Agricultural Market Assessment
EGG AND SHEEP VALUE CHAINS
JANUARY 2016
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Acronyms and Abreviations

AOG  Armed Opposition Groups  
FAO  Food and Agriculture Organisation of the United Nations  
FGD  Focus Group Discussion  
FMD  Foot and Mouth Disease  
GDP  Gross Domestic Product  
IDP  Internally Displaced People  
ISIL  Islamic State of Iraq and the Levant  
KII  Key Information Interview  
ODK  Open Data Kit  
PDS  Public Distribution System  
PPR  Peste des Petits Ruminants
Executive Summary

Agriculture is an important sector for Iraq economy but it has been in slow decline for over a decade due to conflict, economic downturn, urban migration and state policies that have interrupted market dynamics. Iraq currently relies principally on imports to meet the country’s food security needs. However, the agricultural sector does provide an opportunity for Iraq to improve the country’s economy, and more critically, to increase the resilience of conflict affected rural populations, by increasing their productivity and household food security.

This report summarises the findings of a market assessment conducted by GOAL and Big Heart Foundation in January and February 2016 in three sub-districts, Rabia (Ninewa governorate), Derabon and Darkar (Dohuk governorate). The objective of the assessment was to identify the opportunities and constraints within existing agricultural market. In order to focus our research, and based on an analysis of the context, we have identified and assessed two specific value chains, (sheep and egg), to examine more closely and inform GOAL and Big Heart's programme approach.

The research included secondary data research, key informant interviews, focus group discussions and a household survey and considered all aspects of both value chains; from mapping of players, inputs, production, processing, marketing, infrastructure, support services and the wider enabling environment.

From our research into the sheep value chain, we know that there is a business case for sheep production and there are opportunities to increase production and restore livelihoods lost due to the conflict. This will have a beneficial impact on local access to meat and milk products for all communities, and on existing milk processing businesses, by increasing supply. Programming should tap into existing opportunities by identifying and expanding existing (successful if depressed) business models with key players as well as supporting farmers who have lost their livelihoods as a result of the conflict.

Identification of key players should be based on a clear business opportunity and the potential for scale and inclusive growth. Programming should work to reduce the identified constraints, such as low sheep stocks and access to inputs and services for farmers. Identification and investment of natural entrepreneurs (early adopters), from both communities will be critical in demonstrating what works and in influencing others (later adopters). Additionally, initiatives should focus on conflict resolution and support a more enabling environment for all players along the sheep value chain to increase production and linkages with the local market, which is already demonstrating demand.
The egg value chain differs from the sheep value chain in that there is an opportunity to increase household production to more market facing production, specifically targeting women, who are the current producers. There is demand in the local market for local eggs, where any excess is sold but producers are poorly linked to other actors in the value chain. Increase linkages would allow producers to; take advantages of economies of scale for purchase of inputs (feeds); aggregate commodities and link to larger market players and potentially access to more productive breeds.

The Recommendations section of the report outlines these findings and conclusions in detail.

**GOAL & Big Heart Organisational Profiles**

**GOAL** is an international non-governmental development and humanitarian organisation, founded in 1977. Over more than 30 years, GOAL and has spent over $1billion on humanitarian and development programmes in more than 50 countries. GOAL currently works in 19 countries across Africa, Asia and Latin America. In regions of chronic crisis and underdevelopment including conflict affected and fragile states, GOAL implements humanitarian and development programmes aimed at supporting long term positive change for poor, vulnerable and marginalised groups by reducing their economic and social vulnerability and supporting individuals and communities to create their own pathways out of poverty.

GOAL's rationale for supporting a systems approach stems from an appreciation of the importance of inclusive economic growth for poverty reduction. Expanding access to goods and services are critical in developing competitive and inclusive economies. Improving the lives of the poor, stimulating growth and expanding access, means transforming the systems around poor people. In Uganda, GOAL is currently implementing a $20 million agricultural livelihoods programme using innovative systems approaches.

Cognisant of context, GOAL aims to uses a facilitative approach to stimulating and incentivising permanent actors to see and take advantage of opportunities. GOAL’s programming seeks to engage and catalyse growth and development, ideally remaining outside the system.

**Big Heart Foundation** is a not-for-profit, non-governmental, non-religious organisation established in June 2013 to provide impartial humanitarian assistance and to prevent and alleviate human suffering. Big Heart specialises in providing impartial humanitarian assistance to highly vulnerable populations living in hard-to-reach, insecure and underserved areas. GOAL has worked in partnership with Big Heart in Syria and together the organisations have a proven capacity to deliver relevant, effective programming.
Agricultural Sector Overview

The agricultural sector in Iraq represents the second largest industry of the non-oil economy, contributing 4.2% to GDP in 2013\(^1\). Significantly, 33% of the Iraqi population live in rural areas\(^2\). As one of the largest sources of rural employment, agriculture provides an important source of income and food security. Despite almost 70% of the total population living in urban areas, it is widely recognised that rural populations - both host communities and internally displaced persons (IDPs) - are disproportionately affected by poverty and food insecurity; an estimated two thirds of the population who are classed as food-insecure reside in rural areas. Notably, women play an important role in the agricultural sector in Iraq and according to FAO the percentage of women comprising the agricultural labour force increased from 42% in 2000 to 53% in 2015.

Despite the importance of the sector, the agricultural industry has been slowly declining over a number of years since the early 2000s, impacted by various conflicts, displacement, the economic situation and State policies. Recently, the Ministry of Agriculture estimated that Iraq has lost 40% of its agricultural production capacity following ISIL control of the country’s agricultural-dominant provinces\(^3\). The conflict has seen rural areas destroyed, land deemed unsafe due to remnants of explosives, and agricultural assets stolen. The security situation and loss of rural livelihoods has caused an increase in the urban migration of both host community and IDP families. Those who remain in the farming industry are forced to resort to negative coping mechanisms to meet their families’ needs, including the selling of productive assets (livestock, equipment, supplies).

The agricultural sector in Iraq is not currently meeting its potential in terms of efficiency and productivity due, in part, to State policies that have created a dependency on subsidies and disincentive private investment needed to modernise agricultural practices and technologies. Iraq is currently unable to produce enough food to cover the population’s demand and the country is heavily reliant on imports. In the Kurdistan Region, according to the Regional Ministry of Agriculture, 90 percent of food consumed is imported\(^4\).

Recently, the agricultural sector has been identified by both the Government of Iraq and the Kurdistan Regional Government (KRG) as a strategic area of focus to be prioritised for rehabilitation and development. In its strategy document, ‘Kurdistan Region of Iraq 2020; A Vision for the Future’, produced by the Ministry of Planning of the KRG, the agricultural sector is identified as a primary sector for development and investment. With sound interventions, informed by a robust understanding of the current constraints on and opportunities for the sector, agriculture in Iraq has the potential to play a key role in increasing food security, reducing unemployment and poverty, and supporting the country in building resilience to future crises.

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\(^1\) CIA Factbook  
\(^2\) FAO Stat 2015  
\(^3\) http://www.al-monitor.com/pulse/business/2015/01/iraq-agriculture-production-self-sufficiency.html  
\(^4\) www.ekurd.net November 2015
GOAL and Big Heart undertook an agricultural market assessment over a three week period from the 7th - 28th January, 2016. The objective of the assessment was to deepen an understanding of the functioning of key agricultural markets with the purpose of informing GOAL and Big Heart’s livelihoods programming strategy in Iraq. The specific aim was to identify and assess actors, trends, dynamics and opportunities at all levels of two key value chains as well as the external influences and enabling environment of the wider market systems.

The assessment applied a mix of market system analysis tools and approaches adapted to the context and time constraints, with a focus on both desk and field research. The field research was carried out by a team of nine local facilitators (five male and four female) who participated in an initial one-day training workshop in data collection tools and techniques, including the use of interview facilitation/listening techniques. The following data collection methods were utilised:

- Desk research of secondary data sources
- Key Informant Interviews (KII)
- Focus Group Discussions (FGD)
- Household Surveys

A total of 37 KIIs were carried out with key actors identified within each value chain and five FGDs and 210 household surveys were completed with specific target groups. The household surveys were carried out using Open Data Kit (ODK) mobile data technology with tablets that facilitated the data collection process.

Time was the primary constraint considering the scope and complexity of the value chains analysed. Sufficient data was collected however to understand the key aspects of the targeted value chains required to inform quality programming and to provide a fair representation of the current situation.

While the household survey provides a valuable snapshot, the number of household surveys conducted does not provide sufficient confidence level to be statistically representative of the total targeted population.

An additional constraint was the lack of current, reliable data relating to the value chains analysed. Recent Agricultural Census data is unavailable and years of conflict have resulted in a lack of consistent statistical data across multiple sectors - including agriculture.

5 See Annex A for list of Key Informants
The assessment focused on the two sub-districts of Derabon and Darkar located in the district of Zakho, Dohuk Governorate; and the sub-district of Rabia, in the district of Tel Afar, Ninewa Governorate. These districts were selected due to the high level of need in regards to livelihoods programming combined with a strong background in the agricultural sector. The two locations were also chosen because they represent a significant density of IDP population (Zakho) and a high density of host community population who have recently returned (Rabia).

The assessment analyses the egg and sheep value chains and market systems, with a particular focus on the opportunities for inclusion of the poorest and most vulnerable populations within those systems. Three target populations were identified as central to the assessment process: host communities, internally displaced persons (IDPs) and refugees in non-camp settings.

Zakho is a district of Dohuk Governorate. The district is estimated to host over 20,000 IDP families many of which have been displaced from Sinjar mountain areas. Zakho lies close to the border with Turkey. The assessment specifically targeted two sub-districts of Zakho: Derabon and Darkar.
Rabia is a sub-district of Tel Afar district located in the northwest of Ninewa Governorate. It lies on the border between Syria and Iraq and has seen a large displacement of the population as a consequence of the conflict between Iraqi and Kurdish troops on the one side and ISIL on the other. In October 2014, Kurdish troops regained control of Rabia from ISIL and since then returned host community members and IDPs (estimates at 1,4607) are slowly trying to regain their livelihoods. The assessment targeted both Rabia town and surrounding villages.

The following locations were targeted and various data collection methods were employed as detailed below:

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>DATA COLLECTION METHOD</th>
<th>SAMPLE SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NINEWA GOVERNORATE Tel Afar District</td>
<td>Rabia</td>
<td>Focus Group Discussion</td>
</tr>
<tr>
<td></td>
<td>Rabia</td>
<td>Key Informant Interviews</td>
</tr>
<tr>
<td></td>
<td>Rabia</td>
<td>Household Surveys</td>
</tr>
<tr>
<td>ZAKHO GOVERNORATE Zakho District</td>
<td>Zakho</td>
<td>Focus Group Discussion</td>
</tr>
<tr>
<td></td>
<td>Zakho</td>
<td>Key Informant Interviews</td>
</tr>
<tr>
<td></td>
<td>Zakho</td>
<td>Household Surveys</td>
</tr>
</tbody>
</table>
Household Survey Findings

A total of 210 households were surveyed in Zakho and Rabia. A mixture of rural and urban locations were targeted.

Demographics

Household Status

Of the 210 households interviewed, 106 households were internally displaced people (IDPs) and 104 households or 49.52% were host communities.

Gender of head of household

The majority (86.19%) of households were male headed, with the exception of 29 households (13.81%) which were female headed.
The average age of the head of household interviewed fell in the 36 - 45 year old age category.

Number of household members

The average family size of interviewees currently within the household was quite high. Of the interviewees, over 55% had a total number of 9 or more family members currently part of the household. (This includes extended family)
Of those who self-identified as being displaced, most had been displaced since August 2014 and many from the Sinjar region. In total, 95.71% of interviewees stated that they had no intention to return home in the next three months, an indication of their protracted displacement. The main reasons given for not wanting to return home were a lack of public services, particularly health and education, lack of livelihoods, and insecurity.

IDPs were asked to list in order of importance the deciding factors that would help them determine whether or not to return home; below their responses in order of preference:

1st  • Access to health facility
2nd  • Existence of livelihoods
3rd  • Feeling secure
4th  • Adequate lodgings
5th  • Access to schools

As livelihoods availability is an important criteria for IDPs when deciding whether to return home, funding activities in areas of return is an important factor to consider, while being cognisant of not contributing to push or pull factors.

Interviewees were asked questions regarding the availability of livelihoods in the local area, in addition to providing details on their livelihood status pre-conflict in order to compare it to their current status.

In regards to people’s opinion on which livelihoods are available locally, the majority identified the agricultural sector, particularly livestock, followed by crops and vegetables. This corresponds with the answers provided on pre-conflict livelihoods where the majority of those questioned had been working in the agricultural sector.
85.24% of those questioned believed that their pre-conflict livelihood was sufficient to meet their families’ needs.

**Livelihoods pre-conflict (absolute numbers)**

- Other
- NGO Assistance
- Government job
- Daily labour / informal
- Livestock (Ag)
- Vegetables (Ag)
- Crops (Ag)

In contrast, the majority stated that they currently had no type of livelihood. A total of 80% of those surveyed could no longer meet their family’s needs.

**Current Livelihood (absolute numbers)**

- No job
- NGO Assistance
- Private sector
- Government job
- Daily labour / informal
- Livestock (Ag)
- Vegetables (Ag)
- Crops (Ag)
In relation to credit financing, only 17% of interviewees had applied for a loan in the previous 12 months. The majority did not know where to access a loan or did not believe they had access to a loan if needed.

A major constraint for most was a lack of access to land. Over 72%, which included both IDP and host communities, did not have any access to land.

Access to nearby markets

Nearly all interviewees had access to a local market and the majority stated that they had safe access to the market and that they did not have to pay any transport costs to get there.

Access to nearby markets

16.19% Sometimes
4.29% No, never
79.52% Yes, all the time

How many donems of land do you have access to?

72.38% 0
10.95% 1-10
4.28% 11-20
5.24% 21-50
1.43% 51-100

In relation to credit financing, only 17% of interviewees had applied for a loan in the previous 12 months. The majority did not know where to access a loan or did not believe they had access to a loan if needed.
In order to maximise the value of the assessment, the need to limit the number of value chains to be assessed was recognised from the outset. Careful selection criteria were utilised in order to inform this decision. The table below details the scorecard utilised to assess and prioritise the value chains highlighted by desk research as possibilities for analysis.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Category Weight (1-3)</th>
<th>Criterion Weight (1-3)</th>
<th>Value chain (1-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECONOMIC</td>
<td></td>
<td></td>
<td>Sheep (Dairy)</td>
</tr>
<tr>
<td>Economic Value of Market System</td>
<td>3</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Market growth/ opportunities</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Prospects for Private/Public Investment</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>SOCIAL IMPACT ON TARGET GROUP</td>
<td></td>
<td></td>
<td>Tomatoes</td>
</tr>
<tr>
<td>Participation of women</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Employment creation</td>
<td>2</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Income generation</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Participation of IDPs</td>
<td>2</td>
<td>5</td>
<td>2</td>
</tr>
</tbody>
</table>

In order to maximise the value of the assessment, the need to limit the number of value chains to be assessed was recognised from the outset. Careful selection criteria were utilised in order to inform this decision. The table below details the scorecard utilised to assess and prioritise the value chains highlighted by desk research as possibilities for analysis.
Economic category scores are based on the opportunity demonstrated by the value chain to expand from its current size in addition to the potential for public/private investment. The social category rates the potential of the value chain to have a positive impact on the target population from a social perspective. The environment category considers externalities that impact the value chain for example, government policies. The project category rates the ability of the value chain to be included in an effective, efficient livelihoods programme. Weightings for each category and criteria were designated based on their relevance to the context. Once the value chains, categories and criterion were identified, key informants were engaged to rate each value chain under the agreed-upon criteria.

Through this structured scorecard mechanism, Sheep and Hens (eggs) were selected for analysis. In a broader assessment. The recommendation for a future, broader assessment is that bees and tomatoes value chains are also analysed.
Sheep production is an important component of the agricultural sector in Iraq, with their meat, milk and wool traditionally providing small farmers with income and food. Obtaining accurate data on the size of the sheep population in Iraq is difficult as agricultural censuses are not readily accessible. Furthermore, the on-going conflict, displacement and inaccessibility of some areas makes it almost impossible to get an accurate picture of the current national flock. In 2013, FAO estimated a total population of 8.25 million sheep⁸, which is not a significant increase from the estimated population of 6.9 million in 2000, especially when compared to the growth in human population over the same period. The total sheep population surpasses that of all other livestock by far; significantly fewer cattle, buffalo and goats demonstrate the importance of sheep livestock to rural farmers - a reality that could be due, in part, to the low cost and maintenance of sheep compared to other livestock.

Mapping of Value Chain Actors

At the beginning of the assessment a mapping of the value chain was carried out to determine who the principal actors are involved in the different stages of the value chain, these are mapped overleaf.
MARKET ENABLING ENVIRONMENT

Climate | Agricultural subsidies | Agricultural policies | Insecurity/conflict

Importers → Turkish distributors → Dairy processor → Trader → Consumer

Trader
i.e. Butcher, local market trader, supermarket

PRODUCERS
Large scale farmer
Small scale farmer

Milk wholesaler
Animal wholesaler
Slaughterhouse

KEY INFRASTRUCTURE INPUTS AND SUPPORT
Sheep | Labour | Land | Feed | Transport | Extension services | Credit | Veterinary services | Vaccinations

18
In Iraq, the most common sheep production systems are extensive and semi-intensive, where livestock are grazed with little or no supplemental feed, depending instead on stubble grazing and crop residues. Intensive farming is not widespread and involves raising sheep on daily feed supplements which are costly. This system is mainly adopted by the few large scale sheep farmers who have developed more advanced farming techniques aimed at improving productivity and efficiency.

The table below is indicative of the sheep seasonal calendar in the target areas:

<table>
<thead>
<tr>
<th>Production</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
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<tbody>
<tr>
<td>Breeding season</td>
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<td>Gestation period</td>
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<tr>
<td>Lambing and lamb suckling</td>
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<td>Weaning</td>
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<td>Milking period</td>
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<td>Vaccinations</td>
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<td>Shearing</td>
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<td>Fattening period</td>
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<td>Slaughter (male lambs)</td>
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<td>Pasture</td>
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<td>Concentrate Feed</td>
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</tbody>
</table>

The following inputs were identified for the sheep production industry: animal, feed, vaccines, labour and land/enclosure. In general these represent a significant economic barrier to re-entry by returnees who are looking to re-stock their lost livelihoods.
There are three main native sheep breeds in Iraq including the Awassi, Karadi (including sub-breed Hamdani) and Arabi (including sub-breed Na’aimi). Awassi is the most popular or widespread breed, in part due to its low maintenance and high resilience to various diseases and climatic conditions. All breeds can be considered dual purpose, being raised for both meat and milk production.

Through various focus group discussions it was determined that a small business generally has less than one hundred sheep, a medium size business would have hundreds of sheep and a large business thousands. Depending on family size, on average, a minimum of 15 sheep is required for income generation - any less than this is considered subsistence farming by which the animal by-products would be able to meet household consumption needs but not provide an income.

The cost of purchasing a sheep is approximately $150 although price is affected by both the age of the sheep and the breed. There is a preference to purchase sheep at two or three years of age, when they are able to start lambing. The price of sheep is a significant constraint to re-stocking for farmers who fled their land or whose sheep were seized as a result of the conflict, limiting their possibilities of re-starting their pre-conflict livelihood activities.

As mentioned above, a majority of farmers use extensive and semi-intensive systems in which sheep grazing patterns are linked to cereal crop production. Little to no supplemental feeding is used and when it is, it is limited to the winter months. Supplementary feed usually consists of barley or wheat, however as a result of reduced production of wheat and barley, high prices and lack of availability have severely impacted the sheep industry. The average cost of concentrate feed is $300 per tonne with sheep consuming between 0.5 – 1kg of feed per head per day. The high cost of feed has not only had a knock-on effect on the price of meat but has also resulted in farmers resorting to negative coping mechanisms such as selling some of their animals in order to purchase feed for the rest of their flock.

Key informant interviews with experts and academics suggest that inadequate feed impacts on the productivity of Iraqi sheep and that farmers lack not only the financial means for but also the knowledge about appropriate feed for sheep, which could improve productivity. For example, feed blocks are not commonly used in sheep production due in part to a lack of local availability in the target districts as well as the high price.

As in all countries, farmers’ livelihoods and the entire sheep value chain are dependent on the health of the livestock. Diseases of concern for sheep include foot and mouth disease (FMD), peste des petits ruminants (PPR), sheep pox and mastitis (the latter is curable if treated quickly however can
limit milk production).

In Iraq, State Veterinary Offices exist at both governorate and district levels and have traditionally provided vaccines, health services, drugs, quarantine and surveillance services to farmers (at a minimal financial cost). The recent conflict and economic crisis has impacted significantly on these services however and while the government continues to provide some vaccinations in the case of outbreaks and subsidised treatments, in some areas, farmers are forced to use private veterinary services. The costs of such services can be high, thus causing further increase of the cost of raising sheep.

### Labour

Agriculture in Iraq is principally dominated by small scale farming units run largely through a division of tasks amongst household members with no external labour force required. Generally, only medium to large scale flocks would require additional casual agricultural labour. Focus group discussions highlighted that, at times, small scale farmers in a village may group together either to share the task of taking sheep to graze (on a rotation system with other households) or to hire a shepherd to carry out this task and split the financial cost, which is estimated at approximately $800 per month for a shepherd of a medium sized flock. A proportion of those interviewed for this assessment work as agricultural labourers earning a very low income and some indicated that they worked for lambs or milk instead of cash.

In regards to the division of labour, the role of women has become increasingly important in the agricultural industry in Iraq. With men participating in the war or forced to look for more economically viable livelihoods, women have become gradually more involved in agriculture, with a now estimated 60% of agricultural labourers being female. In sheep farming, men are predominately tasked with feeding, taking the sheep to graze and lambing in contrast to the females, who are more involved in milking and the processing of dairy products.

### Land/Enclosures

Depending on the farmer’s production system and the local context, sheep may be kept in an enclosure. Extensive production systems would generally have sheep grazing in open areas with no need for pens in comparison to intensive farming systems that would see all sheep kept in an enclosure.

In Rabia, due to the warmer climate, sheep pens are generally not used; in Zakho there exists a risk of wolf attacks so enclosures are more commonly used. A rule of thumb is that an enclosure is sized between 1.5 and 2 square metres per sheep and can cost $300 - $500 for small scale farmers.

Iraq has a total land area of 44 million hectares, of which approximately 21% (or 9.23 million hectares) is suitable for agriculture. Access to land is a significant constraint to restoring agricultural livelihoods for IDPs. In some villages communal lands may be accessible to some, however, it would depend on acceptance by the host community and in some areas there may be a risk that
underlying social tensions could be ignited over IDPs accessing the land of host communities. A thorough understanding of tensions in certain areas and access to land rights is necessary. Host communities suggested they had adequate access to land and good pasture in the mountains for grazing. Host communities mentioned that common pasture areas are occasionally provided for free in the summer months by crop farmers who have reaped wheat and barley, however this is on an ad hoc basis, as other informants mentioned having to pay. An opportunity that could be explored is facilitating links between wheat and barley producers and sheep farmers (or encouraging dual production where feasible) for mutual benefit.

**Processing/Marketing**

With a total population of over 33 million people in Iraq and an estimated local population of 3.6 million in Ninewa Governorate and 505,000 in Dohuk Governorate, and with milk and meat considered staple food items, consumed on a daily basis, the importance and size of the market is evident. Many farmers choose to farm sheep due to the potential diversification of by-products including meat, wool, leather, and milk; and from milk many other food products such as cheese, yoghurt, cream, butter, ice-cream etc.

During the assessment, it was observed that there is relatively good access to markets from communities targeted. In Zakho, there are good sized markets with the nearest large-scale market 57 kilometres away in Dohuk. In Rabia the markets are smaller and the nearest larger markets in Iraq are located in Zakho and Dohuk - significant travel distances from Rabia. Most small farmers only access local markets with their produce due to a lack of cold storage facilities, the prohibitive transportation costs involved, and perceived little value add in reaching more distant markets. The access to markets in Mosul and Tikrit are now restricted and producers confirmed that while previously they did trade in these areas, the conflict and security situation has restricted their movement. This has created an increase in local produce available on the local market and a perceived impact in decreasing prices. In some cases, in an attempt to access other markets, a few people are choosing to travel further distances (such as Najaf) but similarly, the transportation costs impact the retail price of the product.

In regard to all dairy and meat produce, two key sales channels exist: formal and informal. The formal is generally used by large scale producers who are well established and is characterised by clear marketing (packaging, labels) and compliance with hygiene standards and can demand a higher retail price. Small scale household level producers generally work within the informal sales channel, this can involve direct sale to other members of the community or at the local market.

**Milk**

Milk is an important sheep by-product as trends and constraints in milk production has an impact on the rest of the dairy value chain. In Iraq, milk production derives from a range of mammals including cows, sheep, goats, water buffalo and camels. Cow milk is the most widely consumed, followed by

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10 IOM Tracker, February 2015 (population totals exclude refugee and IDP numbers)
sheep milk. Sheep milk is preferred due to its high fat content and as a result is particularly used for cheese and yoghurt processing. Although milk production depends on external conditions such as climate, feed, technologies, age of sheep etc., on average a sheep in Iraq can produce between ½kg - 1kg of milk per day over a milking period of on average 90 days per year during the months of April to July. Milk is sold principally in informal markets and in its raw state as consumers prefer to pasteurise and process the milk at home in order to guarantee hygiene standards. An estimated 80% of milk for sale in Iraq is produced by small and medium scale farmers.

The price of milk fluctuates throughout the annual cycle and on average the price is between 1500 - 2000 IQD per litre. At the height of the lambing season there is an excess in the supply of milk and the price decreases to an average of 1250 IQD per litre. In comparison, an increase of up to 3000 IQD per litre can be expected due to a shortage of milk following the end of the lambing period. Generally, for small scale farmers there is a lack of cold storage facilities so produce is sent straight to the local market. Iraqi consumers prefer fresh locally produced milk, however there is a significant quantity of milk powder available on the market. Milk powder is mainly imported and 1kg of powder forms part of the monthly Public Distribution System (PDS) basket that, when the system is functional, is distributed to all households. This has affected the dynamic of the local milk market and consumer demand and competition. Further research is required to fully understand consumer demand and how to make the product more competitive.

The findings of this section of the value chain suggest the need to increase the milk yield to meet demand and so it is important to increase the national flock size. In addition, sheep farmers would benefit from a decrease in the cost of feed through subsidisation or other market interventions as well as establishing cold storage collection centres and coordinate their use by farmers. There exists the opportunity to improve market linkages, for example between farmers and cold storage providers and between milk producers and cheese and yoghurt producers alongside improving the marketing capabilities of all value chain actors to increase access to wider markets.

As mentioned above, a number of products are derived from milk - yoghurt and cheese processing are considered in this analysis in depth because they are key dairy products in Iraq and other by-products (butter, ice-cream, cream etc.) are more reliant on imported powdered milk than on national fresh milk, which is within the value chain being assessed.

Cheese

Cheese in Iraq can be made from cow, sheep, goat and camel milk. There is a preference for cheese produced using sheep or goats milk, which contain higher fat content. On average sheep milk has 7.4% fat content compared to 4.5% in goat's milk and 3.7% in cow's milk; as a result sheep milk is less frequently processed for drinking milk but is instead used in the cheese industry.

The demand for locally produced cheese is high in Iraq and demand outstrips supply, resulting in a large number of imported goods. According to FAO Stats in 2013, 5,405 tonnes of cheese (made with sheep milk) were produced in Iraq; in addition the country currently imports between 10,000 - 20,000 tonnes of cheese principally from Iran, Egypt and Turkey. There are a number of types of national cheeses that require different processing methods and include curds, soft, and white cheeses which are often sold in local markets by small scale producers.
Local cheese can be produced by small scale farmers or more generally, specific small scale processors who purchase milk from farmers. This is principally a female dominated activity. Many households also make their own cheese with locally purchased milk for their own consumption with quite few, low-cost inputs required. Some types of cheeses do not require cold storage and others are matured and stored underground. As cheese can be stored for longer than milk, farmers sometimes switch to cheese production when the price of raw milk drops too low.

The added value to raw milk through cheese processing makes the activity viable from an income-generation perspective. Between 4 – 5kg of sheep milk, costing approximately 8,000 IQD, is required to produce 1kg of cheese. This product can sell for between 10,000 – 15,000 IQD/kg.

Like cheese, yoghurt is in high demand in Iraq and is consumed daily by the majority of households. There is a lack of local supply to meet demand of locally produced yoghurt which is preferred over imported produce. The consumption of Laban (a yoghurt drink) alone is estimated at 300,000 tonnes per year. Consumers prefer yoghurt made with raw milk which can demand a higher retail price as opposed to milk powder.

Yoghurt available in Iraq is produced on both a household and small scale industrial level. Many households make their own yoghurt by purchasing raw milk in the local market. This is preferred as people dislike powdered milk that is used in some yoghurt products as it impacts negatively on flavour. Large quantities of yoghurt are imported, although this is principally produced using powdered milk. There is a gap in local industrially-produced yoghurt counterparts that can compete with imported versions. There are a limited number of small yoghurt manufacturers based in Dohuk and Zakho City and at least three medium sized businesses in Dohuk. On average a small business can produce between 100kg – 200kg of yoghurt per day and a medium sized business up to 400kg per day. Raw milk is sourced from local farmers or wholesalers and the processed yoghurt is sold to small local markets in Dohuk. Market-sold yoghurt can sell for approximately double the price of raw milk (average 2000 IQD/kg), although the price fluctuates in accordance with milk prices. There is a marketing constraint on local yoghurt because it is sold with none or very basic labelling and packaging. Packaged and labelled yoghurt from small manufacturers meeting food quality standards can obtain up to 3500 IQD/kg when retailed in supermarkets.

As with cheese, the yoghurt making process is straightforward; it is a skill many women already possess, as they carry out the task in the home, and very few inputs are required.

Local meat is in high demand in Iraq and is widely preferred over imported products. A large number of imported meat products were observed during the assessment; both legal imports and illegal smuggled items from Syria, Iran and to a lesser degree Turkey. The price of the imported goods are significantly lower, on average costing less than half the price of local products. At the same time, however, the assessment team was consistently told that despite this, local products were preferred
as people trusted the source and believed it to be free of disease and guaranteed to be halal meat; this indicates that the local market is influenced by people's purchasing power. Both sheep and lamb meat are consumed in the local market. Generally male lambs are bred and fattened for sale whereas female lambs are reared for milk production. Female sheep are only sold for meat once they are no longer of reproductive age.

Awassi ewes can reproduce up to 3 times in two years in comparison to the Karadi breed that has one lambing period per year. The lambing season starts in February and following a fattening period a lamb is ready for slaughter within 4 months. The price of lamb meat is more expensive than sheep, selling to consumers for an average of between 10000 - 15000 IQD/kg - with each lamb producing between 15 -20kg of meat. Small farmers will generally sell live lambs to wholesalers and/or slaughterhouses. A butcher will buy directly from a slaughterhouse. Peaks in high sale season include picnic season and Eid. During this period traders can sell up to 60kg of meat per day compared to an average trade of between 30 - 40kg.

A more thorough analysis is needed to fully understand the dynamics of the demand side of this part of the value chain to uncover the full decision-making criteria for households when choosing between local or imported meat.

Leather & Wool

The leather and wool produce were not analysed in great detail as initial findings of the assessment indicated that wool and leather are not viewed as significant sheep by-products in Iraq and there is very little market demand. The national market for wool is small due to the dominance of synthetic wool and the fact that the market in neighbouring countries benefit from larger scale and better quality items resulting in an uncompetitive national product. The Iraqi sheep breeds are not high quality wool sheep and although previously there was a small export market for wool and leather that market has dropped with a key informant advising that no permission was requested last year from the Animal Production Office to export wool from Dohuk.

The shearing season is in April and May and one sheep can produce on average over 1kg of wool which can sell for a very low value of between 1000 - 2000 IQD/kg uncleaned. Some farmers may choose to use the wool and leather for personal use such as for mattresses or pillows, but otherwise these products are generally disposed of.
Despite the fact that State policies have tended to focus on crops rather than sheep or livestock, there are still a number of ways that government intervention has impacted on the sheep value chains.

The PDS is now, due to the conflict and lack of government resources, only partially functioning. However as a system that previously provided every Iraqi with a monthly food ration, it has constrained private sector involvement in the agricultural sector and distorted the markets of the distributed commodities. In particular, the price of animal feed has been affected by the government control over wheat and barley productions. Furthermore, the PDS has created an over reliance on imported food to meet local demand and has consequently had a negative push effect on local food prices.

In addition, the government provided agricultural subsidies to farmers to incentivise the production of certain commodities (e.g. wheat and barley) through the provision of fertilizers, seeds and machinery. This led to a disproportionate focus on those commodities and away from others such as sheep farming.

A lack of government regulation in regards to smuggling was a concern to a number of those assessed due to the perceived high level of smuggled items from Syria, Iran and Turkey, and its impact on national prices. Since the government-led liberation of Sinjar, smuggling is believed to have decreased but continues to be an issue. In addition, at the outset of the conflict, when ISIL captured new areas and seized agricultural assets they flooded local markets by selling the stolen animals at low prices; the impact of this however has significantly decreased. Nonetheless, stricter border controls to lessen the number of smuggled items into Iraq would facilitate more stable market prices.

Agricultural extension services exist in Iraq on a district level. Agents are tasked with providing farmers with information on new technologies, techniques, diseases and other relevant data. Agricultural services are on-going through the conflict, however they have been affected by cuts to budgets and many of those interviewed in the assessment did not mention the agricultural extension service as a main point of information. In fact many interviewees expressed an interest in receiving more information on feed, vaccines, product diversification and technologies.
Native sheep breeds in Iraq are hardy and adapted to local climatic conditions. Iraq has a subtropical semi-arid climate with hot and dry summers from June to September and cold and wet winters from December to February. However rainfall can be limited and irregular and the biggest climatic risk for sheep is drought, which in the past has resulted in significant loss of livestock for farmers, notably in 1999 and 2008 - 2009 drought episodes. Consequently, it is important that farmers are supported to become more resilient to the effects of climate change; this could include increased knowledge on feed types although other activities should also be explored.

The State Agricultural Bank is no longer providing financing to farmers due to the conflict and the country’s deteriorating economic situation. Pre-conflict, the bank used to provide Agricultural Loans to farmers who looked to establish an agricultural project and had the land to do so. Following an assessment of the feasibility of the project, a business decision on the loan was made. The loans generally offered heavily subsidised or interest-free credit that restricted the possibility of private bank competition. During the assessment we were unable to gather information on private bank loans and although there may be financial products available on the market it is fair to say that very few are accessible to the target population via private sector loans and the State controlled Agricultural Bank.

Access to credit is now almost in its entirety reliant on informal systems such as through family and friend networks. More information is required as to the continued functioning of these informal systems and the potential to (re)activate Village Savings and Loans Associations that in certain cultural contexts have proven successful.
In rural areas, household level family poultry-keeping has been a long-standing tradition. Culturally, chickens are raised by women and children, principally for subsistence as a source of protein (meat and eggs), and occasionally as small scale businesses selling any surplus eggs. It is a low input activity and data around this aspect of the poultry sector is difficult to obtain in regards to income, profitability and food security potential. At the other end of the scale exists commercial poultry production which began in Iraq in the 1960s when the first large scale poultry farm was established. However this sector did not see expansion until the 1970s and 1980s with the addition of more large scale businesses, significantly increasing the national production levels of chicken meat and eggs.

At the beginning of the assessment a mapping of the layer hens value chain was carried out to determine who the principal actors involved in the different stages of the value chain are:
Production

There are principally two poultry production systems in Iraq, household and commercial.

The household system is extensive and is characterised by low inputs and low productivity. The system is dominated by indigenous breeds and both meat and eggs are outputs of the household level with a focus on subsistence and minimum income potential (surplus egg production is the main way of generating income through this system). At this level, households may own an average of 10 to 20 birds which are kept around rural families homes.

The commercial industry is split into two separate sub-sectors: broilers (for meat) and layers (for eggs); with large scale farms only focusing on one of the outputs. This is an intensive system and on average farms own hundreds to thousands of birds.

At the beginning of the assessment, the decision was made to focus specifically on layer hens and the egg value chain as opposed to broilers. This was due to the identified opportunity within the egg value chain for the target population to earn a livelihood as opposed to meat, which at household level, only occurs as subsistence farming and has higher entry costs. Nonetheless there is value in conducting further research on the broiler value chain.

Egg production is characterised by low inputs, although for the poorest and most vulnerable households, access to capital can be a barrier to entry even for household level production. Significantly, access to quality inputs is a barrier to many for more efficient production and in comparison to household level production, inputs for intensive systems require significant capital due to the required scale of a business. The main inputs for layer hens as identified during the assessment, are as follows:

Hens/Chicks

At household level production, most hens are local indigenous breeds, in comparison to commercial production which utilises international breeds proven to be more productive. The breed of hen determines the colour of the eggs laid (either brown or white) and consequently influences consumer choice. The breed of hen also affects productivity levels significantly; international breeds can produce between 250 - 350 eggs per year, in comparison to local breeds that produce an average of 50 eggs per year. Hens begin laying eggs at 20 weeks and can continue in commercial laying until 80 weeks, after which their productivity starts to decrease.

Native breeds are the only layer hens available to purchase on the local market; the international breeds are imported in bulk, primarily from Iran and Turkey, amongst others countries, for commercial productions. The cost of a native breed is high with a local hen costing $8 - $12, similar to the cost
of international breeds that can fluctuate between $9 - $15 to import, although it is important to note that the low price is also due to economies of scale and large scale importations of hundreds to thousands of birds.

Feed

At household level, indigenous breeds are often fed scraps and have no pre-determined diet - this greatly affects their level of productivity and without adequate feed some hens may stop laying eggs altogether. It is believed that the household system could improve with appropriate feed and could shift egg production from subsistence to small scale enterprises; however, both the cost of feed and technical knowledge on the topic are constraints.

Feed is an important influencer of the commercial intensive system and is the most costly input (estimated to represent 60% of the final cost of production). Hen feed is comprised principally of a mix of wheat, barley and soybean. Soybean is not produced domestically in Iraq so feed mills rely heavily on imports, which have been recently affected by border closures. Feed mills have experienced soybean shortages and price fluctuations have had a knock-on effect on the price of poultry production. On average feed can cost $550 - $600 per tonne with hens requiring between 80 - 100g of feed per day, or 35kg per year. At these values, we calculate that hen feed costs $23 per year per bird, however it is important to note that only large scale farmers can obtain feed at this price by buying in bulk in tonnes.

Housing

Enclosures at household level are of varying standard; some households allow their hens to roam freely in open areas whereas other make basic enclosures with rocks, mud and plastic sheets. Most birds need a basic enclosure to protect them from the elements as temperatures can have a significant effect on egg productivity as well as bird health. Generally, hens are free range with free access to enter and leave their enclosure; however this does put them at increased risk of wolf and fox attacks.

Commercial farms have large hen enclosures that can house hundreds and sometimes thousands of birds. These enclosures are costly and also heavily rely on equipment to control inside temperatures. Birds remain indoors at all times and the temperature is monitored against cold or heat to minimise death rate and enhance productivity. Ventilation is required to maintain adequate oxygen levels and to remove moisture and ammonia produced by the birds waste.
The poultry industry is renowned for being susceptible to disease and there is a high risk of death and illness in both household and commercial productive systems. Birds kept at the household level are more at risk due to a lack of knowledge on disease prevention/control, and a lack of capital to cover vaccinations. Household level birds are unable to access vaccination programs by government extension services and as a result there is a high death rate and low productivity. Significantly, mortality rates can range between 35 – 70%.

Imported birds should be vaccinated as a pre-condition of import and agricultural extension and veterinary services provide vaccination programs and share information with producers. Large scale producers endeavour to limit access to poultry houses to prevent the spread of disease. Due to the living conditions, bird diseases can spread quickly and whole businesses can be damaged. Key bird diseases include Marek's, Newcastle, bronchitis and fowl pox. Vaccines are relatively low in cost however lack of access is a constraint to household level production and expansion. In recent weeks, there have been concerns about avian flu in Iraq with a recent confirmed case in a large poultry farm in Dohuk resulting in the cull of 700,000 birds and which, if spread, could be devastating for the national poultry industry.

Current data regarding egg production and consumption in Iraq is limited, however based on 2011 statistics, an estimated 254 million eggs\textsuperscript{11} were produced in Kurdistan and approximately 1018 million in the whole country.\textsuperscript{12}

Eggs are sold through two main channels: the formal and informal markets. The household system relies heavily on the informal market and the commercial system on the formal. Eggs are generally sold directly to the consumer in the case of household level production and to a retailer in the case of commercial production. Although egg categorisation and grading does not exist and neither does ‘free-range branding’, generally people prefer locally, extensively farmed eggs as opposed to commercial and intensively produced eggs and they are prepared to pay a small premium for this.

Local production of eggs does not meet demand and eggs are imported from neighbouring countries such as Turkey and Iran. These eggs are slightly cheaper however, and when possible, consumers will purchase locally, believing them to be fresher and healthier. Currently, 30 eggs can sell for an average of 6000 – 7000 IQD. Although further analysis is required, there is a general consensus that there exists the opportunity and demand in the local market for small enterprises to expand their production.

\textsuperscript{11} Kurdistan Regional Statistics Office
\textsuperscript{12} Poultry report 2011, Republic of Iraq Ministry of Planning, Central Statistical Org.
Enabling Environment and Support services

In the late 1990s the Government of Iraq heavily subsidised large scale commercial poultry farms, providing discounted feed, vaccines, and hatching eggs. However outputs remained low and the country continued to rely on imports to meet demand. In the early 2000s subsidies began to decrease which, combined with increased production costs, caused many poultry farms to shut down. The principle criticism of current policy by farmers is a lack of tariffs on imports that are impacting the local market due to their low cost. Local farming populations would like to see more done in regards to preventing illegal smuggling and increasing the cost of international produce through import taxation.

Predominately, services are only available to large scale poultry productions and not to household level systems. This leaves small scale enterprises with limited access to information, with rural populations reliant on advice from friends and family. Traditional poultry-keeping methods are employed and, as it is not viewed as a highly profitable enterprise, households are generally not open to investing in inputs or techniques that could improve productivity and consequently income. As indicated above, agricultural extension services for large scale producers have been limited by the conflict.

Agricultural Extension and Technical Knowledge

Indigenous breeds are slightly more resilient than imported breeds; however both are still vulnerable to local climate changes. Optimal living conditions are between 18 – 20 degrees Celsius and Iraqi summers and winters can prove too extreme for the birds – which results in low to nil egg production or sudden deaths in the worst case scenario.

As mentioned previously, large scale producers require equipment to control extreme heat and cold. Small scale farmers do not have access to equipment; instead, they focus on promoting hens to incubate eggs and produce chicks during the summer months in order to expand their poultry population.

Climatic Conditions
The following section summarises findings by market and enabling environment and provides recommendations for programme design intended to stimulate both value chains for increased household food security and incomes.

**Key findings for the sheep value chain include:**

**Market environment**

- Sheep farming is an indigenous multi-commodity business, with sheep raised for both meat and milk production; production of both commodities is seasonal.
- Sheep is the most populous of all livestock in Iraq, with indications that the population has decreased significantly, a consequence of conflict and displacement.
- There is an existing market for the sheep products but it is depressed due to poor local supply and imports of cheaper commodities.
- High initial investment costs make it difficult for existing sheep farmers to re-stock lost assets and increase production.
- Sub-optimal animal feeding reduces productivity. Animal feed is expensive and only used in winter months.
- Access to, and cost of inputs and services (feed, vaccinations, extension services, transport, cold storage etc.), is a constraint to increasing production of both meat and milk.
- Local supply of both milk and meat is not able to meet demand in local markets.
- Imported meat, milk and dairy products are available in the local market. Local products struggle to compete on price but there is demand and buyers willing to pay a premium for local products.
- Sheep milk is in high demand due to its use in cheese and yogurt production.

**Enabling environment**

- Host communities have access to land, but IDPs do not.
- Women make up the largest section of the agricultural labour force.
- The regulation environment imported goods and regulators do not incentivise local production nor de-incentivise smuggled goods in the market.
- Most producers do not have up to date information/knowledge, most get from family and friends.
- Agricultural extension services have been impacted by the conflict.
- Communities have little access to formal financial services, informal financial services are more common. As a result farmers struggle to restock lost assets or grow their business.
Key recommendations for stimulating the sheep value chain are:

**Market environment**

- Develop a business case for sheep production with existing sheep farmers who see the opportunity to increase production for the local market.
- Increase sheep stocks. Initiatives could include a re-stocking programme for existing sheep farmers where some of the cost of initial investment could be bought down using donor funds.
- Build / affirm a business case with existing providers of goods and services (i.e. feed, vaccinations, extension services, transport, cold storage, extension, information etc.), to increase access for sheep farmers. Could include buying down some costs of inputs and services, but the focus should be on sustainable business models. Identification of existing businesses willing to take a risk will be key in leveraging early successes.
- Identify existing financial service providers and link sheep farmers to their products where appropriate. Stimulate existing informal financial mechanisms for saving and loans with sheep farmers.
- Stimulate existing meat and milk value addition businesses to increase their demand for raw commodities.
- Identify and work with existing sheep value chain input suppliers (e.g. feed, vaccines and information), and service providers (e.g. extension, transport, cold storage), to increase demand for inputs and services, that support increased production. Initiatives should target goods and service providers willing to embed essential services e.g. extension services. Programming could initially buy down some of the costs, but initiatives should be based on more sustainable business models.

**Enabling environment**

- Initiatives that support social cohesion between host and IPD communities and build social capital.
- Work with local government and opinion leaders to increase informal practices and norms for optimal land use and productivity; facilitate land access for IDP sheep farmers, through a conflict sensitive approach and inter-community dialogue with host communities and local authorities.
- Reinforce women’s new roles in the agricultural sector and work to increase their decision making in household and business financial decision making e.g. farming as a family business.
- Work with local government to reinforce their role to provide a secure environment for sheep farmers and to reduce access to smuggled goods in the market thorough policy and taxation rules.
- Prioritise joint initiatives with suppliers of goods and services who understand that developing relationships with their bottom of the pyramid producers makes good business sense and support them to embed information and extension services into their business model.
- Work with local government and opinion leaders to influence trade / market rules and provide a more enabling environment for sale of local produce in local markets.
Key findings for the hen-eggs value chain include:
The assessment chose to focus specifically on layer hens and the egg value chain due to the identified opportunity within the target population to increase household food security and generate income. Nonetheless more research could be conducted on the broiler value chain.

Market environment

- Household production of hens and eggs is commonly undertaken by women and children for household food security, with selling of available surplus. There is very little commercial production and most hens are indigenous and free range at household level.
- Sub-optimal knowledge of feeding practices negatively affects productivity, as does disease, housing and temperature.
- Egg production requires few inputs, however where they are required, the knowledge of use, cost quality and consistent supply of inputs is a constraint to increasing production.
- Locally, egg producer’s uses indigenous breeds, which are more resilient to disease but less productive than commercial breeds. Findings suggest that only local breeds are available in the market.
- Feed producers rely heavily on imported commodities and the supply chain is often interrupted by border closures causing price fluctuations.
- Vaccines are relatively low in cost however lack of access is a constraint to reducing disease and increasing production at household level.
- There is local market demand for locally produced eggs for which the market will pay a premium.
- The local supply does not currently meet local or commercial demand.
- There is limited demand for commercial feeds from household level hen keepers.
- Most household produced eggs are sold in the informal market

Enabling environment

- Extension services are limited with most egg producers getting their knowledge from friends and family.
- The principle criticism of current policy is a lack of tariffs on imports that are damaging the local market due to their low cost.

Key recommendations for stimulating the hen-egg value chain are:

Market environment

- Work with existing egg producers (mostly women), to demonstrate a business case for more market facing egg production. Work with natural entrepreneurs to demonstrate this and influence others.
- Work with local feed producers to find alternatives to imported commodities for commercial feed and develop and affirm a viable business model for same.
- Link networks of egg producers for aggregation, access to inputs and access to commercial buyers/retailers e.g. supermarkets.
- Increase production to meet local and commercial market demand.
- Work with local government to increase tariffs on imported eggs and prevent smuggled produce reaching the market.
Enabling environment

- Identify and work with existing providers of chicken vaccination services and link to egg producers.
- Work with existing input and service providers to embed extension services within their business model.
- Reinforce women’s new roles in the agricultural sector and work to increase their decision making in household and business financial decision making e.g. farming as a family business.
- Improve access to credit; link with formal financial services where possible or consider the possibility of (re)establishing informal networks similar to Village Savings and Loans Associations.
## Annex 1: List of people interviewed

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<th>PLACE</th>
<th>NAME</th>
<th>POSITION/WORK</th>
<th>PLACE</th>
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<td>1</td>
<td>Jamsim Mohammed</td>
<td>Mayor of Rabia</td>
<td>Rabia</td>
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<td>2</td>
<td>Dilshad AbdulStrar</td>
<td>Turkish trader</td>
<td>Zakho</td>
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<td>3</td>
<td>Furat market 2</td>
<td>Open market</td>
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<td>Mohammad Haji</td>
<td>BRHA</td>
<td>Zakho</td>
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<td>Dr Diyar Tayeb</td>
<td>Vet office</td>
<td>Dohuk</td>
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<td>Dr Chiya Abullah</td>
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<td>Semel</td>
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<td>Mohydeen Mohammad</td>
<td>Vegetable trader (whole market)</td>
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<td>Adnan Ali</td>
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<td>15</td>
<td>Mekhan Mahdi</td>
<td>Agriculture college/ poultry farmer</td>
<td>Dohuk</td>
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