1,226	1,499	1,768	2,092	2,007	1,969	1,889	1,788
2013	1,689	1,650	2,214	2,908	3,677	4,498	5,303	6,276	6,020	5,908	5,668	5,365

One of the issues is whether it will be feasible to get the eggs in Uruzgan without too much damage. If this proves too complicated, a semi-intensive breeding unit with 60 Golden Brown layers and 6-7 selected local breed cocks can be set up to produce an F1 chick, which unites the egg production potential of the commercial layer with the resilience and mothering capacity of the local breed.

The small-stock breeding farms with both a breeding and demonstration function, will offer vaccinated chicks for sale to farmers. These farmers are fully trained in semi-intensive poultry and small livestock keeping and the operation of an incubator. Farmers have developed a system of continuing the restocking post project as a commercial activity

Once the system works well it can be expanded with a second incubators in Terin Kowt and others in Dehra wood and Chora. In theory some 8-10 incubators are needed to substitute the eggs presently imported in Uruzgan.

ANNEX I DETAILS ON NATURAL RESOURCES AND LAND USE

Climate

Spring

In the valleys (March to April) spring is warm and generally clear. In the mountains above 2000m (early April to early June) it is cool, with unstable weather; light frosts are possible until late in the season. Precipitation occurs as heavy brief rains, sometimes with thunderstorms, and in the mountains snow is possible early in the season.

Summer

Below 2000m (May - September) summer is hot and dry. Temperatures are 25° - 35°C at daytime and 18° - 24° C at night. Above 2000m (early June to early September) it is considerably cooler, with light frosts possible at night. Precipitation occurs mainly in the season as brief downpours.

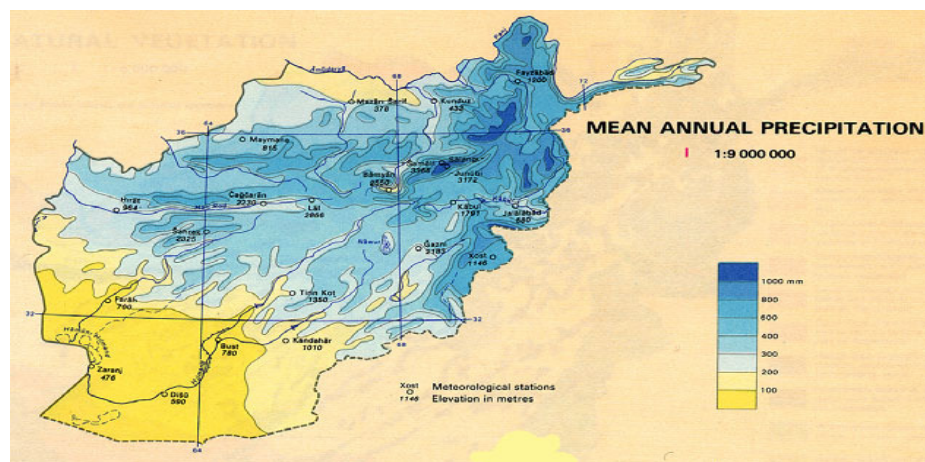
Fall

In the valleys (October to November) and in the mountains above 2000m (early September to early November) it is initially warm and dry but later cool and damp. Light frosts begin in late October or early November. Precipitation occurs mainly as rain, but snow is possible in the mountaintops. Wind directions are variable throughout the year.

Winter

In valleys (December - February) winter is rather mild. Temperatures are 3° - 6° C at daytime, 0° - - 4° C at night. In the mountains, above 2000m winter (early November to early April) is considerably colder. Precipitation in the valleys and basins occurs as snow, which melts rapidly, and rain, and in the mountains only as snow. Snow cover persists above 2500m, lasting 2 to 4 months. In winter, strong winds (up to 20 m/s) in the mountaintops and passes are accompanied by snowstorms. This area is characterized by mountain-valley winds; they blow up the mountainsides in daytime and back at night.

As the next graphs shows total rainfall is minimal (200 – 400 mm per annum) and without irrigation very little can be produced.



ANNEX II: MILK PRODUCTS

Milk Products as described by Fitzherbert (2007)

Yoghurt: mast (Dari), masta (Pashto), ayran (Turki)

Milk is brought to the boil, but not boiled. When warm, culture (maya) is added – usually some of the mast from the previous day. It is eaten fresh. Often the fat is separated to make *maska* and/or *roghan*.

Buttermilk: dough (Dari), shombe/schlombe (Pashto), ayran (Turki)

After the butterfat is separated from heated milk, the resulting buttermilk may have additional water added as well as herbs such as dried mint and a little salt. A favourite drink in hot weather.

Chakka

Mast is put in a cloth bag and the surplus liquid is drained off. Chakka can be stored for later use or sale.

Qurut

Chakka is spread out on trays or boards in the sun and dried. Whilst still moist it is rolled into small balls. Some salt may be added. When completely dry it is stored for winter or it may be taken to the market and sold.

Maska (Dari), ghorī (Pashto)

Butterfat is separated from the heated milk before making mast, either by skimming it or by using a hand separator. It may be further churned to make it solidify.

Sarshir

Literally the top of the milk skimmed off after heating.

Qaimaq

Similar to clotted cream. The milk is boiled and the cream separated and soured a little.

Roghan-i-zard

Literally yellow fat: clarified butter or ghee. *Maska* is further heated in a pot until it clarifies. A little salt may be added and then it is left to cool. *Roghan-i-zard* is often stored in a goat skin for later use or sale.

Cheese: panir

Usually a simple cheese; not made throughout Afghanistan. Milk is boiled and fat skimmed off, then it is left to cool. While still warm culture (maya) is added. This may be rennet or undigested milk taken from the first stomach (shirdan) of a suckling lamb or kid. When the cheese is set, it is cut into slabs and stored in goat skins until needed or sold.

Maya

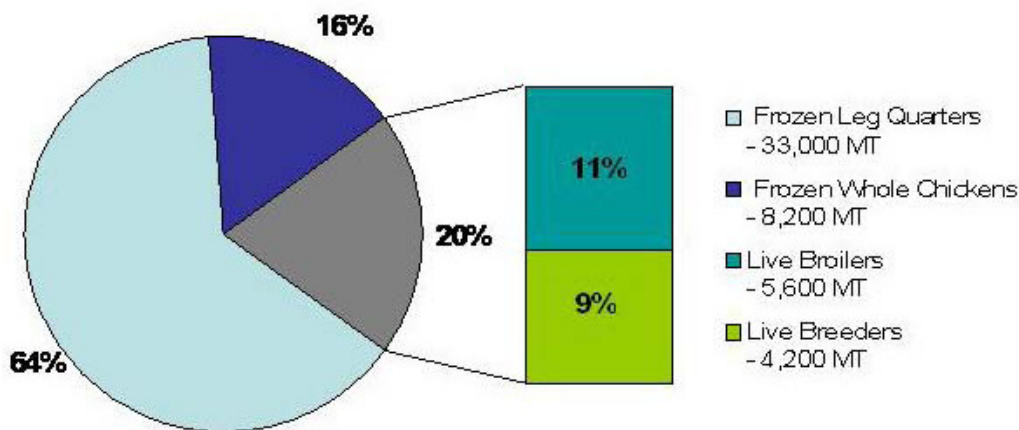
Culture or starter for mast or panir. Previous batches of mast, or dried mast for cheese, usually extracted as described above.

Shir-e-towj

Colostrum milk heated and eaten with bread.

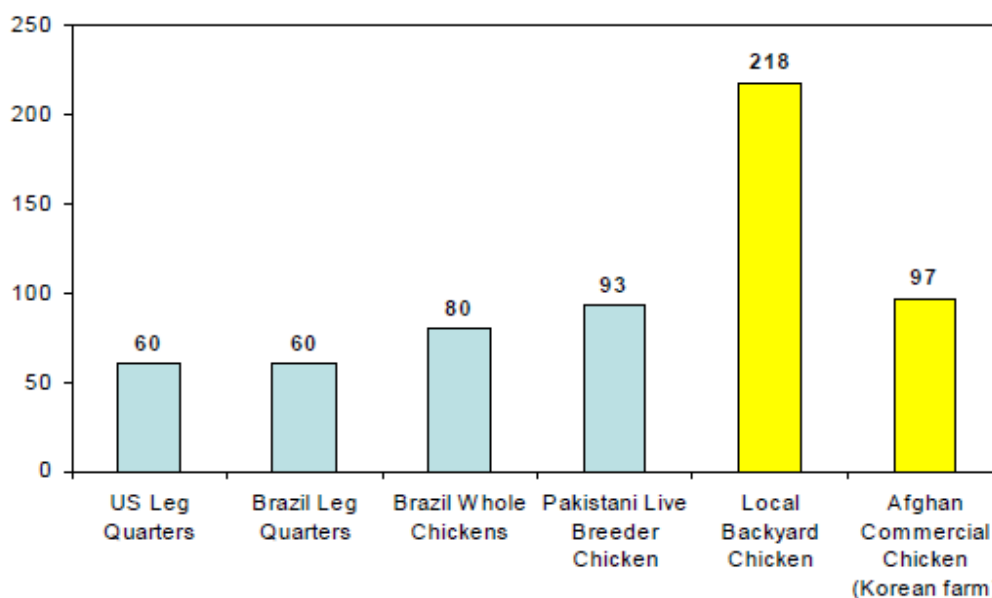
ANNEX III POULTRY IN AFGHANISTAN

The next graphs is some five years old but still reflects the present situation: Afghanistan is flooded by imported frozen chickens.



Source: ALTAI, Market Sector Assessments, March 2005

A total import of 51 million kg represent an average of 1.5 kg per capita. The import is not because people prefer to eat it; on the contrary they prefer local chicken as they are more sure that it is prepared properly (halal) and they are willing to pay substantially higher prices for it. The next graph shows this; it provided the retail prices of various types of chicken meat (in Afs/kg) in February 2005.



Source: ALTAI, Market Sector Assessments, March 2005

Indeed frozen chicken is much cheaper and therefore it dominates the markets; the graph also shows that modern chicken production inside Afghanistan (in this case a Korean firm) can lead to a much lower price for local chickens.

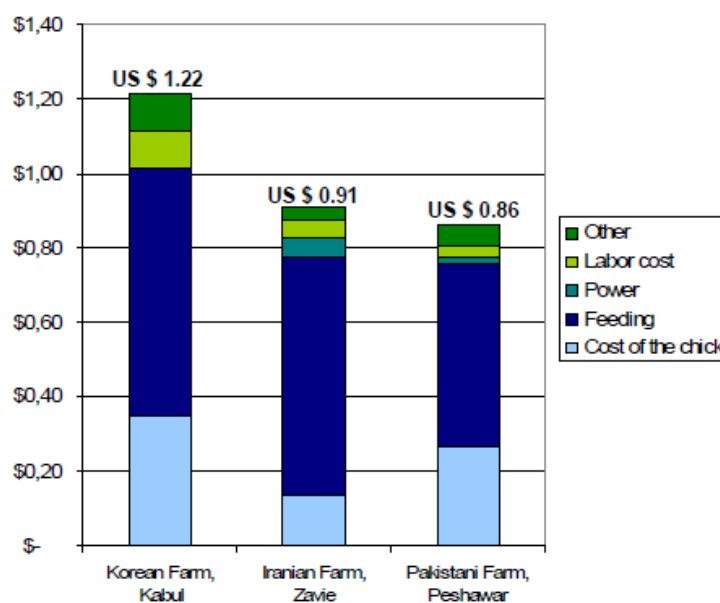
Case Study: “Korean Farm”, Kabul

A highly interesting semi-commercial initiative started in Kabul in 2004. Apparently, it is the only broiler farm in the region. The project was initiated by an Afghan farmer and mainly financed by a Korean businessman, hence the nickname of the farm among Kabulis. The farm has a capacity of 4,000 chickens but it started producing only 2,000 chicks for training purposes.

- One-day chicks were imported from Pakistan for US \$ 0.42 per unit.
- 6,000 kg of feed were imported from Pakistan for US \$ 0.33 per kg
- No heating was needed for this experimental phase
- 3 employees were trained. They receive a salary of US \$ 100 per month
- The farm was built one year ago on a piece of land rented for US \$ 120/month
- About 20% of the chickens is lost during the process (5% in Pakistani farms)
- Produced chickens weighed 1.5 kg after 1.5 month and were sold within 2 weeks for US \$ 1.33 per kg (63 Afs), mainly through an agent who brought them regularly to the live chicken retailers of Mondy Bazar, in the centre of Kabul
- The agent owns a container 200 m from the live chicken market, where he brings and stores chickens, waiting for retailers to come and purchase them from him.
- The farm has purchased hatchery equipment and a feed mill that it plans to use in the near future.
- Despite an initial production cost of US \$ 1.40 per kg, the results are promising, as fixed costs (rent and labour), today accounting for US \$ 0.38 per kg, could be scaled down to US \$ 0.20 if the facility were to function at full capacity, making it more competitive at a cost of US \$ 1.22 per kg.

The next graph compares the cost structure of this farm with similar-size farms in Iran and in Pakistan. Figures for the Korean farm were recomputed assuming that the farm is running at full capacity, but for only 6 months a year, as heating costs become prohibitive in the cold season (up to US \$ 0.4 /kg).

Cost Comparison between Afghan, Iranian and Pakistani Farms (US \$/kg of Broiler Chicken)



ANNEX IV LIVESTOCK DISEASES IN URUZGAN

The Afghanistan Veterinary Association in Uruzgan provided the following list of seasonal infection diseases in the Province.

Disease	Causes	Season	Kind of animal	Vaccination	Treatment
Anthrax	Bacteria	Summer	Sheep and goat	ASV	Impossible but use antibiotic
Brucellosis	Bacteria	All Season	Cow/sheep/goat	-	Antibiotics
Black leg	Bacteria	Summer/Fall	Cow/sheep/goat	BQV	Antibiotic
CCPP	Myco Plasma	Fall/Winter	Goat	CCPP	Antibiotic
Enterotoxaemia	Bacteria	Spring/Fall	Sheep and goat	ETV	Antibiotic Sulfamed
Foot rot	Bacteria	Rany Season	Sheep and goat	-	Antibiotic Antiseptics
FMD	Virus	Spring/ Fall	Cow/sheep/goat	FMD	
Hemorrhagic Septicemia	Availible	Rany Season and Summar	Cow/sheep/goat	HSV	Antibiotic and Sulfamed
Influenza	Virus	All Season	Poultry/Bired	Not available	No
Mastitis	Bacteria	All season	Lactation animals	-	Antibiotitic
Tuberculosis	Bacteria	All season	All animals	-	Not Economic
Tetanus	Bacteria	All season	Equine, Human	T A.T	Antibiotics AntiSeptic
Rabies	Virus	All Season	All animals	A.R.V	No
Sheep/goat pox	Virus	Fall	Sheep/goat	SPV	NO
R.P	Virus	All Season	Cow	RPV	NO
Salmonella Pullorum	Bacteria	All Season	Poultry	-	Antibiotic
Newcastle disease	Virus	All Season	Poultry	NDV	No
Gumbro	Virus	All Season	Poultry	G.V	No
Thileria	Protozoa	All Season	Cow/sheep/goat	-	Anti protozoal
Babeisia	Protozoa	All Season	Cow/sheep/goat	-	Anti protozoal
Surra	Protozoa	All Season	Hours/Camels	-	Suramine/ Accaprine

Source: AVA in Uruzgan

The next table (from Ayubi et.al, 2008) shows the activities of VFUs in Uzurgan in 2007.

Animal Health Program Monthly Activity report from VFUs 1/2007 until 1/2008								
		Urozgan VFUs				Daikondi VFUs		Total
		Terin Kowt	Abborda	Zearat	Chora	Gezab	Naik Abad	
	Cattle	0	0	0	588	0	0	588
ASV	Sheep	0	0	0	390	0	0	390
	Sheep	1380	0	450	500	0	0	2330
ETV	Goat	320	0	0	0	0	0	320
	Cattle	30	0	65	65	0	0	160
FMD	Sheep	450	0	100	200	0	0	750
	Goat	0	0	100	0	0	0	100
	Sheep	250	0	0	0	0	0	250
PPR	Goat	100	0	0	0	0	0	100
	Total	2530	0	715	1743	0	0	4.988
	Cattle	61	35	22	45	26	53	242
	Sheep	124	65	333	96	78	146	842
Respir.diseases	Goat	113	81	63	144	86	162	649
	Equine	4	0	3	6	7	7	27
	Camel	1	0	4	3	0	0	8
	Poultry	10	5	0	0	7	35	57
	Cattle	47	30	16	30	14	40	177
Diarrea	Sheep	113	55	330	84	100	113	795
	Goat	108	39	59	135	131	140	612
	Equine	5	0	1	2	4	4	16
	Poultry	0	0	0	0	0	53	53
	Cattle	40	45	18	37	33	24	197
	Sheep	19	21	7	20	31	38	136
	Goat	13	37	22	32	22	35	161
Digestive disorders	Equine	32	10	21	7	11	10	91
	Camel	11	2	12	8	7	2	42
	Poultry	2	0	6	8	0	34	50
	Cattle	4	25	2	2	1	3	37
	Sheep	2	8	0	3	0	0	13
Reprod.diseases	Goat	2	2	0	2	0	2	8
	Poultry	4	0	0	5	0	0	9
	Cattle	28	17	13	15	14	29	116
Mastitis	Sheep	6	0	0	0	2	18	26
	Goat	0	0	5	5	6	12	29
	Cattle	166	52	98	182	326	212	1.036
	Sheep	3.882	253	1073	937	2361	2230	10.736
Ecotparasites	Goat	4.083	132	1346	1196	3002	2478	12.237
	Equine	15	3	29	55	60	80	242
	Camel	12	1	34	40	18	4	109
	Poultry	280	0	240	400	106	83	1.109
	Cattle	151	104	161	184	217	145	962
	Sheep	3.148	270	1052	1535	1867	2024	9.896
Endoparasites	Goat	2.390	85	1349	1610	2843	2180	10.457
	Equine	7	1	57	64	36	32	197
	Camel	12	2	20	35	9	10	88
	Poultry	40	0	45	205	56	105	451
	Cattle	16	12	10	12	20	31	101
	Sheep	24	5	10	16	40	276	371
Other infectious dis.	Goat	3	0	2	3	33	25	66
	Equine	1	0	4	4	1	0	10
	Camel	0	0	1	1	0	0	2
	Poultry	2	2	9	14	8	16	51
	Cattle	10	3	1	11	6	1	32
	Sheep	13	4	2	12	2	0	33
Wounds	Goat	6	3	1	2	0	1	13
	Equine	7	0	1	15	27	15	65
	Camel	6	0	2	7	1	0	16
	Poultry	0	0	0	0	0	9	9
	Cattle	9	2	8	13	13	14	59
	Sheep	35	33	21	63	97	87	336
Castrations	Goat	8	0	4	14	43	45	114
	Equine	3	0	0	0	0	0	3
	Poultry	0	0	0	0	1	0	1
Dehorning	Cattle	4	4	3	6	2	2	21
	Cattle	3	0	2	3	1	3	12
Dehorning	Sheep	0	0	0	0	0	4	4
	TOTAL	15.085	1.448	6.522	7.328	11.776	11.072	53.232
	Total per month	1.257	121	544	611	981	923	4.436