

# **Survey of Calving Rates, Calf Mortality and Cattle-Derived Livelihoods amongst Recipients of Female Cattle from the CLP's ATP Phases 1.2-1.4**

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<b>Executive Summary</b> .....	3
<b>1. Introduction</b> .....	5
<b>2. Methodology</b> .....	6
<b>3. Results</b> .....	7
<b>3.1 Calf Mortality</b> .....	7
<b>3.2 Calving rates</b> .....	8
<b>3.3 Milk Production, Value and Contribution to Livelihoods</b> .....	9
<b>3.3 Sustainability of Dairy Herds</b> .....	11
<b>3.4 Decision Making</b> .....	12
<b>3.5 Other Investments</b> .....	13
<b>4. Conclusions</b> .....	14
<b>References</b> .....	15

## Executive Summary

### Key findings

- Birth rate was 43% on average, across the period 2006-2012 (52% for CLP-transferred cattle).
- Calf mortality (both sexes) was 7% on average across the same period.
- Milk production is 2.1 L/hh/day or 1.9 L/cow/day on average.
- Milk sales are worth Tk. 1,600 per month on average, but milk is only sold for 5 months of the year.
- Most households do not view milk as a significant contributor to livelihoods.
- The value of female cattle is primarily their sale value, and households are successfully managing herds to produce a sustainable stream of calves for sale.
- Recipients of cross-breed cattle appear better off than recipients of local cattle – they produce more milk, get better prices for cows sold and have higher total asset values.

The cornerstone of the CLP's work to reduce extreme poverty on the chars of north western Bangladesh is the asset transfer project (ATP). Under the project, households receive an income-generating asset of their choice (95% choose cattle) which is intended to assist in generating a sustainable livelihood. During the first phase of the CLP (CLP-1, 2004-2010), 55,000 households received assets through ATP. CLP-2 (2010-2016) will transfer assets to a further 67,000 households.

Following the conclusion of CLP-1, DFID commissioned HTSPE and Verulam Associates (funded by AusAid) to conduct an independent impact assessment (IIA) of the CLP in order to identify achievements and lessons that could improve the second phase of the programme.

The findings of the impact assessment in relation to calf birth and mortality rates, milk productivity decision-making and the sustainability of cattle herds were met with some concern within the CLP. Broadly, the IIA concluded that dairy herds were unsustainable and would disappear as a result of poor ability or interest by participants in managing herds to produce milk or calves. The IIA suggested that high calf mortality rates (35%) and low birth rates (33%), coupled with very low milk productivity (0.25 l/cow/day) were key factors in driving households out of milk production. These findings raised concern within the CLP because they suggested major problems within the implementation of ATP, and were considerably different to the field observations of CLP staff. Staff also raised some concerns over the methodology used in the IIA, particularly relating to the sample size of just 81 households.

Given the importance of ATP, the CLP decided to commission an independent survey on a larger scale, in order to validate findings of the IIA. The contract to conduct the survey was won by an independent company

which had contracted the author (Dr Abu Hadi Khan from Bangladesh Agricultural University) to lead a team of livestock experts from the pathology department of the same university. The team surveyed more than 400 households, and used the same questionnaire as the original IIA, but with some modified and additional questions. The study was conducted in January and February 2012 and focused on

- calf birth and mortality rates
- per household per day and per cow per day in the production
- the value of milk sales and perceptions of milk as a livelihood
- management and sustainability of cattle herds
- intra-household decision-making related to large investments

The study found that birth rates were 43% - 10% higher than the impact assessment had suggested, and cattle transferred by the CLP had a higher rate (52%). The total mortality rate 2006-2012 was 7% - one fifth of the rate found by the impact assessment. However, the annual average mortality rate is increasing and most deaths are due to manageable diseases such as calf scours. Birth rates amongst cattle purchased independently of the CLP are worryingly low, at 19% (one calf every 5 years).

Contrary to the impact assessment assertions, households are both willing and able to manage herds successfully in order to produce a sustainable stream of calves for sale, and most cattle owning households also reported selling milk on a seasonal basis. On average, per (milking) household per day milk production was found to be 2.1 L, and per cow per day 1.9 L - considerably higher than the findings of 0.56 L and 0.25 L (respectively) recorded by the impact assessment. Despite milk being worth around Tk. 1,600 per month (during milking months), on average households are only producing milk for 4.8 months per year. As this means that the average household is not producing any milk for 7 months of the year, it is unsurprising that the majority of households considered milk to make little or no contribution to their livelihoods. However, recipients of cross-breed cattle reported that milk is considerably more valuable, produced in greater volumes and for longer. With better management, owners of both breeds could extend the milking period to make milk more valuable to livelihoods. However, this would need to be met with improved access to markets or improved local demand, if it is to be attractive to farmers.

The majority of households surveyed have successfully diversified their asset base, with cattle value now making up only around 50% of total asset value on average. Recipients of cross-breed cattle were found to have significantly higher asset values than recipients of local cattle. Decision-making regarding such investments does not seem to be dominated by men, as reported by the impact assessment - 65% of households reported that the decisions were made jointly between man and woman.

In light of the findings, it is recommended that the CLP review its livelihoods training in relation to the ATP project. Participants need to be convinced of the need to manage disease risks (especially vaccinations) after CLP support has ended if mortality rates are not to continue to rise. Similarly, there seems to be

a need to improve participant knowledge of cattle to ensure that they select cattle that are productive. The low calving rate of cattle purchased independently could pose a serious problem for participant livelihoods in the long term.

Given that the preferred livelihood appears to be focused on cattle sales, there may be cause to re-focus livelihoods training to reflect this, or to improve the attractiveness of milk production – perhaps by improving market linkages accompanied by better management to improve the volume and period of milk production. Furthermore, the greater relative success of recipients of cross-breed cattle suggests that the CLP should consider expanding the cross-breed promotion project.

## **1. Introduction**

The Chars Livelihoods Programme (CLP) began its second phase in April 2010 and is scheduled to end in 2016. The Programme's purpose is to improve the livelihoods, incomes and food security of up to 1 million extremely poor women, men and children living on island *chars* in the north west of Bangladesh. The Programme is co-financed by DFID and AusAID, managed by Maxwell Stamp PLC and led by the Rural Development and Cooperative Division (RDCD) of the Ministry of Local Government, Rural Development and Co-operatives of the Government of Bangladesh (GoB).

The first phase of the CLP ran from 2004 to 2010, with a similar remit to CLP-2, and provided targeted interventions to 55,000 of the poorest families living on the island *chars*. CLP-1 worked in the districts of Bogra, Kurigram, Giabandha, Jamalpur and Sirajganj. Extreme poor households living on island *chars* received an integrated package of support to purchase an income generating asset of their choice (95% chose cattle), stipends, livelihoods and social development training, access to a raised plinth, water and sanitation. CLP-1 transferred 67,863 cattle, of which 2,387 were cross-breed stock. These were transferred in four phases of the Asset Transfer Project (ATP), known as ATP 1.1, 1.2, 1.3 and 1.4.

In 2011 the independent Impact Assessment (IIA) of CLP-1 indicated that the performance of CLP participants' cattle may be worse than previously thought. Based on a survey of 81 households from ATP 1.2, the IIA concluded that some outcomes were disappointing, particularly in terms of calving rates (at just 33%), calf death rates (35%) and milk production. The IIA also suggested that participants did not view milk production as a viable long-term source of income, primarily because men, who prefer beef sales (according to the IIA), remain in control of investment decisions.

As these findings generated concern within the CLP, this study was designed to verify these findings by conducting a study across the CLP working area to examine calf death rates, birth rates, the sustainability of milk production and intra-household decision-making.

## 2. Methodology

This study was conducted during January and February 2012. 439 households on island *chars* in the CLP-1 working areas of Bogra, Kurigram, Giabandha, Jamalpur and Sirajganj districts were selected using the sampling methodology described below. This sample size was selected based on FAO methodology, which suggests that a sample of between 336 and 384 animals would be suitable to investigate mortality and birth rates of between 30-40% (as found by the IIA), with a standard error of no more than 2.5% (Putt et al 1987). A slightly larger sample size than required was chosen in order to allow for some households having migrated or being otherwise unavailable for interview. The distribution of households by phase was 115 ATP 1.2, 137 ATP 1.3 and 187 ATP 1.4. ATP phase 1.1 was not considered, as that phase was not investigated by the IIA team.

The households surveyed had received 70 cross-breed and 369 local cows from CLP-1. Households were classified into various groups (or strata) according to phases of ATP and breed of cattle received (cross or local).

The sample households were selected as follows:

1. The proportion of the total survey population that were contained in each district was identified (e.g. Bogra 20%, Sirajganj 25%)
2. The number of households being surveyed was divided according to this proportion (e.g. Bogra 60, Sirajganj 75)
3. A suitable cluster size (i.e. households per village) was decided taking into account the logistics, and other practicalities (e.g. 10 households per village).
4. The cluster size then determined how many villages were identified (e.g. in Bogra  $60/10 = 6$  villages)
5. The relevant number of villages was then selected from the district at random. (E.g. in Bogra 6 villages would be selected at random).

The sample of households that received cross-breed cattle was drawn exclusively from Sirajganj. This is considered representative because Sirajganj households received 87% of all cross-breed animals transferred under CLP-1, while the other districts received only around 300 cross-breed cattle between them. The sample of households that received local breed cattle was larger (369), reflecting the much larger number of local breed cattle transferred, and was drawn from across all CLP-1 districts. All the households surveyed had received female cattle under the ATP, in common with what was done in the IIA.

Data collection was through questionnaire interview. The questionnaire was based on the original Impact Assessment questionnaire, but minor modifications were made where field testing revealed issues with certain questions (Annex 5), and additional questions were included, such as whether the animal was from crossbreed or local stock. Some short qualitative questions were included, with the aim of exploring participants' attitudes towards different livelihood strategies such as milk production.

The survey was conducted by a survey company independent of the CLP, and was led and managed by the author and a team of livestock experts from the Department of Pathology, Faculty of Veterinary Science, Bangladesh Agricultural University.

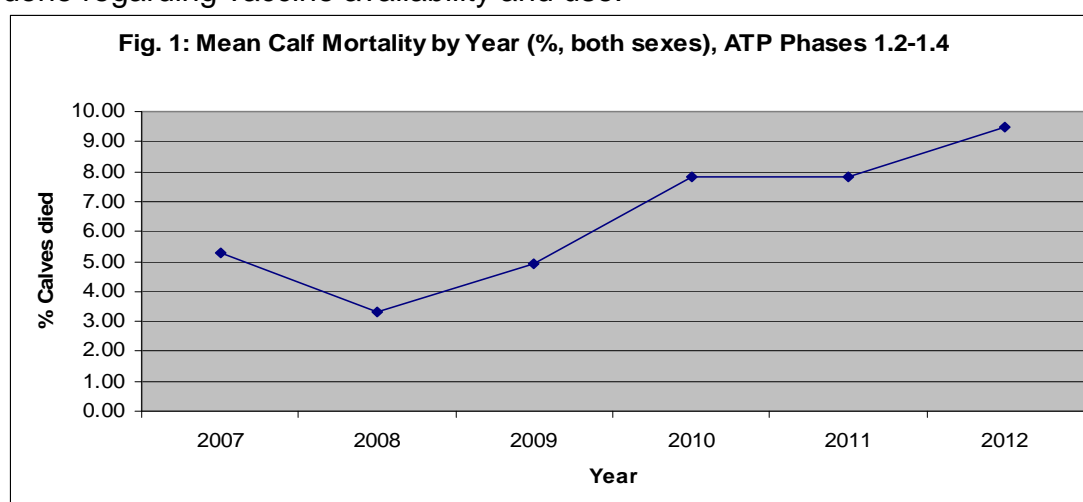
### 3. Results

#### 3.1 Calf Mortality

The IIA concluded that: *Technical efficiency in the remaining herds was very low, with calving rates averaging only 33% per year and very high mortality (35%) amongst young stock (IIA page 34)*

Examining ATP1.2, the Independent impact assessment reported “very high mortality (35%) amongst young stock” (page 34) – although details in the Annexes reveal that this rate applies to female calves only. The findings of this study do not support this. The female calf mortality rate across the period 2006-2012 was found to be 5% (ATP 1.2-1.4). The rate for calves from ATP 1.2 households (both sexes) was found to be 9% (see Annex 1)

The total mortality rate across phases 1.2-1.4 (both sexes) was found to be 7% over the period 2006 – 2012. This reflects an annual average mortality rate of 6%, which although low, has been rising year on year since 2009, and in 2011 reached 8% (see figure 1). Principal causes of death during the period were reported as calf scours (22%), others (pneumonia, injury etc 18%) and Black Quarter (BQ - 16%). Although overall mortality is low, some alarmingly high mortality rates were recorded within phases – households that received ATP 1.2 crossbred cattle at 14%, for example. The rise in annual death rates after 2009 (when CLP support ended) and the fact that diseases for which the CLP provides vaccines (HS, BQ, FMD and anthrax<sup>1</sup>) accounted for 41% of all deaths between 2006 and 2012 indicate that more work may need to be done regarding vaccine availability and use.



<sup>1</sup> HS: haemorrhagic septicaemia, BQ: black quarter, FMD: foot and mouth disease

### 3.2 Calving rates

The IIA found that *calving rates [average] only 33% per year (page 34)*

Similarly, birth rates recorded by this study were much higher than the Impact Assessment findings. The Impact Assessment reported that cattle owned by households from ATP 1.2 had a birth rate of just 33% (one calf every 3 years), and that no ATP 1.2 cow had given birth twice. This study found that average birth rate of cows owned by ATP 1.2 households across the period 2006 - 2012 was found to be 42% (0.42 calves born per year, or 1 calf in roughly 2.5 years – see Table 1).

*Table 1: Birth rates by breed and phase*

	<b>Total Number of Calves Born (time of entry - time of survey)</b>	<b>Average Number of Calves per Cow (all mature cows owned from time of entry)</b>	<b>Average Birth Rate (%)</b>
<b>Recipients of ATP 1.2</b>	254	1.6	44.3
<b>Recipients of ATP 1.3</b>	215	1.1	42.3
<b>Recipients of ATP 1.4</b>	276	1.1	46.0
<b>Cross Recipients (ATP 1.2-1.4)</b>	127	1.3	47
<b>Local Recipients (ATP 1.2-1.4)</b>	21	1.1	42
<b>CLP provided cattle</b>	233	1.4	52
<b>Non-CLP provided cattle</b>	25	0.4	19
<b>Both Breeds, ATP1.2 - 1.4</b>	190	1.1	43

Considering all cows owned by participants of phases 1.2-1.4, the average birth rate across the period was 43% (meaning 0.43 calves were born per cow per year, or roughly one calf every 2.5 years). The birth rate from cows transferred by the CLP (ie excluding cows born or purchased post-transfer) was higher than this at 52% (one calf every 2 years). In fact, the overall average birth rate was dragged down by the extremely low birth rate of cattle not provided by the CLP (19%, one calf every 5 years), which may indicate that participants need better education in how to select and care for cattle after programme support ends – particularly since most households have now sold their original CLP cow. As might be expected, crossbred cattle had a slightly higher than average birth rate (47%), and local cattle slightly lower rate (42%), and there were no major differences between the phases (see Annex 1).

On average, CLP cows have given birth to 1.6 calves each, but this number is closely correlated with the number of years since a household joined the



programme, with cattle from ATP 1.2 (transferred between November 2006 and May 2007) having given birth to 2.9 calves on average, while phase 1.4 (August 2008- May 2009) have so far given birth to 1.7 calves on average.

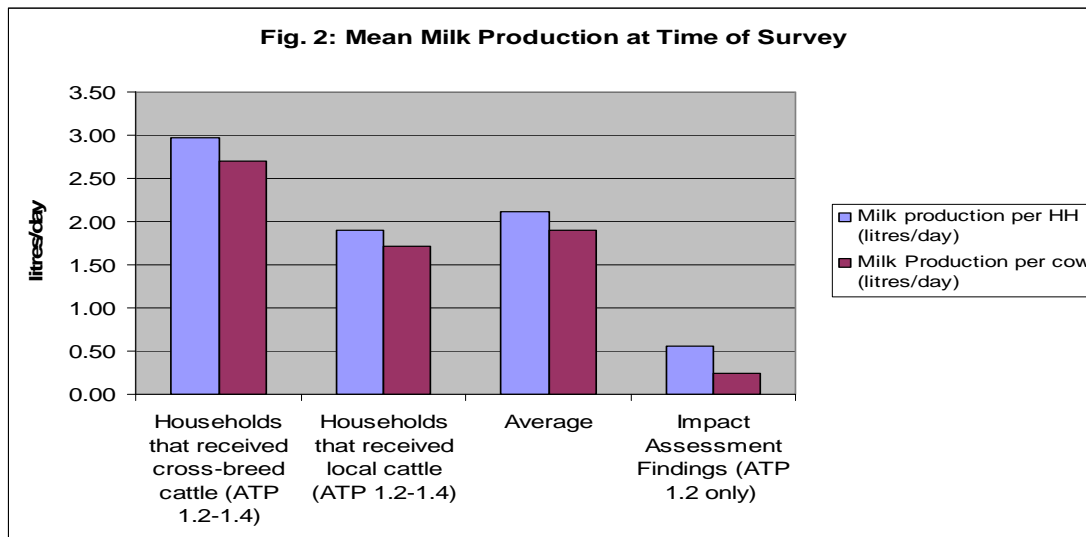
### **3.3 Milk Production, Value and Contribution to Livelihoods**

The IIA concluded that: *38% of interviewed beneficiaries had dropped out of milk production entirely, in the sense that they no longer had either milking cows or young females to bring forward. In line with the low calving rate, milk production is very low at 0.25 litres/cow/day, and mean production per household was 0.56 litres/day. 34% of interviewed households were selling milk, at an average of 0.86 litres/day, worth Tk.582/month (IIA page 34).*

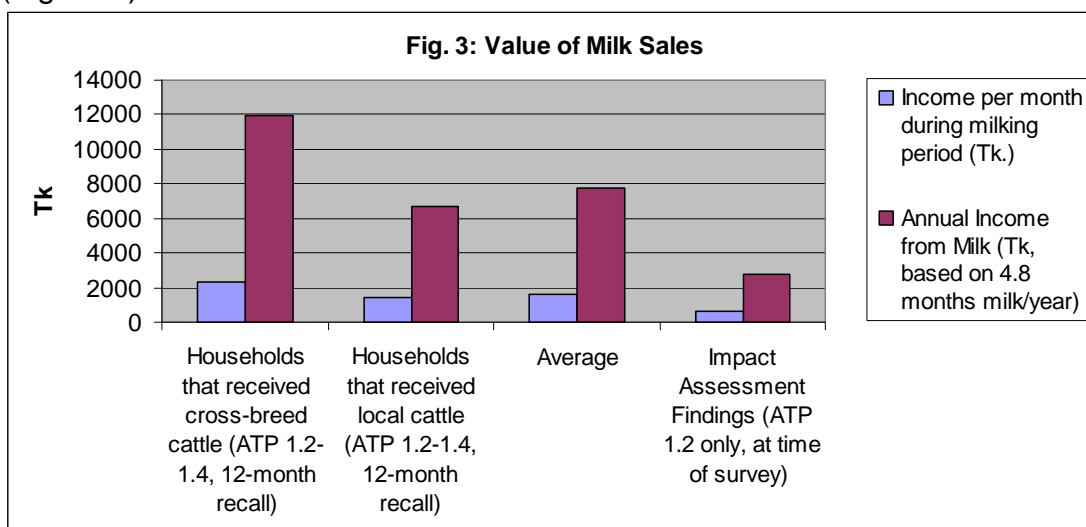
During the testing of survey tools, it became apparent that many households viewed milk as a seasonal rather than a year-round income flow. To account for this, participants were asked about milk production at present and over the previous 12 months. The results indicate that participant attitudes to milk and female cattle are more nuanced than suggested in the impact assessment.

This study found that 34% of participants had dropped out of milk production in the sense defined by the impact assessment, which is similar to the findings of the impact assessment (38%). However, this is not necessarily the cause for concern that the Impact Assessment believes. It is inevitable, and indeed desirable, that some households will use the capital acquired from the CLP to invest in different productive assets and livelihood strategies. Most of the households without dairy cattle had either beef cattle or land (although around 13% of all households had neither). Of the two-thirds (66%) of households that remained in milk production, 100% had at least one heifer to bring forward and 30% had cows that were pregnant, suggesting that the proportion of milk producers has stabilised and participants are managing herds successfully.

At the time of the IIA survey, 34% of all households were found to be selling milk (on average 0.86 litres/hh/day), and that “milk production is very low at 0.25 litres/cow/day, and mean production per household was 0.56 litres/day”. The findings from this study are considerably different. At the time of survey, milk production was found to be 1.9 litres/cow/day on average, and mean production per household was 2.1 litres/day. There were considerable differences between productivity of cross-breed and local cattle, as can be seen in figure 2. Nevertheless, a recent study published in 2012 (Hall et al 2012), surveying cattle in Bogra, Sirajganj and Jamalpur. Hall et al found that local cattle in those districts produced on average 2.53 litres per day, and cross-breed cattle 7.7 litres, indicating that there is considerable scope for improvement.



Recalling the previous 12 months, 49% of all households (65% of those households with dairy cattle) reported producing and selling milk. The average milk production period was reported as 4.8 months, during which households claimed to have produced 2.9 litres/household/day and sold 1.6 litres/household/day on average. Based on the average reported price of Tk. 34/litre, this would generate an income of Tk. 1,600 per month during milking period – almost three times the Tk. 582 income per month reported by the Impact Assessment. However, it should be noted that the recalled production figure is considerably higher than was reported at time of survey, and the figures from this study are based on a higher average sale price than the IIA recorded. A milk production period of 4.8 months per year is slightly lower than could be expected for cattle on the *chars* (5-6 would be considered very good, and Hall et al 2012 report average lactations of over 9 months), which may indicate that improvements could be made in cattle management training. Nevertheless, based on the reported sales figures, a milk production period of 4.8 months would still equate to an income of Tk. 7,680 per year (Figure 3).



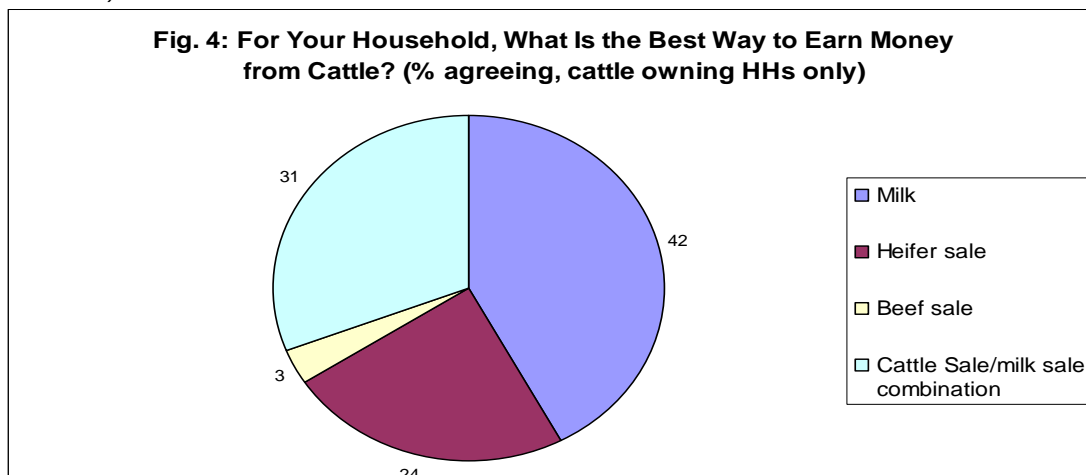
\*IIA annual findings are an estimate calculated by the authors of this report, based on the monthly income figures provided in the IIA.

It is notable that the value of milk sales per litre differs significantly between the two studies. The Impact Assessment calculated the “prevailing weighted mean price” to be Tk. 22.56/litre, whereas in this study participants reported the sale price of Tk. 34/litre on average. The reason for this is probably due to the rising price of milk, yet even using the IA price of Tk. 22.5/litre, households would still be earning over Tk. 1,000 per month based on reported production figures.

Despite these figures, in this study 68% of households indicated that milk made either no contribution or a minor contribution to their livelihood (see Annex 2), which is consistent with the Impact Assessment assertion that “milk production is at best a minor contributor to household income” (IIA Annex IX-174). Only 23% were producing milk at the time of the survey and many households with dairy cattle had not produced any milk in the previous 12 months (Annex 2). The data indicate that households do appear to be focused towards production of calves for sale rather than milk - only 42% of cattle-owning households said that milk was the best way to generate income from cattle while 55% thought that heifer sales or calf sales/milk sales combination was best. Nevertheless, the majority of cattle-owning households had sold some milk during the last 12 months. Recipients of cross-breed cattle were much more likely to have sold milk (Annex 2). This suggests that while milk may not be a major contributor to livelihoods, it provides useful supplementary income that households value as a ‘bonus’ to production of calves. Furthermore, the breed of cattle received has a strong influence on the volume of milk production, with households that received a cross-breed animal through ATP producing and selling more.

### 3.3 Sustainability of Dairy Herds

The IIA concluded that: *[A]lmost all surviving young female stock had been sold rather than retained as herd replacements... the low calving performance of both purchased and own-production stock must indicate an extremely low level of interest in managing female stock for either milk or calf production... Female animals are being valued for the one-off sale income they provide, not for their potential to generate a sustainable income stream.... [As a result of] the death or disposal of the large majority of potential female replacements...the remaining [dairy] herds are technically unsustainable [and] most of the remaining milk producers will, whether voluntarily or involuntarily, quite soon cease to operate (IIA page 34 and Annex IX-173-174)*



The results of this study appear to contradict the conclusions drawn by the IIA team. Almost three quarters of households with cattle indicated that heifer sales or cattle/milk sale combination was the best way to earn money from cattle - indicating a strong interest in herd management focused towards production of calves for sale (Figure 4). Furthermore, 64% of all households had sold their original CLP cow, but 66% still had female cattle. Of that 66%, every household had at least one heifer to bring forward. 96% of all households with cattle said that they impregnated female cattle whenever the animals showed heat, and 30% had cattle that were pregnant at the time of survey. Most households (82%) claimed to be using artificial insemination of females. These figures indicate that households understand the value of females in generating a sustained stream of income (from calf sales), and are managing herd replacement needs successfully. However, the low calving rate of non-CLP cattle is a cause for concern in this regard.

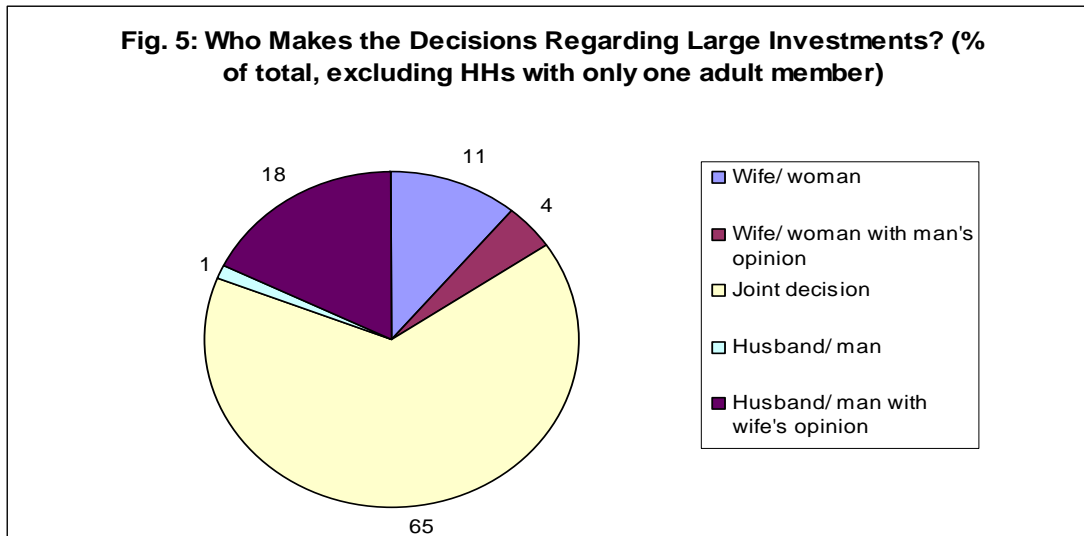
It seems that households are indeed selling the majority of young female animals, as suggested by the Impact Assessment. But this is most likely because herd sizes are small (2.2 cattle per household on average) and households do not need more than one animal to retain as a replacement for the current breeding cow – not because households lack interest or ability to manage herds. Small herd sizes probably reflect households' limited access to labour and land, which would be required for larger herds.

Given that 100% of households with dairy cattle have at least one heifer to bring forward, it does not seem likely that “most of the remaining milk producers will...soon cease to operate”, as was suggested by the Impact Assessment (page 34). Reinvestment in female cattle is indeed low – only 7% of households purchased female cattle in 2011, but this has risen steadily and is not necessarily a cause for concern given the birth rate of 43%. The average value of herds was Tk. 31,000, indicating that households have been able to manage increases in herd value. Households that received a cross-breed animal through ATP had more valuable herds on average (Annex 4). Interestingly, with the exception of ATP 1.3, recipients of local cattle showed a much stronger tendency to purchase female animals than recipients of cross-breed cattle (Annex 3).

### **3.4 Decision Making**

The IIA concluded that: *men remain in control of economic decision making in general and particularly of all 'big-ticket' income and expenditure items. It would therefore seem likely that they would steer the household's cattle enterprise towards beef (IIA Annex IX-176)*

**Fig. 5: Who Makes the Decisions Regarding Large Investments? (% of total, excluding HHS with only one adult member)**



Although the impact assessment argued that men controlled decision-making related to large investments (such as cattle) and would therefore steer households towards beef production, this does not seem to be the case so far. Almost two-thirds of interviewees said such decisions were made jointly (Figure 5) and just 3% of households considered beef to be the best way to make money from cattle (Figure 4 - although clearly that figure represents only the views of interviewed households: IE those that chose dairy cattle from ATP originally, and does not include views of those who chose beef). 1% of households said that the man was fully in control of such decisions. However, it should be noted that in many cases the interviewee was the woman, and responses from men may have been different (the impact assessment drew data primarily from male & female focus group discussions, which have their own issues – Annex 5). The ability to generate a lump sum that could be used for investment in other assets was the most popular response given by those indicating that cattle sales were the best way to make money from cattle. Thus while it is clear that lump sum from cattle sales income is indeed preferred over steady income from milk sales, it is not clear that this is a result of men's inherent preference for lump sums overriding women's preference for smaller regular flows, as was asserted by the impact assessment.

### 3.5 Other Investments

About 37% of households surveyed had invested in land, and 57% had invested in other assets (such as house improvements, other livestock, agricultural inputs or businesses). Interestingly, households that received local cattle showed a much stronger tendency to reinvest in other assets than those that received crossbred cattle - perhaps reflecting the need to compensate for lower cattle values and lower milk and calf productivity rates.

Overall, cattle-owning households held higher asset values than households without cattle (see Annex 4). The average asset value held by households without cattle was still over Tk. 35,000, and would probably be higher if households with neither land nor cattle were excluded, but beyond the scope of this study to investigate this in further detail

#### **4. Conclusions**

This study has found that calving rates have averaged 43% over the period 2010-2016 and that mortality has averaged 7% - considerably different from the IIA findings. However, the rate of mortality has been increasing and improved herd management will be required to prevent this trend continuing. This may require better management training, improved access to vaccines, and better education on their use. Furthermore, the low birth rate of cattle purchased independently of the CLP is a cause for concern, and may adversely affect livelihoods in the long term if not addressed.

The impact assessment argued that households value female animals purely for their sale value and show little interest in managing herds in order to produce a steady stream of income from milk or calves. The IIA concluded that as a result, poor herd management has led to dairy herds which are technically unsustainable and therefore “most milk producers will cease to operate soon.”

The data indicate that households are indeed valuing female animals primarily for their sale values. However, households show a clear interest and ability to manage small herds successfully, with the primary objective of producing calves for sale. The majority of households have sold (and replaced) their original breeding animal, indicating that they understand the value of maintaining a healthy breeding animal of the right age. Furthermore, it is incorrect to argue that the majority of female replacements had been sold. 100% of dairy herds contained at least one heifer – meaning that they are unlikely to cease to operate “soon” (IIA page 34). Households are most likely selling many female animals because the herd size of 2.2 animals on average requires very few replacement animals to be retained.

In this study 68% of households indicated that milk made either no contribution or a minor contribution to their livelihood, which is consistent with the Impact Assessment conclusions that milk is a minor contributor to incomes. This is not surprising, given that the average household is not producing any milk for 7 months of the year. Despite this, milk does appear to be an important component of what makes cattle rearing attractive. 42% of cattle owning households said that milk was the best way to make money from cattle and almost two thirds of cattle owning households reported selling some milk during the last 12 months, the sale of which would be worth on average Tk. 7,680 per household per year at reported production rates and sales values. Other data from within the CLP-1 working areas have shown that there is significant potential to increase both volume and period of milk production (Hall et al 2012), and given that the average production period was just 4.8 months per year, there is considerable scope to improve this contribution.

Households reported that decision making in regards to large investments does not rest predominantly with men, as reported by the impact assessment, but that the majority (65%) of households make such decisions jointly between man and wife. There is no evidence to support the impact assessment assumption that men inherently prefer beef and will steer

livelihoods in this direction – fewer than half of all sales during the period 2006-2012 were beef sales, and just 3% of surveyed households thought that beef was the best way to earn money from cattle (although this does not include the views of households that chose beef cattle from ATP). It is the case that households prefer lump sums over the smaller, regular income stream available from milk but there is insufficient evidence to say that this is a result of female disempowerment. Most households reporting a preference for calf sales indicated that the lump sum was useful in allowing investment in other assets.

In light of the findings, it is recommended that the CLP review its livelihoods training in relation to the ATP project. Participants need to be convinced of the need to manage disease risks (especially vaccinations) after CLP support has ended if mortality rates are not to continue to rise. Similarly, there seems to be a need to improve participant knowledge of cattle to ensure that they select cattle that are productive.

Given that the preferred livelihood appears to be focused on cattle sales, there may be cause to re-focus livelihoods training to reflect this, or to improve the attractiveness of milk production – perhaps by improving market linkages accompanied by better management to improve the volume and period of milk production. Furthermore, the greater relative success of recipients of cross-breed cattle suggests that the CLP should consider expanding the cross-breed promotion project.

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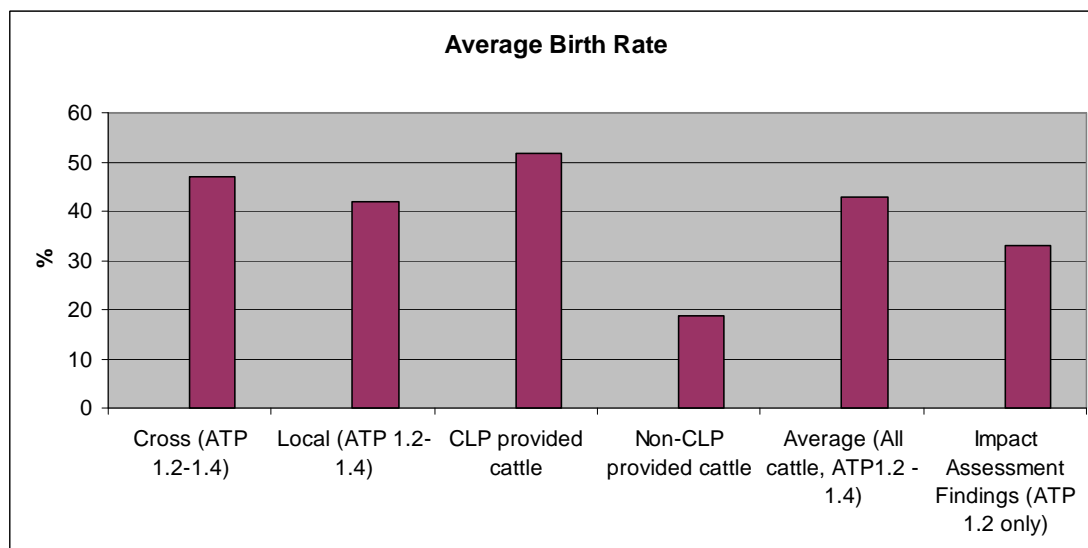
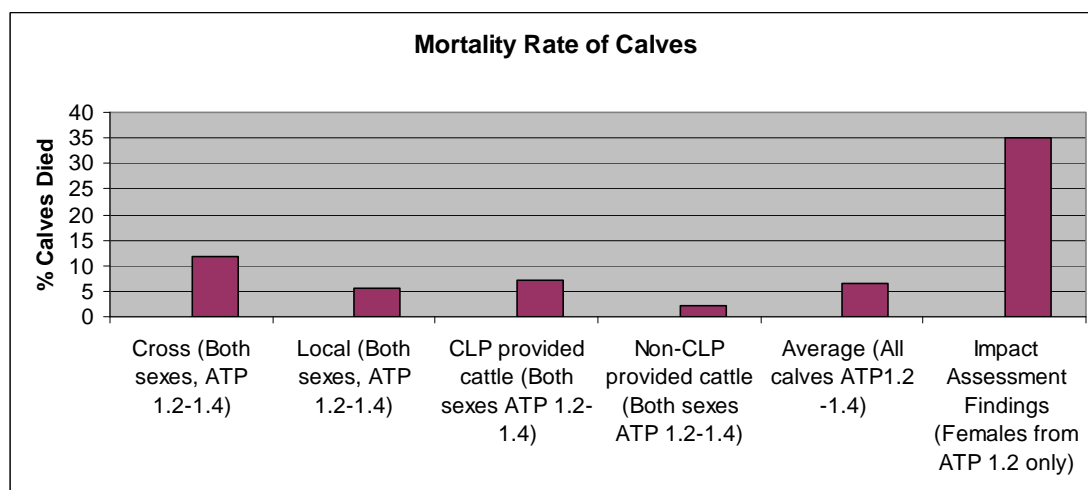
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<http://www.fao.org/Wairdocs/ILRI/x5436E/x5436e06.htm#4.4%20sample%20sizes> Rome: FAO

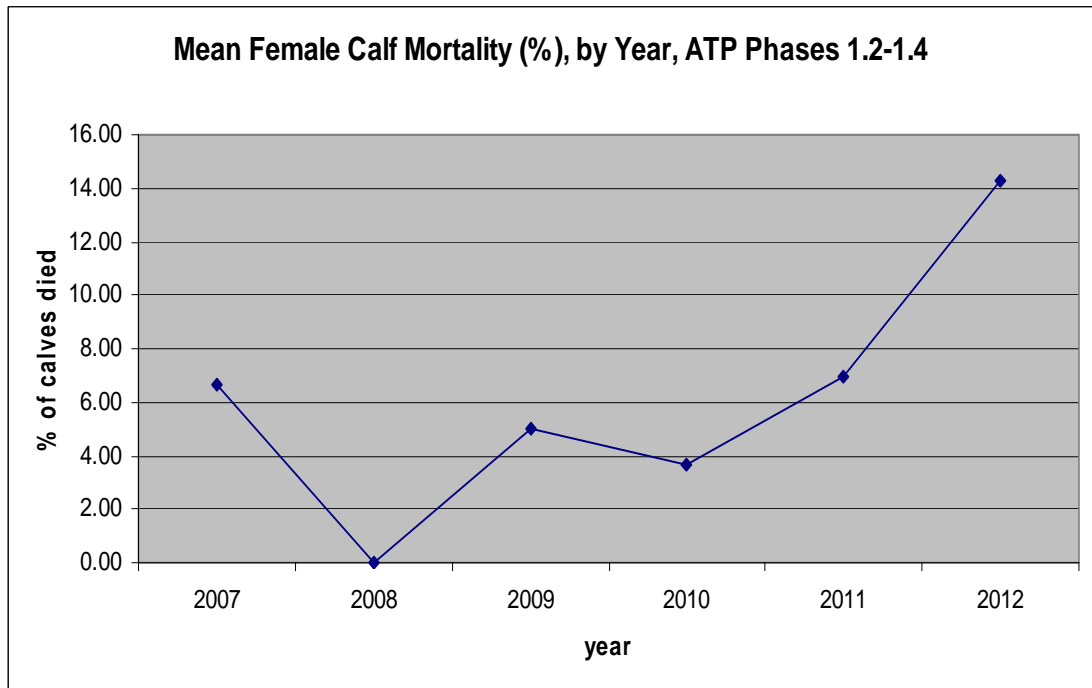
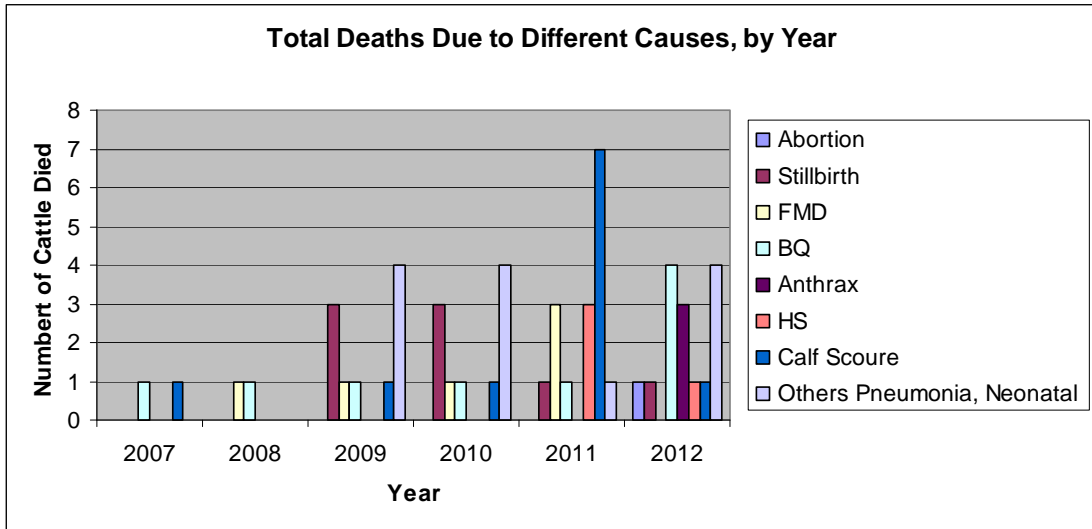
## Annex 1 Calving and mortality rates

	Breed of original CLP cow	Number of Calves Born (time of entry - time of survey)	Number of Calves Died (time of entry - time of survey)	% of Calves Died (Mortality rate)
ATP 1.2	Cross	21	3	14
	Local	233	10	4
ATP 1.3	Cross	25	2	8
	Local	190	13	7
ATP 1.4	Cross	81	10	12
	Local	195	11	6
Cross (ATP 1.2-1.4)		127	15	12
Local (ATP 1.2-1.4)		618	34	6
CLP provided cattle		657	47	7
Non-CLP provided cattle		88	2	2
Both Breeds, ATP1.2 - 1.4		745	49	7



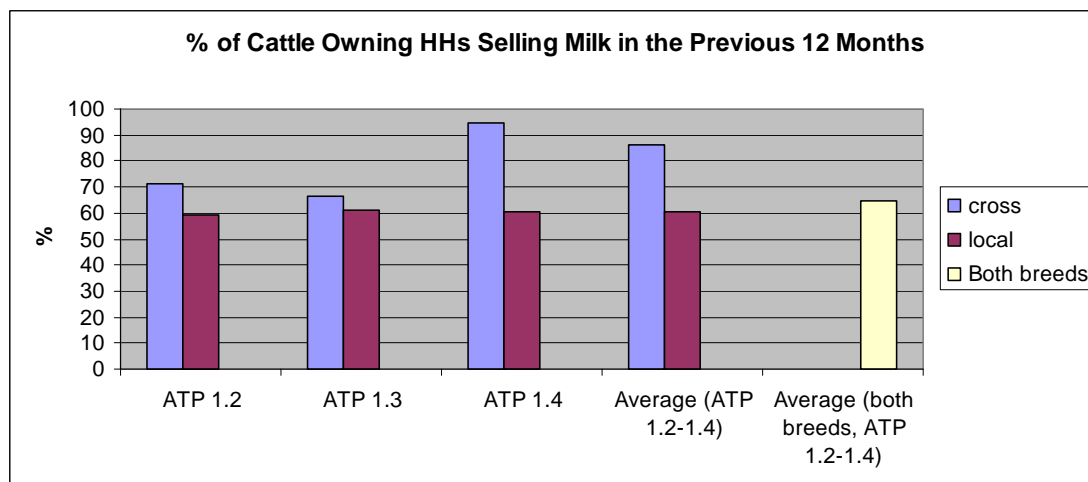
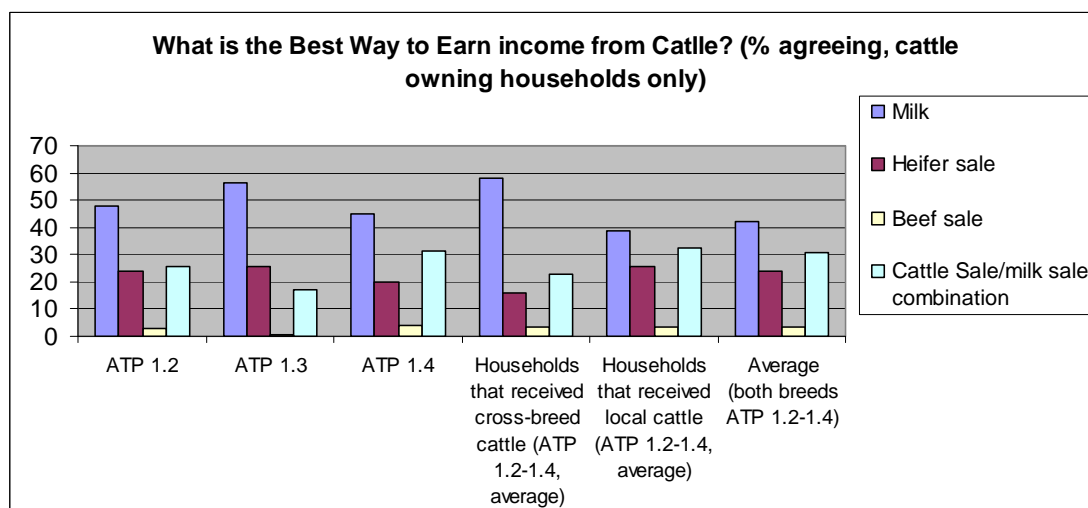
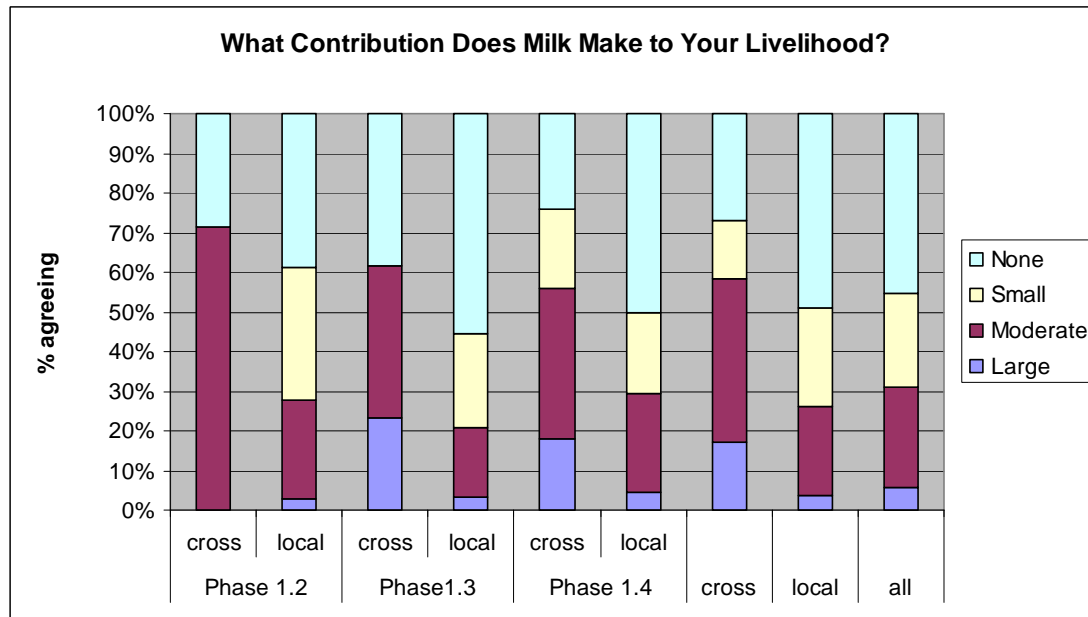


	Abortion	Stillbirth	FMD	BQ	Anthrax	HS	Calf Scoure	Others Pneumonia, Neonatal	Unknown	Total
2007	0	0	0	1	0	0	1	0	0	2
2008	0	0	1	1	0	0	0	0	1	3
2009	0	3	1	1	0	0	1	4	1	11
2010	0	3	1	1	0	0	1	4	1	11
2011	0	1	3	1	0	3	7	1	1	17
2012	1	1	0	4	3	1	1	4	0	15
Total	1	8	6	9	3	4	11	13	4	59
% of total	2	14	10	15	5	7	19	22	7	100

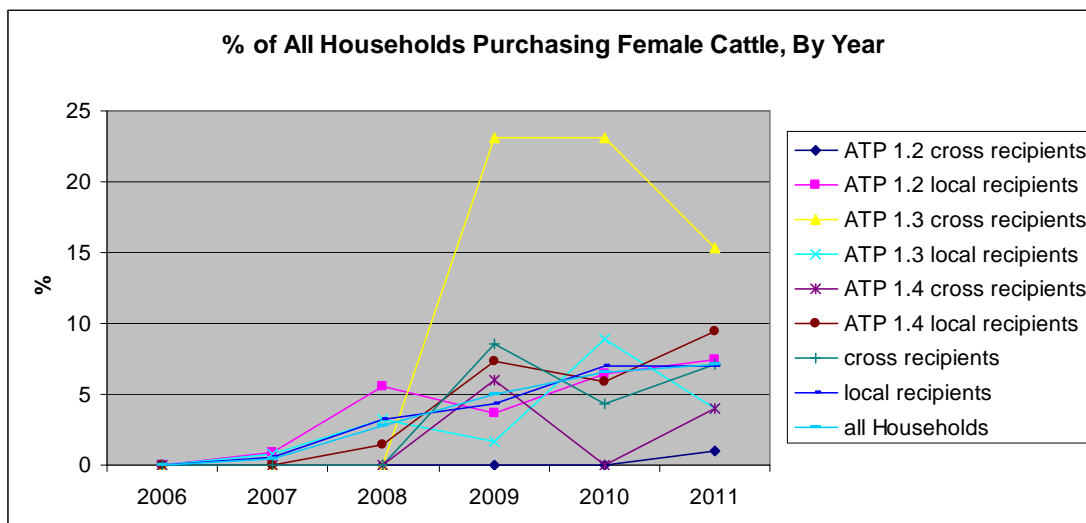
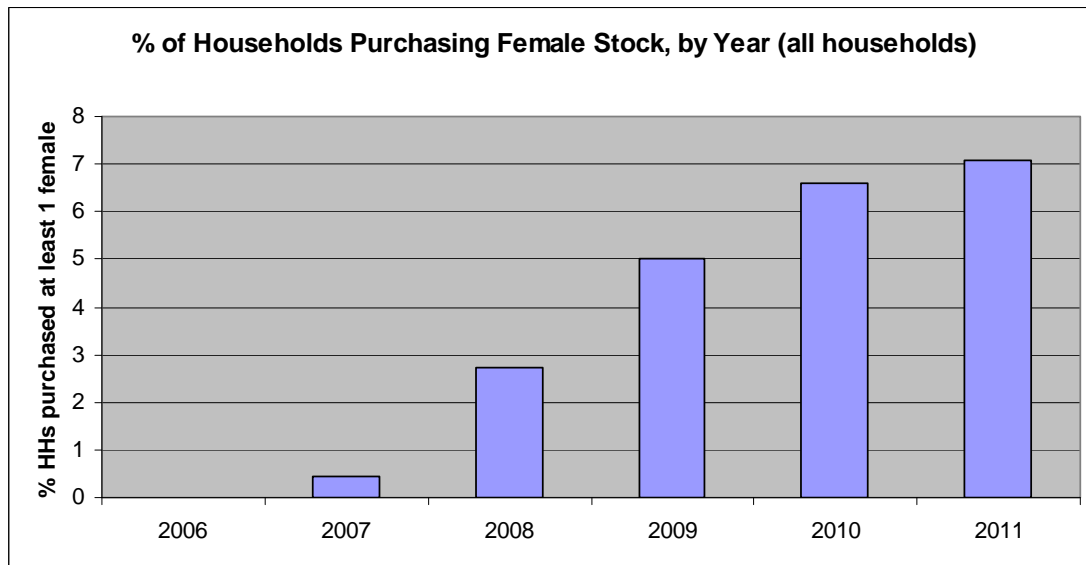


	Breed of original CLP cow	Number of Mature Cows Owned (time of entry - time of survey)	Average period of ownership (years) of mature females	Total Number of Calves Born (time of entry - time of survey)	Average Number of Calves per Cow	Average Birth Rate (%)
ATP 1.2	Cross	11	4.11	21	1.9	46
	Local	186	2.96	233	1.3	42
ATP 1.3	Cross	21	2.66	25	1.2	45
	Local	188	2.54	190	1.0	40
ATP 1.4	Cross	64	2.64	81	1.3	48
	Local	212	2.09	195	0.9	44
Cross (ATP 1.2-1.4)		96	2.81	127	1.3	47
Local (ATP 1.2-1.4)		586	2.51	618	1.1	42
CLP provided cattle		461	2.76	657	1.4	52
Non-CLP provided cattle		221	2.13	88	0.4	19
Both Breeds, ATP1.2 - 1.4		682	2.55	745	1.1	43

## Annex 2 Milk as a livelihood



## Annex 3 Herd management

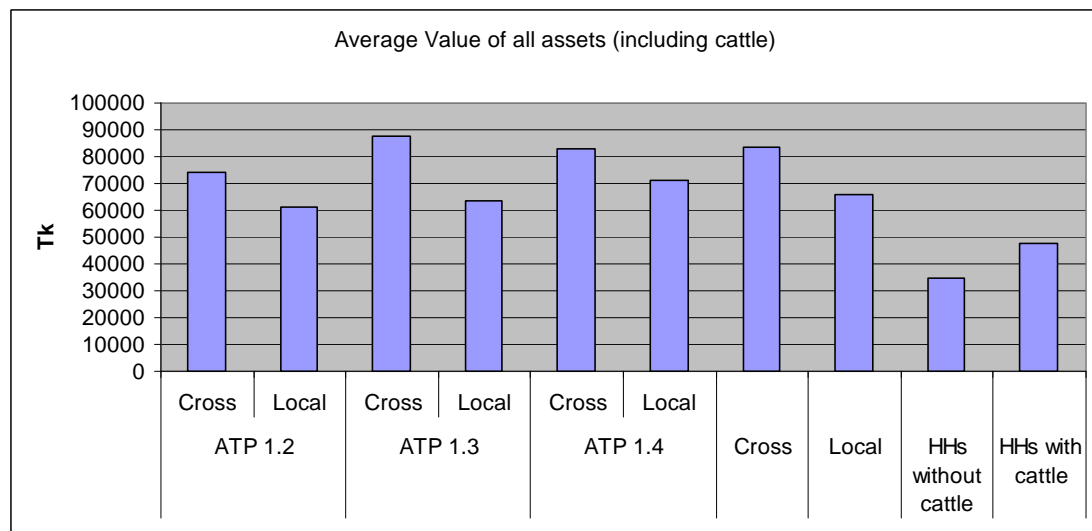


	Type of Animal Received	% HHS saying they always inseminate heifers
Phase 1.2	cross	100
	local	95
Phase 1.3	cross	100
	local	93
Phase 1.4	cross	100
	local	97
	cross	100
	local	95
	all	96



## Annex 4 Value of cattle and other assets

	Breed of animal received	Current Value of Herd (estimated) per HH
Phase 1.2	cross	38586
	local	29655
Phase 1.3	cross	53042
	local	29353
Phase 1.4	cross	36263
	local	29111
cross		40081
local		29350
all		31209



## Annex 5

### Critique of the impact assessment methodology

#### **Small sample size**

Approximately 49,500 households received cattle under ATP. The impact assessment sample size of 81 households represents 0.16% of these. Although the impact assessment team did argue that this was representative during a presentation to CLP staff in Bogra, Putt et al. (1987) contend that for a population size of 49,500, a sample of 81 would be at risk of high levels of standard error (above 2.5%).

#### **Source of decision-making data**

The impact assessment authors argued that reinvestment decisions in relation to cattle remain in the hands of men, who (according to the authors) have an inherent preference for one off, lump sum payments such as would be generated by beef sales, rather than lower level, sustained income streams such as milk sales. No evidence is offered to support the assertion that men prefer beef sales. It is also important to note that data on decision making were drawn primarily from focus group discussions with some key informant interviews. In a conservative society such as rural Bangladesh, the context of questioning on sensitive topics such as household decision-making is extremely important. Asking a focus group made up of other men who makes the decisions in their households may generate significantly different results to asking the same men the same question in the privacy of their own homes, for example.

#### **Birth & mortality rates**

In support of its case, the IIA quotes Marks & Sultana (2009) *Economic Impact of Cattle Transfers during the CLP's Asset Transfer Programme (2006 – 2008)*, "To date, no cow of a Phase 2 beneficiary has given birth twice". But the general mortality calving rate findings within that study are extremely different to those of the impact assessment team (80% calving rate in some cases and just one death reported). This is neither mentioned nor explained by the assessment.

This is particularly important because the IIA analysis of reinvestment decisions considered only those based on sale of original CLP stock. Therefore, if the birth rate is wrong, this will have a high impact on the rest of the study. For example, if a household has produced no females from its original CLP heifer, and it sells that heifer, this generates considerably different picture from if that heifer had produced two female calves before it was sold. Moreover, it is questionable whether it is accurate to measure sustainability of herds by considering the percentage of sales funds reinvested in females.

#### **Appropriateness of tools**

In field testing of the Impact Assessment questionnaire, the team found the tool unwieldy and difficult to use. It is not clear what level of field testing and adjustment was done by the original IIA survey team, nor whether the questionnaire took into account conditions on the *chars*. For example, it is not

clear if the questionnaire was translated into Bangla. In addition, many questions were unclear or ambiguous particularly with regards to time periods referred to. Questions on milk production repeatedly required clarification as to what the time period being referred to was.

Furthermore, many households struggled to answer questions such as “In the most recent 12 months, what % of total household income was from cattle and milk?”, which is hardly surprising – this is a difficult question for anyone to answer and given the level of education on the *chars* it is unclear why such questions were retained. Indeed, during field testing, when asked (the IIA question) “what is the average sale (litres) of milk per month over last 12 months?”, one participant even responded derisively “how can I answer that? We will need a calculator”. Consequently, the accuracy of the answers given by households to these questions must be drawn into doubt.