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CAMBODIA MSME PROJECT FINAL MONITORING AND EVALUATION REPORT

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1. SUMMARY RESULTS

This section provides a summary of MSME project impacts. Section 1.1 provides a summary of 2008 results comparing targets to actual impacts in the final year of the project. Section 1.2 provides a more detailed summary by Component and for the time period from Baseline 2005 to Final Evaluation 2008. Section 1.3 presents an analysis of the aggregate MSME Project economic impacts on enterprises and the economy in 2008.

The MSME project monitoring and evaluation (PMP) framework, in its entirety, includes indicators from a number of different sources. Here the key impact indicators covered in this Evaluation are presented. Results for other indicators will be provided by the MSME project in separate project finalization reports.

1.1. MSME Indicator Framework Targets and Actual Results in 2008

This section provides a short summary of MSME project impacts in its final year 2008 by comparing FY 2008 targets to actual results. Results by Component are discussed further in Section 1.2 and in the main body of this report.

As shown in Table 1, 2008 was a very successful year for the project overall. Many final year targets were exceeded, often by large margins. The key impact Indicator 1.1(a), change in value of sales, exceeded targets by 169% to 293% across value chains.

Indicator 1.1(b) volume of sales also more than doubled the target for the pig value chain, while Fish and Brick and Tile value chains did not meet volume of sales targets. However, Fish and Brick and Tile enterprises were still able to exceed targets in value of sales. This is due to a focus on increasing product quality and unit values in these value chains, rather than a growth strategy based mainly on increasing volume of sales. These issues are explored in this report. Overall these results for Component 1 show large improvements in performance among assisted enterprises over the last year in all value chains.

Indicator 2.3 results for Pigs and Brick and Tile makers show targets for new investments exceeded by over 400%. This indicates that these enterprises are confident enough in value chain competitiveness to invest in further growth at levels well beyond expectations. New investments in fish enterprises did not meet target, largely due to the project including a higher proportion of new/small scale fish producers among their fish value chain clients. These new/small scale fish producers, while experiencing growth in value of sales, have not yet reached a stage for larger scale investments.

For the Component 3.0 indicator, improved MSME access to finance, targets have been exceeded for accessing loans from any source at any time in 2008 for most client MSMEs. The exception is Brick and Tile makers. where the target was that all enterprises of this type that were a client of the project (15) would access credit, but the outcome was that 40% of these enterprises actually used loans.

Table 1 Summary Results: Project Indicator Framework Target and Actual Results 2008

Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
OBJECTIVE: Component 1: Improved Performance of USAID-Assisted Enterprises in Targeted Value Chains					
1.1 (a) Percent change in volume of sales of program-assisted enterprises	Pigs	Mean Head/MSME	16.4	38	232%
	Fish	Mean Kg./MSME	2,890	1,863	64%
	Brick & Tile	Mean No. Bricks & Tiles/MSME	540,334	338,701	63%
1.1 (b) Change in value of sales of program-assisted enterprises	Pigs	Mean \$/MSME	\$1,290	\$3,786	293%
	Fish	Mean \$/MSME	\$2,154	\$3,637	169%
	Brick & Tile	Mean \$/MSME	\$21,156	\$39,967	189%
OBJECTIVE: Component 2: Enhanced Capacity to Support Competitive Value Chains					
2.3. Percent increase in value of new investments by MSME	Pigs	Mean \$/MSME	\$1,200	\$5,256	438%
	Fish	Mean \$/MSME	\$6,886	\$4,830	70%
	Brick & Tile	Mean \$/MSME	\$18,000	\$115,160	640%
OBJECTIVE: Component 3: Ongoing Improved MSME Access to Finance					
3.0. Percent of MSME in target value chains that have accessed loans from any source at any time.	Pig	No. of MSME	150	169	113%
	Fish	No of MSME	50	66	132%
	Brick & Tile	No. of MSME	15	6	40%
3.1. Number of MSME trained in basic accounting.	Pig	No. of MSME	100	119	119%
	Fish	No. of MSME	50	55	110%
	Brick & Tile	No. of MSME	15	3	20%

Figure 1 Indicator Component 1.1a- Percent Increase in Volume of Sales 2008 Actual as % of 2008 Target

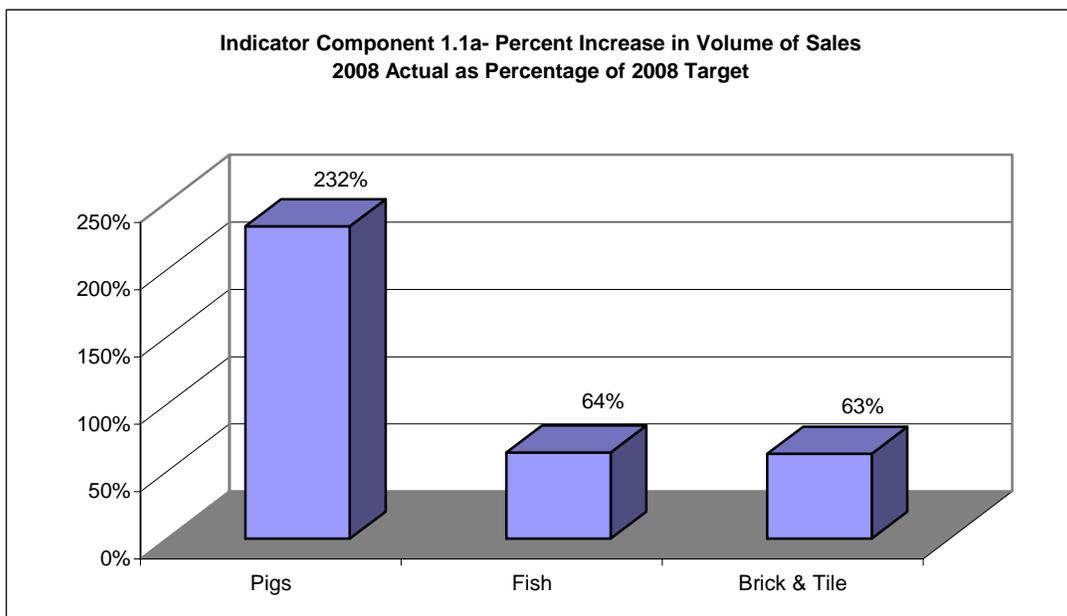


Figure 2 Indicator Component 1.1b- Percent Increase in Value of Sales 2008 Actual as % of 2008 Target

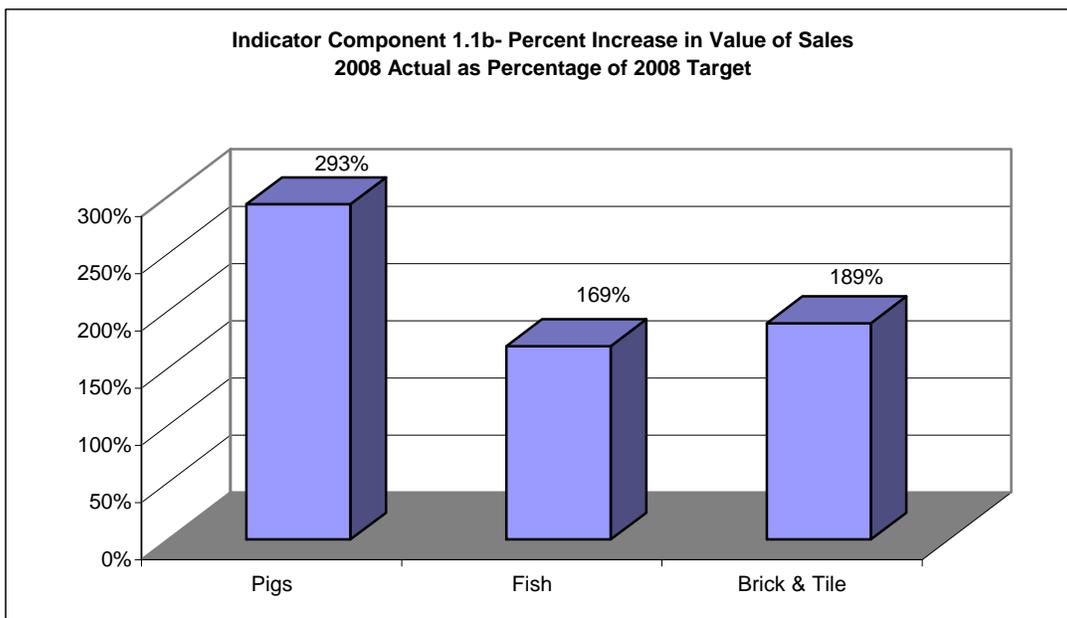


Figure 3 Component 2.3- Percent Increase in Value of New Investments 2008 Actual as % of 2008 Target

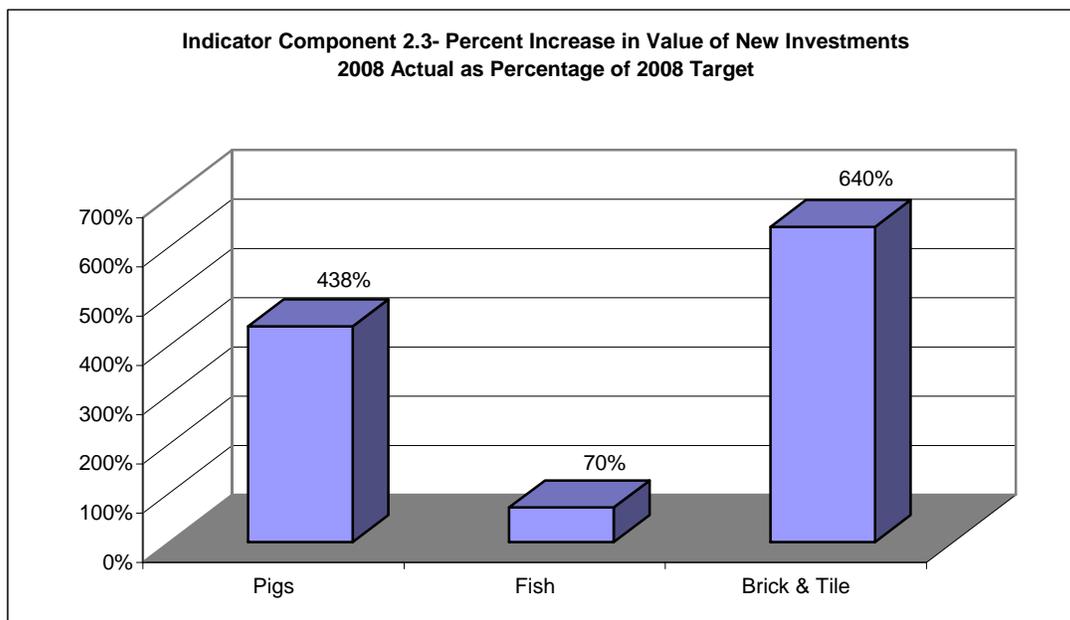
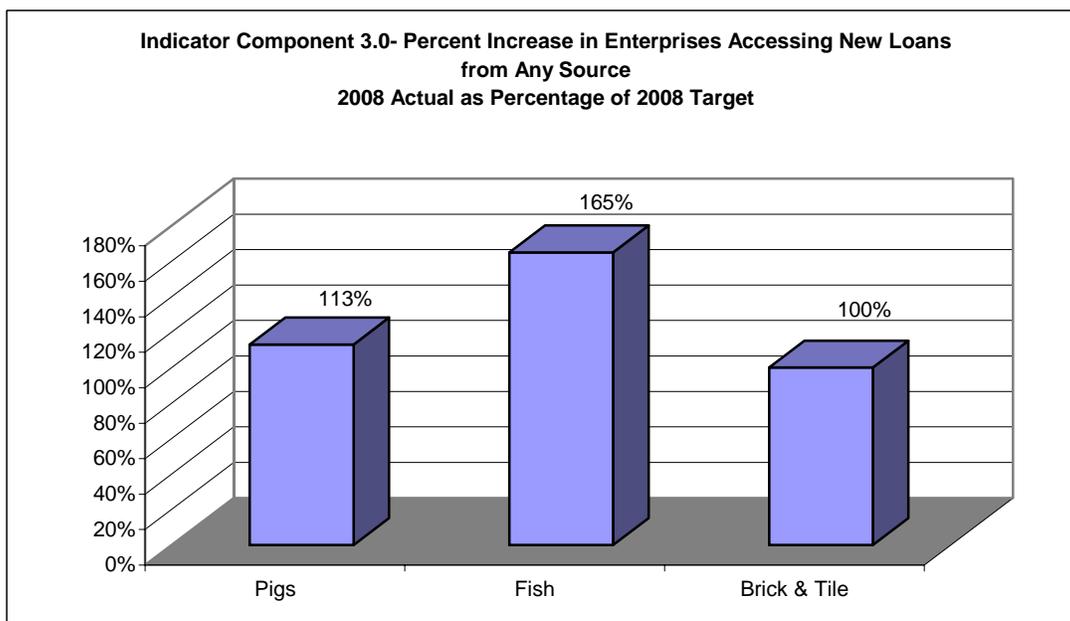


Figure 4 Component 3.0- Enterprises Accessing New Loans 2008 Actual as % of 2008 Target



1.2. MSME Indicator Framework Results by Component, Baseline to Final Evaluation 2008

This section provides a summary of MSME project impacts by looking at changes in Component Indicators from the CIDS Baseline Study in 2005 through FY 1 in 2006, to FY 2 and the project Mid-Point Evaluation in 2007 and then to the Final Evaluation results from 2008. The following tables set out the results for each Component and Component Indicator. For each Indicator the Target and Actual results are shown. Below, these results are shown as the percentage of the FY target and then as the percentage of Baseline results.

For Project Component 3 some Indicator definitions and targets were revised in Year 2 so there is no Baseline or Y1 Data. Further revisions were also made after the 2007 Mid-point Evaluation survey, leading to gaps in data for year 2. While FY Target and Actual results were reported for each year in previous studies, and are also reported for 2008 in later sections of this report, Component 3.1 and 3.2 indicators do not provide a consistent basis for comparisons over the time frame of the project cycle and so they are not included here in this section.

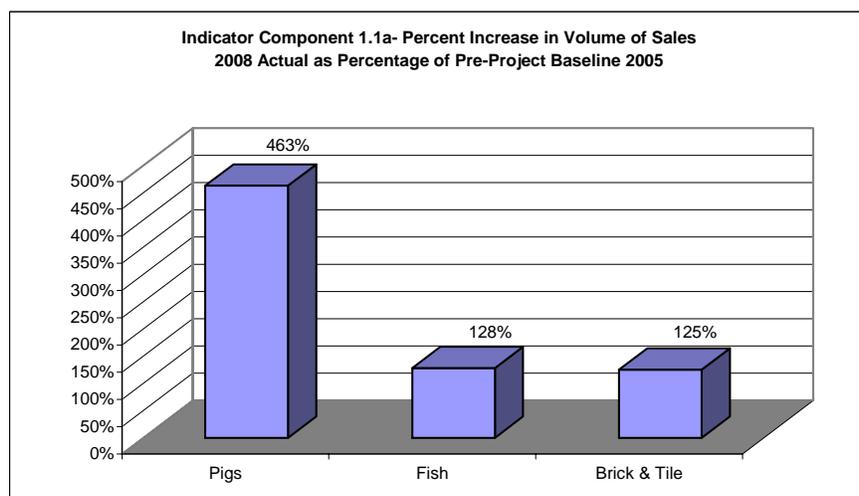
Results for Component 1: Improved Performance of USAID-Assisted Enterprises in Targeted Value Chains are shown in the following two tables. The first table looks at changes in sales volumes over the project cycle. Compared to the Baseline study, the most dramatic impacts of the MSME project have been on increasing pig sales volumes, which are up 463% by 2008. The mean results have been increased by one large scale producer sampled who was an MSME client who accounted for about 5% of total sales volumes among the 406 producers.

Growth in fish and tile sales volumes have been relatively less dramatic but still solid, with fish volumes up 128% and tile volumes up 125% in the three years after the baseline. Results for growth in sales volumes have mostly fallen below annual targets to some extent with the exception of pigs in 2008. However, emphasis for fish and brick and tile productivity increases have focused more on quality improvement and higher unit prices as discussed later in this report.

Table 2 Summary Results: Project Indicator Framework Component 1a

OBJECTIVE: Component 1a: Improved Performance of USAID-Assisted Enterprises in Targeted Value Chains						
Indicator	Value Chain	Unit	Base-line CIDS 2	FY2006	FY2007	FY2008
1.1 (a) Percent change in volume of sales of program-assisted enterprises	Pigs	Mean Head/MSME				
Target				10	12	16
Actual			8.2	9	10	38
% of FY Target				88%	81%	232%
Actual as % of Baseline				110%	122%	463%
1.1 (a) Percent change in volume of sales of program-assisted enterprises	Fish	Mean Kg./MSME				
Target				1,825	2,190	2,890
Actual			1,460	1,573	1,686	1,863
% of FY Target				86%	77%	64%
Actual as % of Baseline				108%	115%	128%
1.1 (a) Percent change in volume of sales of program-assisted enterprises	Brick & Tile	Mean No. Bricks, Tiles /MSME				
Target				337,709	405,251	540,334
Actual			270,167	280,000	325,000	338,701
% of FY Target				83%	80%	63%
Actual as % of Baseline				104%	120%	125%

Figure 5 Indicator Component 1.1a- Percent Increase in Volume of Sales 2008 Actual as % of Baseline

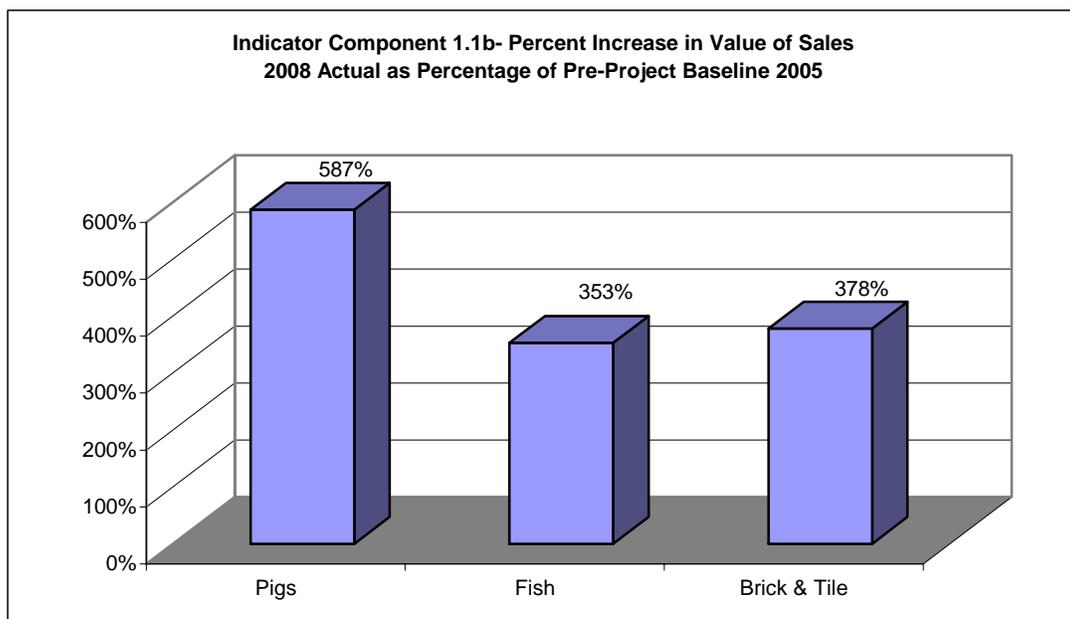


This second table on Component 1 looks at changes in sales values over the project cycle. Project impacts have been particularly striking on sales values with increases over Baseline by 2008 of 587% for pig enterprises, 353% for fish and 378% for tile enterprises. The rise has been particularly steep during 2008, a likely result of better quality products combined with the impacts of inflation over the last year. Notably, fish and tile results far exceed targets on sales values while growth in production volumes have been much less, pointing to rising quality and unit prices for their products.

Table 3 Summary Results: Project Indicator Framework Component 1b

OBJECTIVE: Component 1b: Improved Performance of USAID-Assisted Enterprises in Target Value Chains						
Indicator	Value Chain	Unit	Base-line CIDS 2	FY2006	FY2007	FY2008
1.1 (b) Change in value of sales of program-assisted enterprises	Pigs	Mean \$/MSME				
Target				\$806	\$968	\$1,290
Actual			\$645	\$700	\$796	\$3,786
% of FY Target				87%	82%	293%
Actual as % of Baseline				109%	123%	587%
1.1 (b) Change in value of sales of program-assisted enterprises	Fish	Mean \$/MSME				
Target				\$1,363	\$1,635	\$2,154
Actual			\$1,090		\$1,285	\$3,851
% of FY Target				0%	79%	179%
Actual as % of Baseline				0%	118%	353%
1.1 (b) Change in value of sales of program-assisted enterprises	Brick & Tile	Mean \$/MSME				
Target				\$13,224	\$15,869	\$21,156
Actual			\$10,579	\$15,180	\$18,506	\$39,967
% of FY Target				115%	117%	189%
Actual as % of Baseline				143%	175%	378%

Figure 6 Indicator Component 1.1b- Percent Increase in Value of Sales 2008 Actual as % of Baseline



Results for Component 2: Enhanced Capacity of Value Chain Firms and/or Stand-Alone Providers to Support Competitive Value Chains, are shown in the following table. The project indicator for this component is the mean increase in new investments in the enterprise since joining the MSME project. The value of “new investments” in the case of Pig Producers is defined as the sum of three investment components: fixed capital investments during the project, the value of pig stock at the start of the production cycle in May 2007 and the value of total costs of pig production May 2007 - April 2008. For Fish and Tile enterprises, the value of “new investments” is defined as the sum of two investment components: fixed capital investments during the project and the value of total costs of production May 2007 - April 2008.

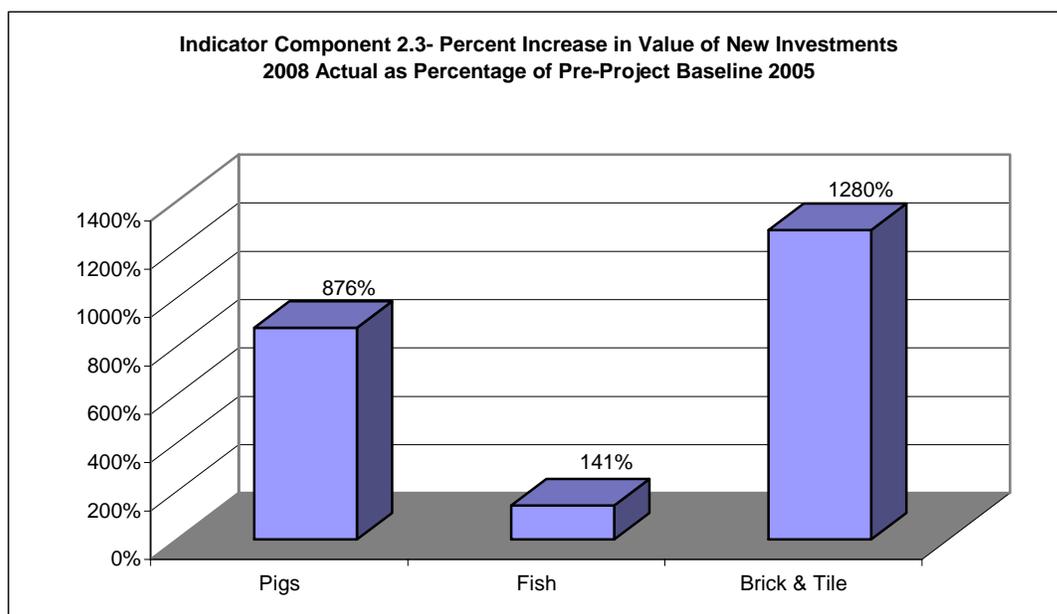
This is a conservative estimate of project impacts on new investments, as costs of production investments are annual costs, but only the most recent year’s costs are included in the estimate. There has been a spectacular growth in new investments in both Tile and Pig enterprises compared to baseline. In the case of pig producers, most of this investment growth has been in terms of rising costs of production for larger numbers of pigs. In the case of Tile producers, investment growth results from both large increases in investments in fixed capital items and large increases in costs of production, especially for the larger numbers of bricks also produced by these enterprises. Both these enterprises have also met or exceeded annual FY targets through the project cycle, showing strong growth in both 2007 & 2008.

The exception to these trends has been the fish enterprises. Investment growth since Baseline has occurred, but at a much lower rate and new investments have consistently fallen below annual FY targets. As discussed in the earlier Fish Producer section of this report, this is likely due to the combination of large scale fish enterprises, mostly in Kampong Cham, with mostly small scale enterprises in the process of commercialization in Prey Veng, and the lag time of perhaps two years until large increases in productivity, returns and investments occur.

Table 4 Summary Results: Project Indicator Framework Component 2

OBJECTIVE: Component 2: Enhanced Capacity of Value Chain Firms &/or Stand-Alone Providers to Support Competitive Value Chains						
Indicator	Value Chain	Unit	Base-line CIDS 2	FY2006	FY2007	FY2008
2.3. Percent increase in value of new investments by MSME	Pig	Mean \$/MSME				
Target				750	900	\$1,200
Actual			\$600	\$953	\$2,860	\$5,256
% of FY Target				127%	318%	438%
Actual as % of Baseline				159%	477%	876%
2.3. Percent increase in value of new investments by MSME	Fish	Mean \$/MSME				
Target				4,291	5,150	\$6,886
Actual			\$3,433	\$3,689	\$3,934	\$4,830
% of FY Target				86%	76%	70%
Actual as % of Baseline				107%	115%	141%
2.3. Percent increase in value of new investments by MSME	Brick & Tile	Mean \$/MSME				
Target				11,250	13,500	\$18,000
Actual			\$9,000	\$10,990	\$32,972	\$115,160
% of FY Target				98%	244%	640%
Actual as % of Baseline				122%	366%	1280%

Figure 7 Component 2.3- Percent Increase in Value of New Investments 2008 Actual as % of Baseline



One further Indicator of importance is found under Component 2 and needs to be reported separately. This is Component 2.2: Total number of enterprises trained in private sector growth. The target for this Indicator in 2008 is 1,500 MSME enterprises of all types, the results are not split by type of enterprise. Result from this Evaluation indicate that over 95% of sampled individual DAI client enterprises had participated in the most common types of

training sessions by May 2008, when total producer enterprises numbered 1,488. With a further increase in number of DAI enterprises, to 1,800 after May, consisting mostly of producers, this target would have been met.

The evaluation also includes more detailed information on training participation rates which serve to more fully highlight the impact of capacity building activities the MSME project undertakes with producers, which have contributed fundamentally to the achieved large increases in volumes and value of sales in all value chains. The results in terms of number of training session per individual are important.

In the later sections of this report, we present the numbers of person/training sessions by type for both pig and fish producers. The results from our sample are that 406 Pig Producers reported attending a total of 3,532 person/training sessions or an average of 8.7 person/training sessions per enterprise. The sample of 56 Fish Producers reported a further attendance at 606 person/training sessions by type or an average of 10.8 person/training sessions per enterprise. Extrapolating from the sample to all MSME project producers, this gives an estimate that individuals from all 1,209 MSME Pig producer enterprises would have attended a total of 10,518 person/training sessions by type and individuals from all 264 Fish producers enterprises an additional 2,851 person/training sessions by type since joining the MSME project. So an important dimension of project impact in capacity building for private sector growth has been the multiple training of individuals from within client enterprises.

To add to these impacts, the results from both the Pig and Fish Spread Surveys indicate that MSME project producers directly conduct about 20% of total training in improved technologies for non-project producers within their villages.

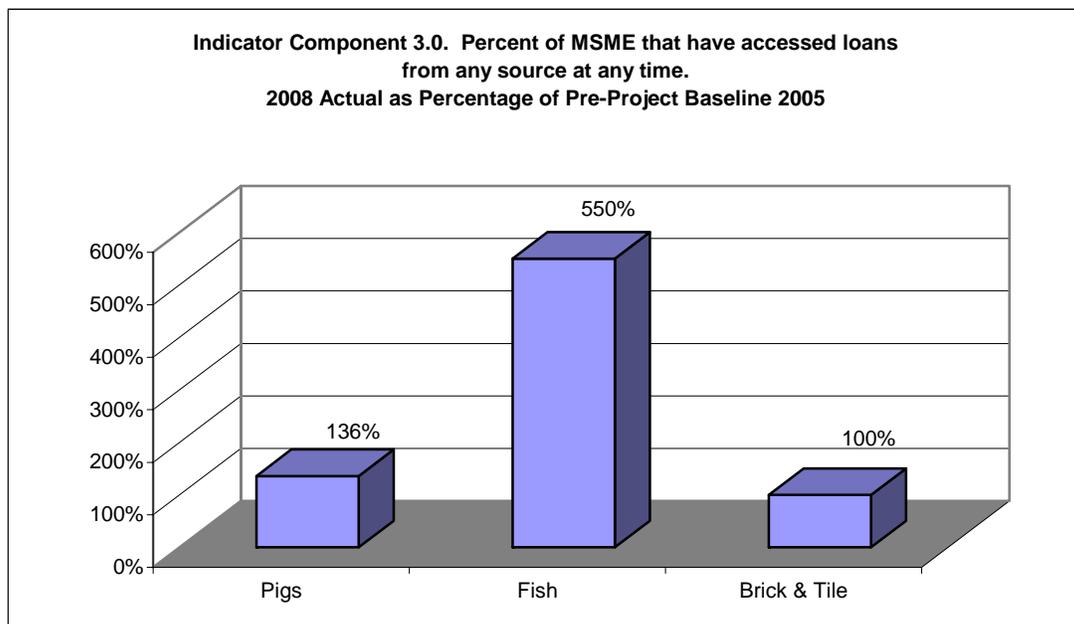
Results for Component 3.0: Ongoing Improved MSME Access to Finance, are shown in the following table. The results for 2008 are conservative as they likely only examine access to cash finance to fund enterprise investments. While respondents were asked about credit for production inputs, the response rate was very low and much lower than that found in 2007. Respondents seem to have replied only in terms of cash loans in 2008. As discussed in the introduction to this section, Component 3.1. and 3.2 Indicators are not included here due to changes in Indicator definitions and targets over the project cycle.

Table 5 Summary Results: Project Indicator Framework Component 3

Component 3.0: Ongoing Improved MSME Access to Finance						
Indicator	Value Chain	Unit	Base-line CIDS 2	FY2006	FY2007	FY2008
3.0. Percent of MSME that have accessed loans from any source at any time.	Pig	No. of MSME				
Target				122	140	150
Actual			124	25	176	169
% of FY Target				20%	126%	113%
Actual as % of Baseline				20%	142%	136%
3.0. Percent of MSME that have accessed loans from any source at any time.	Fish	No. of MSME				
Target				NA	19	50
Actual			12	NA	8	66
% of FY Target					42%	132%
Actual as % of Baseline				0%	67%	550%
3.0. Percent of MSME that have accessed loans from any source at any time.	Brick & Tile	No. of MSME				
Target				5	6	15
Actual			6	4	4	6
% of FY Target				80%	67%	40%
Actual as % of Baseline				67%	67%	100%

Concerning Component 3.0, the number of enterprises accessing loans from any source at any time for investments growth has been variable by type of enterprise. Compared to the Baseline, Fish Producers have shown a very large increase in the percentage of enterprises accessing loans in 2008. Pig Producers show a more modest but steady growth in enterprises accessing loans after an initial rapid increase in 2007. Brick and Tile enterprises have not experienced growth in the proportion utilizing loans for investment. All types of enterprise met or exceeded the annual targets for numbers of enterprises accessing credit for the first time in FY 2008.

Figure 8 Indicator Component 3.0- Percent of MSME that have accessed loans 2008 as % of Baseline



Results for Component 4.0: Improved Business Environment, are shown in the following table. The Indicator is the number of enterprises who have joined business associations since joining the MSME project as a means to participate in policy advocacy and public-private sector dialogues. MSME project staff will be providing additional information in this area of project impacts in separate reports.

The Baseline for this indicator was zero. Since FY1 of the project, the number of enterprises of all types joining business associations has approximately doubled each year through 2007 and 2008. While increasing business association policy advocacy and public-private sector dialogues requires time to develop, a good foundation has been laid through this ongoing and quite rapid increase in business association membership among enterprises.

Table 6 Summary Results: Project Indicator Framework Component 4

Component 4: Improved Business Environment						
Indicator	Value Chain	Unit	Base-line CIDS 2	FY2006	FY2007	FY2008
4.0. Number of MSME participating in policy advocacy meetings and public-private dialogues.	ALL	No of MSME				
Target				20	200	400
Actual			0	100	228	562
% of FY Target				500%	114%	141%
Actual as % of Baseline				NA	NA	NA

1.3. Aggregate MSME Project Economic Impacts on Enterprises and the Economy in 2008

In this section we examine the aggregate impacts of the MSME project on the enterprises working with the project and therefore on the economy as a whole. Two simple methods are used to enumerate these aggregate project impacts. These methods have been used previously in DAI MSME Project Portfolio Reviews submitted as a reporting requirement to USAID.

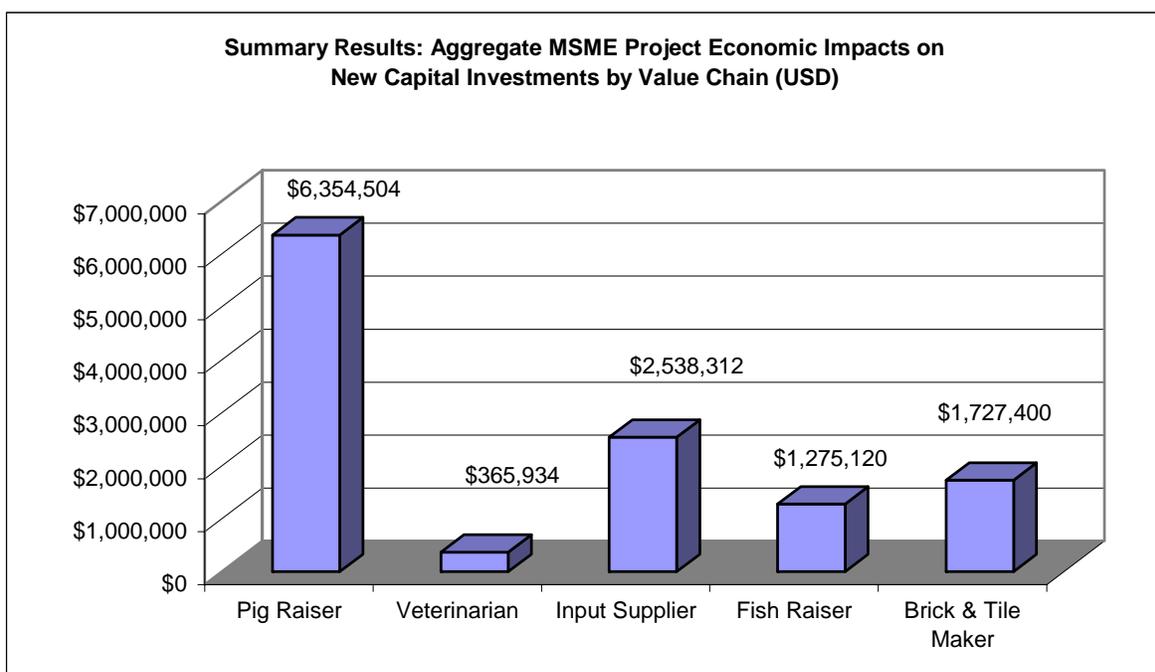
1. The sum of the Average New Capital Investments by number of enterprises by type in 2008.
2. The sum of the Average Increase in Value of Sales by number of enterprises by type in 2008.

The Total DAI MSME Project Budget was \$5,007,688 for the entire project cycle of three years. The aggregate impact of the MSME on the enterprises and therefore on the economy as a whole in terms of the sum of new Capital Investments since joining the project is estimated to be \$12,261,270. So the 1,654 MSME enterprises have invested over \$12 Million in their enterprises, adding value, and through purchasing these goods and services in the wider Cambodian economy. This is a major economic benefit for the enterprises themselves and the wider economy within which these enterprises operate. The simple return on investment for the MSME project by this measure is 244% of total project cost.

Table 7 Summary Results: Aggregate MSME Project Economic Impacts on Capital Investments

Value Chain	Role	Average New Capital Investment	Number of Enterprises	Total Value
Pig Value Chain	Pig Raiser	\$5,256	1209	\$6,354,504
Pig Value Chain	Veterinarian	\$2,577	142	\$365,934
Pig Value Chain	Input Supplier	\$105,763	24	\$2,538,312
Fish Value Chain	Fish Raiser	\$4,830	264	\$1,275,120
Brick /Tile Value Chain	Brick & Tile Maker	\$115,160	15	\$1,727,400
Total Estimated Value/Return			1654	\$12,261,270

Figure 9 Summary Results: Aggregate MSME Project Economic Impacts on New Capital Investments

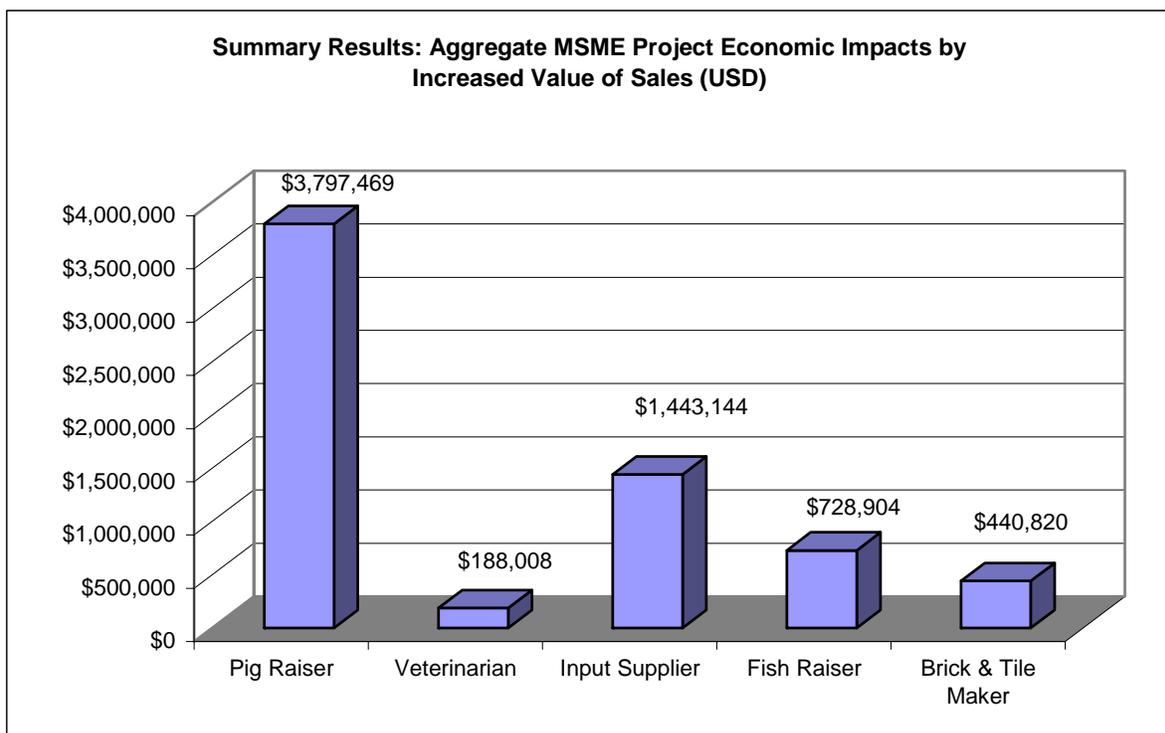


The aggregate impact of the MSME on the enterprises and therefore on the economy as a whole in terms of increased value of sales from baseline is estimated to be \$6,598,345. So the 1,654 MSME enterprises have increased the value of sales by \$6.6 Million for their enterprises, and have increased the value of the goods and services they provide to the wider Cambodian economy. This is a further major economic benefit for the enterprises themselves and the wider economy within which these enterprises operate. The simple return on investment for the MSME project by this measure is 132% of total project cost.

Table 8 Summary Results: Aggregate MSME Project Economic Impacts by Increased Value of Sales

Value Chain	Role	Average Increase in Value of Sales from Baseline	Number of Enterprises	Total Value
Pig Value Chain	Pig Raiser	\$3,141	1209	\$3,797,469
Pig Value Chain	Veterinarian	\$1,324	142	\$188,008
Pig Value Chain	Input Supplier	\$60,131	24	\$1,443,144
Fish Value Chain	Fish Raiser	\$2,761	264	\$728,904
Brick/Tile Value Chain	Brick/Tile Maker	\$29,388	15	\$440,820
Total Estimated Value/Return			1654	\$6,598,345

Figure 10 Summary Results: Aggregate MSME Project Economic Impacts by Increased Value of Sales



A range of other MSME aggregate project impacts cannot readily be quantified in monetary terms or require further analysis to derive monetary values. These impacts have been reported earlier in this study, however, it is worth briefly highlighting some of these major impacts here once again.

- 
 The MSME project has provided training and capacity building activities in improved pig and fish production and business technologies for a total of 10,832 person/training sessions by type of training, equivalent to 3,714 enterprise/training sessions enabling producers to increase the productivity of their enterprises.
- 
 The MSME project has increased productivity for producers in a number of important ways, including substantially reducing pig mortality rates, reducing the period necessary for pig growth to sale weight, and increasing the quality and unit value of fish and tiles.
- 
 The MSME project has decreased the risk of businesses making an annual loss of income substantially across all value chains.
- 
 The project has had some impact on increasing enterprises utilization of credit, although this has been deliberately limited until businesses first reduce production risks and increase revenues.
- 
 The project has facilitated the establishment of new business associations and groups of producers that will be the foundation for efforts in policy advocacy and public-private sector dialogues, to improve the business environment in future.

2. BACKGROUND, OBJECTIVES AND METHODOLOGY

1.4. Background and Objectives of Research

The Cambodia Micro, Small and Medium Enterprises (MSME) Strengthening Project is implemented by Development Alternatives, Inc (DAI) and funded by the United States Agency for International Development (USAID) over the period October 2005 to September 2008. The vision of the project is to improve entrepreneurship and competitiveness for micro, small and medium enterprises (MSME) in selected value chains and target provinces by enabling improvements to businesses and the business environment. In the past, many of these targeted MSME, were operating in a difficult environment. Value chain linkages were under-developed, business margins thin, and business risks were high, constraining local economic development and efforts in rural poverty alleviation.

The Project assists rural MSME entrepreneurs in improving opportunities and incomes by partnering directly with value chain stakeholders to promote new ways of thinking and acting among local business people. The emphasis is on increased trust and cooperation, networking, sharing information and pooling resources in ways that can benefit all MSME in the value chain. DAI facilitates training of MSME by working directly with Input Suppliers, who then train enterprises within their sectors. Practical tools are utilized to improve products, services, business relationships and access to affordable credit.

The DAI MSME project has five enabling Components:

-  Component 1: Improved Performance of Enterprises in Targeted Value Chains - DAI will work to strengthen MSME by taking advantage of opportunities and addressing primary constraints identified by the project.
-  Component 2: Enhanced Capacity of Value Chain Firms or Business Services to Support Value Chains - DAI seeks to improve MSME access to market information, know-how, technology and working capital within selected value chains.
-  Component 3: Improved MSME Access to Finance - By linking MSME with financial institutions, creating incentives for financial institutions to extend credit to MSME, facilitating the development of new financial products, and helping MSME meet the demands of lenders for proper business plans and financial records.
-  Component 4: Improved Business Environment - DAI seeks to strengthen linkages and trust among MSME in targeted value chains and work with networks and groups of firms to more effectively represent their interests to the government, pool resources, and lobby for regulatory changes to improve the business enabling environment in those value chains.
-  Component 5: Vocational training and employment for Vulnerable Persons.

DAI uses a six-step approach to strengthening MSME:

-  Identify value chains with potential for positive impact in market demand, job creation, and revenue generation;
-  Build the knowledge, capacity and skills of firms within those value chains;
-  Strengthen vertical linkages within the chains;
-  Strengthen horizontal linkages between companies and business service providers at multiple levels of the chain;
-  Improve access to finance to upgrade inputs, productivity and quality; and
-  Improve the enabling environment by engaging the private sector and strengthening institutions.

The project engages MSME in three primary value chains: pigs, aquaculture, and brick and tile making. It is currently active in six provinces: Kratie, Kampong Cham, Prey Veng, Svey Rieng, Kandal and Kampong Speu, working with more than 1,800 MSME.

Nearing the end of the three-year project, and following a Project Monitoring and Evaluation Report in partnership with Indochina Research Ltd (IRL) in 2007, the Project has now carried out this follow-up Final Project Monitoring and Evaluation survey in 2008. In 2008, project assistance expanded to 1,800 firms and the number of target provinces expanded from four to six.

The aim of the Final Project Monitoring and Evaluation Survey 2008 is to follow-up and document the benefits to value chain primary producer clients assisted by the Project up to this year. Furthermore, this study will examine in greater depth the impacts of the Cambodia MSME Project on goods and service providers to primary producers, including Pig Input suppliers and Veterinarians, who also work with and benefit from the Project. Finally, The spread of Project benefits to non-beneficiary producers located in the same villages as MSME producer clients will be explored. A comparison of MSME Project beneficiaries to a relative control group from the initial CIDS baseline study who did not receive any benefits will also be conducted.

1.5. Methodology

The Final Project Monitoring and Evaluation Survey 2008 aims to provide results according to the Performance Monitoring Plan Indicators and targets and evaluate results on a broader range of project impact issues for enterprises in Cambodia.

The enumeration of benefits of the Cambodia MSME Project to stakeholders has been undertaken using quantitative sample surveys in face to face interviews by IRL field research interviewers. DAI and IRL worked in collaboration to improve and modify research tools based on experience gained in 2007 to improve enumeration and to cover a broader and up to date range of M&E issues.

The sample frame and sampling procedure was developed in consultation with DAI. The sample frame for randomized selection had the following parameters defining the population of DAI MSME:

-  MSME that were clients of DAI in the four provinces of Kratie, Kampong Cham, Prey Veng, and Svay Rieng.
-  MSME that were clients of DAI for at least one full production cycle;
-  MSME in the two new newly added provinces of Kandal and Kampong Speu were excluded as most had not yet completed a full production cycle with the project.

DAI provided the sample frame consisting of a list of 889 MSME clients to IRL on this basis. Sub-samples were then drawn for each value chain (Pigs, Fish, Brick and Tile Makers). Due to the large variation in number of enterprises by value chain and role, a mixed approach was used for the sampling different value chain actors.

The Pig value chain accounted for 92% of all DAI clients in the population at 825 enterprises. Within this value chain, Pig Producers and Veterinarians were randomly sampled. The far less numerous Pig Input Suppliers and one Slaughter-house were purposively selected for a 100% sub-population sample. Due to the small population of Fish and Brick and Tile Maker firms in these value chains, they were also purposively selected for a 100% sub-population sample. Using this method, we aimed to considerably increase the sub-samples of these not so numerous but important DAI value chain clients in the 2008 study.

The final component of sampling for this study was to select a sample of Pig and Fish producer enterprises that had not been DAI clients, to examine the extent of spread of DAI technologies to Non-project producers. These producers were selected within villages with at least one DAI client of the same value chain type. Three villages were selected for the Pig Spread Survey and two villages were selected for the Fish Spread Survey. Village selection was random among villages with populations likely large enough to yield a sample of 50 Non-project producers per village using random selection. Producers in each village were then selected using interval random sampling to choose producer households.

Table 9 MSME Evaluation 2008 Total Sample Structure

Value Chain		MSME Population*	Planned Sample n	Planned as % of Population*	Achieved Sample n
Pig Value Chain	Pig Raiser	675	400	59%	406
Pig Value Chain	Vet	125	62	50%	64
Pig Value Chain	Input Supplier	19	19	100%	15
Pig Value Chain	Slaughterhouse	1	1	100%	0
Pig Value Chain	Pig Spread Srvy	-	150	-	152
Fish Value Chain	Fish Raiser	68	68	100%	56
Fish Value Chain	Fish Spread Srvy	-	50		51
Brick& Tile Val. Chain	Brick & Tile Maker	13	13	100%	12
	Total		825		753

* Four provinces, enterprises completing at least one production cycle with the MSME project, as provided by DAI.

Stage two for randomly selected DAI Pig value chain enterprises then consisted of setting quotas by province, proportional to the population distribution of all Pig value chain enterprises by province. Field teams were provided with a list of proportionally randomly selected sample communes to produce the province quota by seeking to interview all DAI Pig value chain clients in each commune. Due to the likelihood that not all Pig value chain clients would still be in operation and some might not be available for interview, teams were also provided a list of substitute communes to assist meeting the overall province quotas. These provincial quotas were met during field work with only minor variations.

Fieldwork took place between 19th May and 3rd July 2008. DAI field staff assisted IRL teams to contact DAI clients in the field with which improved overall contact rates. However, as anticipated, a significant number of value chain clients were out of operation or were not available for interview at the time. Some clients that could not be located had either moved or were far away busy in agriculture, and a number had temporarily ceased pig production either due to market forces or the impact of epidemics. In the end the sampling quotas were met after utilizing substitute communes to make up for quota shortfalls.

Analysis and Data Limitations

The design of the Final Project Monitoring and Evaluation Survey 2008 benefited from experience of undertaking the 2007 Midpoint Evaluation and the earlier Baseline study. DAI and IRL worked on improving the sampling methodology for a broader range of DAI value chain clients as described above to give more representative results. The desired sample has been achieved during field research. Research tools were redesigned in an attempt to improve enumeration and to cover new or other areas of importance to the final evaluation of DAI MSME impacts that were not covered in the Baseline or Midpoint Evaluation.

For these reasons, the 2008 Monitoring and Evaluation Survey was structured to include its own measures of baseline indicators. To do this, the survey sections asked questions in relation to both the most recent year, May 2007 to April 2008, and for the last year of operations for the enterprise before commencing with the DAI MSME project. For example, questions on volumes and value of sales followed this format. Thus the study in 2008 has an internal baseline. Limitations to this baseline are therefore matters of limitations to accurate recall by respondents, where few enterprises keep formal business records.

The better seasonal timing of the field research for the 2008 study meant that producers had just recently completed their average annual production cycles, making the before/after project intervention comparisons more robust. Notably this was also the case for Fish Producers, who had not completed their production cycle at the time of the 2007 Midpoint Evaluation.

3. STUDY RESULTS

The results of this study are divided into sections, according to the three value chains supported by the DAI MSME project: the pig value chain, fish value chain and the brick and tile value chain. Within the pig value chain section, separate sub-sections provide results for Pig Producers, Veterinarians and Input Suppliers within the value chain. Throughout these sections of the report, results are compared with project targets for 2008 which emanate from the 2008, Year 3 Project Work Plan submitted by DAI and approved by USAID. The final section provides a summary overview of findings in relation to the DAI MSME Performance Monitoring Plan Indicators and targets for 2006, 2007 and 2008.

Each section starts with a general profile of enterprises. For the first time, a demographic profile of business owners and their households including age, sex, education, value chain experience and household composition is included. The next section then provides results on the duration of involvement with the project and specific results on types of DAI MSME training and activities they have attended by gender. The following sections provide an analysis of project impacts on business performance including new capital investments, volume and value of sales, and access to credit. New in 2008, the surveys also incorporates new sections for the analysis of project impacts on labor employment and business service utilization, a more detailed section on business productivity impacts, and further new sections analyzing perceived impacts on poverty alleviation and impacts on business policy advocacy.

2. PIG VALUE CHAIN -PIG PRODUCERS

Of a total of 1,655 enterprises of all types working with the DAI MSME project in 2008, 83% or 1,376 businesses are enterprises in the pig value chain. Within this value chain 88% of pig enterprises are Pig Producers, 10% are Veterinarians and 2% are Input Suppliers. Results are presented for each of these different actors in the pig value chain in turn. While DAI Project Monitoring Indicators relate only to Pig Producers, we have included Veterinarians and Input Suppliers to provide a broader indication of DAI MSME project impacts on the value chain as a whole.

2.1. Demographic Profile

This survey interviewed a proportionately and randomly selected sample of 406 DAI MSME Pig Producers (33% of the total), engaged with the project for at least one production cycle and within the four of six provinces in which DAI has operated. The four provinces sampled account for 86% of the total of project Pig Producers and the vast majority of producers that have completed at least one production cycle with the project,

The geographical distribution of DAI MSME Pig Producers by province is uneven, with 44% located in Kampong Cham province, 29% in Kratie, 12% in Prey Veng and 16% in Svay Rieng. DAI MSME Pig Producers are 22% female and 78% male. A higher proportion of female producers are found in Kampong Cham (30%) and in Kratie (27%) and a much lower proportion in Prey Veng (8%) and in Svay Rieng (0%). Project staff need to recruit more women producers in the two south-eastern provinces to match the better gender balance achieved in Kampong Cham.

DAI MSME Pig Producers are typically aged around 38 years and have had an average of 6.4 years experience raising pigs before joining the project. Their households are composed of an average of 1.8 female and 1.9 males aged over 15 years and 1.2 boys and 1.2 girls aged less than 15 years. They are more educated than average in a rural Cambodian context. Overall 66% have at least some level of secondary level education, with only limited variations by province.

2.2. Project Collaboration & Training Benefits

Most Pig Producers had been engaged with the DAI MSME project for a period of at least 12-24 months and 100% confirmed that their primary position in the pig value chain was as a Pig Producer.

Table 10 Pig Enterprises: Months since joining the MSME project

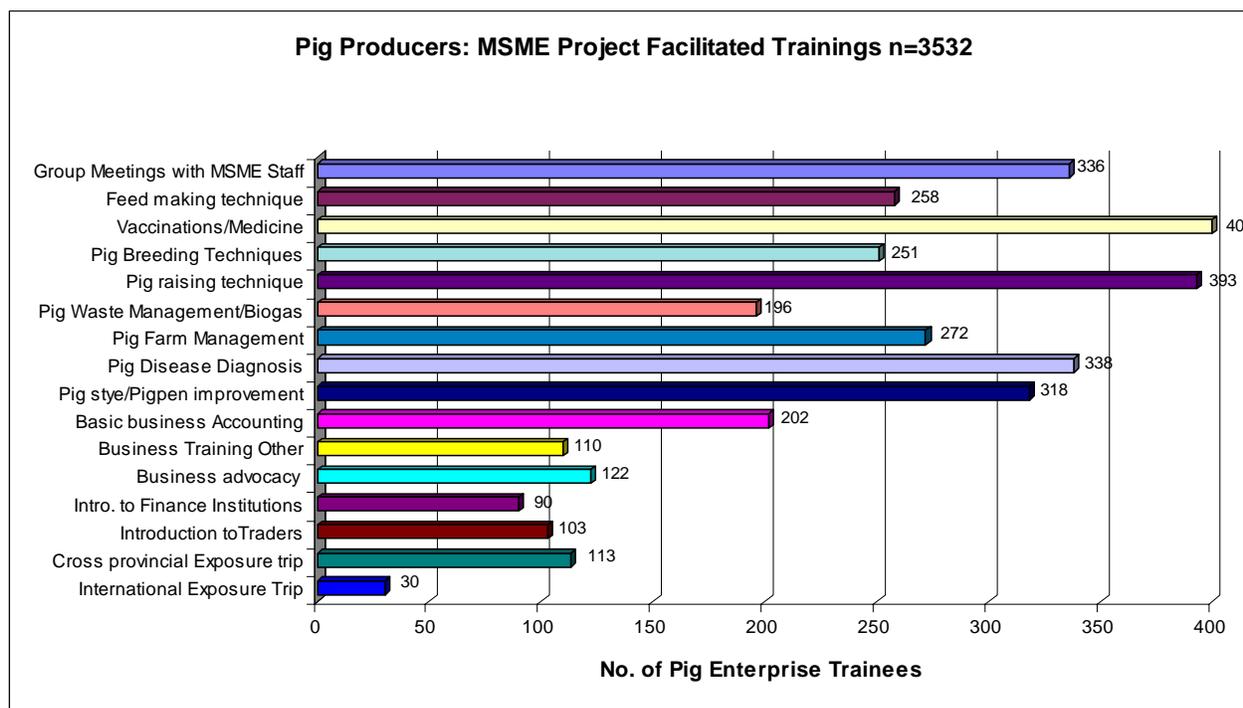
Month category	Count	%
<12 months	96	24
12 - 24 months	266	66
> 24 months	44	11
Total	406	100

A core activity in support of Pig Producers for the DAI MSME has been to organize technical training and related capacity building activities in pig production and business practices. The 406 sampled enterprises reported attending a total of a 3,532 person/training activities since joining the project, an average of 8.7 training attendances per enterprise. 100% of training was undertaken by business owners rather than employees.

The breakdown of types of courses attended and by province is shown in the following chart. Participation rates are particularly high for pig production technical courses, usually in the range of about 60-90% of enterprises.

For core technical training in areas including Pig Raising Technique, Vaccinations/Medicine and Pig Disease Diagnosis participation rates are over 80%. For business skills development courses, participation rates are lower, in the range of 25-50%. Business Accounting training has been provided to 50% of enterprises and Business Advocacy training has been provided to 30% of enterprises. About one third of enterprises have also participated in Exposure Trips to other provinces or to other countries.

Figure 11 Pig Producers: MSME Project Facilitated Trainings



DAI MSME training and related capacity building activities are gender balanced in relation to the 22% proportion of women owned enterprises already participating with the project. Women Pig Producers are proportionally represented in pig technical training courses and are over-represented in business training and Exposure Trips. Project staff are enabling women to participate equitably in training opportunities once they have joined the project.

Core potential impacts of these capacity building activities are improvements in enterprise productivity and profitability. These results are presented in a later section. However, another potential impact is to facilitate diversification of enterprises from sole pig production to incorporating other pig value chain business activities. This Final Evaluation explored the extent of diversification among pig production enterprises as a result of DAI organized capacity building for the first time.

The results are interesting. Following DAI organized capacity building activities, 58% of Pig Producer enterprises diversified into pig trading, 30% diversified into pig production input providers and 13% diversified into Veterinarian or other pig production service provider roles. So, increasing value chain diversification has quite often been an additional impact of DAI MSME-organized capacity building activities.

2.3. Impacts on New Capital Investments & Credit, Gross Sales Volume & Revenue, Cost of Production & Gross Profit

OBJECTIVE: Component 2: Enhanced Capacity of Value Chain Firms &/or Stand-Alone Providers to Support Competitive Value Chains					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
2.3. Percent increase in value of new investments by MSME	Pig	Mean \$/MSME	\$1,200	\$5,256	438%

An important indicator of project performance is the increase in the average value of new investments in pig production enterprises. This is also an indicator for future projected earnings. The value of “new investments” is defined as the sum of three investment components: fixed capital investments during the project, the value of pig stock at the start of the production cycle in May 2007 and the value of total costs of pig production May 2007 - April 2008.

The 2008 target for average new investments per enterprise was \$1,200. The result was an average of new investments of \$5,256 or 438% of target. The tables below show the composition of new investments by component as well as the total. In 2008, the major investment is in pig stock at the start of year, followed by investments in cost of production.

Table 11 Pig Producers: Mean Value of New Investments since joining the MSME project (USD)

New Investment Components	Mean/Enterprise
N=406	
Fixed Capital investments	\$688.43
Pig Stock	\$2,532.30
Total cost of Pig Production	\$2,035.56
Total	\$5,256.28

The most common pattern of Fixed Capital Investments, accounting for about half these enterprises, was to invest in pig pens (1 unit), troughs (2 units) and sows (1.4 head). Land was an additional investment by 38% of enterprises but the land areas bought were typically very small (40 m²). The average enterprise pig stock investments at the start of the production cycle in May 2007 consisted of 16 piglets (value \$609), 8 feeder pigs (value \$1,302), 3 sows (value \$588), and 0 boars. The total average number of head of stock has grown from 24 head before joining the project to 27 head during the last year. This overall growth in average pig stock investments for all enterprises in the sample since pre-project is reduced by the different investment patterns of a small number of very large scale Pig Producers. These large scale producers had a maximum of up to 500 piglets and 400 feeder pigs/enterprise before joining the project decreasing their stock to a maximum of 200 piglets and 400 feeder pigs in 2008. These results reduce average growth in enterprise pig stock investments for all other enterprises.

The following table shows the composition and average enterprise investment in pig costs of production for the period May 2007-April 2008. The average total enterprise investment in pig costs of production was \$2,036. By far the largest investment was made in pig supplementary feed, accounting for 78% of total costs, followed by buying piglets accounting for 12% of total costs.

Table 12 Pig Producers: Cost of Pig Production for the year 2007-2008 (USD)

Cost Item	N=406					
		Mean	Median	Std. D	Max	Sum
Piglets	235	0	645	7,500	95,405	
Supplementary Feed	1,593	900	2,609	35,000	646,833	
Vaccine	80	21	501	10,000	32,437	
Medicine	29	9	58	500	11,838	
Veterinary Service	10	0	36	350	4,141	
Machinery Fuel & Oil	54	20	91	540	21,954	
Machinery Repair/Maintenance	8	0	22	225	3,051	
Hired Labor Part-time	2	0	27	480	730	
Hired Labor Fulltime	8	0	90	1,600	3,072	
Transport Costs	17	0	38	360	6,961	
Trader license fees	0	0	1	10	15	
Slaughterhouse fees	0	0	0	0	0	
Inspection Fees	0	0	0	0	0	
Overall Cost	\$2,036				\$826,436	

The average total enterprise cost of pig production has increased by 150% from \$1,360 in the last year before joining the project. The shares of different cost items in the total cost, however, have remained fairly consistent comparing pre-project and during project expenditures.

OBJECTIVE: Component 3: Ongoing Improved MSME Access to Finance					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
3.0. Percent of MSME in target value chains that have accessed loans from any source at any time.	Pig	No. of MSME	150	169	113%

An important issue for enterprises is how the Fixed Capital investments described above have been financed. Investments were financed using only their own capital in a reported 86% of enterprises. Only 14% of enterprises reported borrowing some or all of their investment capital from any kind of lender. Loans with institutional MFIs were taken by 8% of enterprises with a mean value of \$648. Loans from informal credit sources were reported by 5% of enterprises with average loans amounts of \$761 in loans from family or friends and \$392 from private money lenders.

Extrapolating the 14% rate of borrowing from the sample to all 1,209 MSME Pig Producers would mean that 169 enterprises would have borrowed from any source, being 113% of the 2008 target.

These results on rates and numbers of Pig Producers accessing credit seem to relate only to credit in the form of cash loans for Fixed Capital investments. The results do not seem to include the rates and numbers of Pig Producers accessing credit for other purposes, in particular the purchase of goods and services on credit. While producers were asked about these other forms of credit, they seemed to have interpreted credit only as cash credit and responded accordingly. Results concerning rates of credit provision for goods and services to Pig Producers by Veterinarians and Input Suppliers in later sections of this report indicate that producers often access these forms of credit and that they have not been enumerated in the reported rates here.

Having examined patterns of investment and expenditure, we now turn to examining key DAI MSME impacts on pig enterprise Volumes of Sales and Gross Sales Revenues. Here we provide the most recent results from the year to April 2008 and assess impacts by comparison with results from the last year before each enterprise joined the project as reported in this survey.

OBJECTIVE: Component 1: Improved Performance of USAID-Assisted Enterprises in Targeted Value Chains					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
1.1 (a) Percent change in volume of sales of program-assisted enterprises	Pigs	Mean Head/MSME	16.4	38	232

First we examine MSME project impacts on enterprise volumes of pig sales. The mean number of pigs of all types sold in the year to April 2008 was 38 head/enterprise. This exceeds the 2008 MSME target of 16.4 head by 232%, a very good result. The average composition of sales volumes in enterprises is shown in the following table.

Table 13 Pig Producers: Number of Head Sold in the year 2007-2008

	N=406	Mean	Median	Std. D	Max	Sum
Piglets		18	0	41	500	7409
Feeder		19	12	24	280	7674
Pigs Boars		0	0	1	15	33
Sows		1	0	1	10	224
Total Head Sold		38				15340

Among all enterprises, 89% sold feeder pigs, 49% sold piglets, 20% sold sows and 3% sold boars. These volumes compare to a reported pre-project average volume of sales of 34 head/enterprise, an increase of 4 head/enterprise.

This pre-project average volume of sales is higher than reported by previous baseline and evaluation studies. One reason is that the 2008 Evaluation random sample included one very large scale Pig Producer in Kampong Cham. This producer sold 500 piglets and 280 feeder pigs in 2008. In the last year before joining the project he had sold 300 boars and 600 sows. He stopped selling sows and boars in 2008 as he is changing production to feeder pigs & piglets only in collaboration with an agri-business company. These production figures have been back checked with this producer.

OBJECTIVE: Component 1: Improved Performance of USAID-Assisted Enterprises in Targeted Value Chains					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
1.1 (b) Change in value of sales of program-assisted enterprises	Pigs	Mean \$/MSME	\$1,290	\$3,786	293%

MSME project impacts on enterprise Gross Sales Revenue in the year to April 2008 also show very good results. The mean Gross Sales Revenue was \$3,786/enterprise. This is 293% of the 2008 MSME target of \$1,290. The average composition of Gross Sales Revenue in enterprises is shown in the following table.

Table 14 Pig Producers: Gross Sales Revenue 2007-2008 (USD)

	N=406	Mean	Median	Std. D	Max	Sum
Piglets		\$715	0	\$1,936	\$24,975	\$290,135
Feeder		\$2,925	\$1,721	\$4,173	\$53,200	\$1,187,455
Pigs Boars		\$15	0	\$130	\$2,250	\$6,159
Sows		\$132	0	\$375	\$3,626	\$53,512
Total Sale Revenue		\$3,786	\$2,408			\$1,537,261

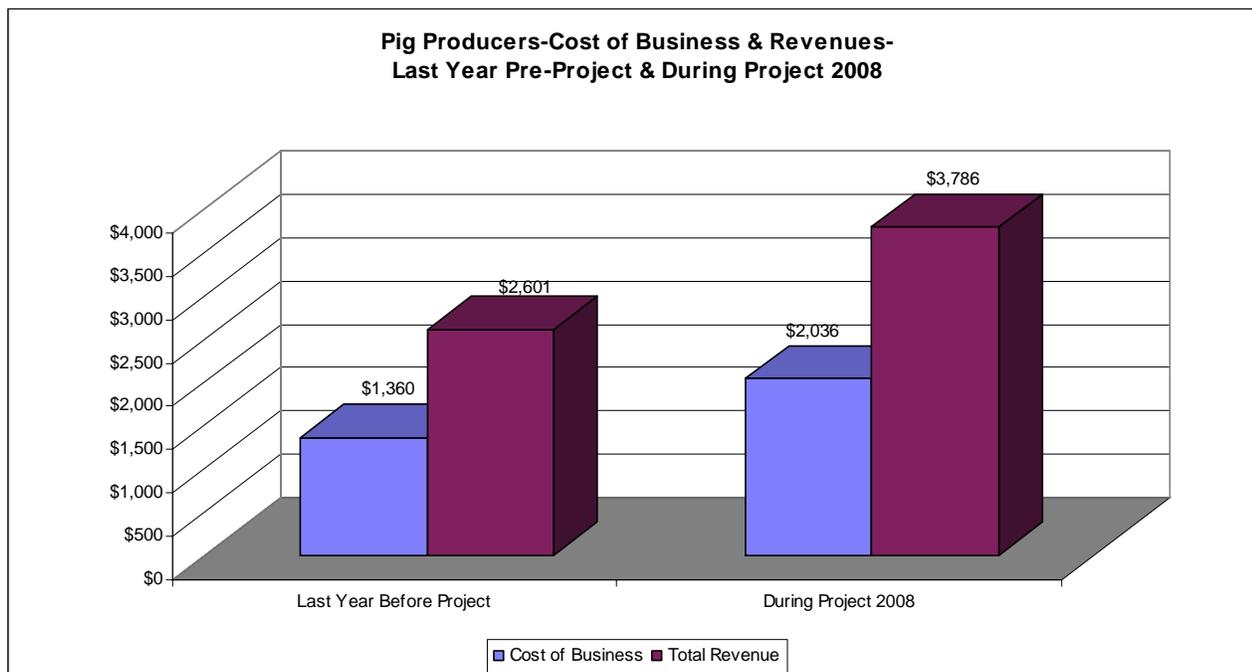
With the re-designed enterprise interview forms in 2008, we are also able to calculate Gross Profit of pig enterprises. The mean Gross Profit/enterprise in 2008 was \$1,751, an increase of 141% over Gross Profits during the last year before joining the project. Results are shown in the following table.

Table 15 Pig Producers: Gross Profit During Project 2007-2008 & Pre-Project (USD)

N=406	During Project	Before Project
Mean	\$1,751	\$1,241
Median	\$1,043	\$442
Std. Deviation	\$2,588	\$7,619
Minimum	-\$2,718	-\$2,250
Maximum	\$31,098	\$149,400
Sum	\$710,825	\$503,701

Gross Revenue was 186% of Costs of Production in 2008, down slightly from 191% pre-project. The proportion of enterprises making a loss in 2008 was 10%, well down from 18% of enterprises making a loss pre-project.

Figure 12 Pig Producers: Cost of Business & Revenues Pre-Project & During Project 2008



Overall MSME project impact on both volume of sales and value of sales has been very positive, exceeding project targets by large margins and showing improvements in comparison to pre-project enterprise productivity. Given that Pig Producers are 73% of the DAI MSME client base, these results are very important for evaluating overall project impacts on business productivity.

2.4. Impact on Labor Employment & Business Service Utilization

DAI MSME impacts on labor employment are potentially important in a number of ways. Improved enterprises can provide increased employment opportunities for Pig Producer family members and hired labor, either casual or full-time. Rural employment generation allows more people to make a living in their communities and cuts down the need for migration, a risky strategy, especially for more vulnerable groups such as youth and young adults aged 15-24 years. Increasing employment also contributes directly to reducing rural poverty. This 2008 Evaluation explored in more detail project impact on labor employment.

First, we have results on the employment of Pig Producer household members in the enterprise, either full time or part time. On average 3.27 household members were employed per enterprise representing most of the household labor force aged 15 years and over. Typically, employed labor included both one male and one female aged 25 years or older. In about 50% of enterprise cases, a female and male aged 15-24 years were also employed. The gender distribution of household labor is quite even. In total 1,326 household members were employed in these 406 enterprises.

Table 16 Pig Producers: Household Labor Employment During Project 2008 (persons)

	N=406	Mean	Median	Std. D	Max	Sum
Females-Aged 15-24 years		0.56	0.00	0.84	4.00	228
Females-Aged >=25 years		1.02	1.00	0.51	3.00	416
Males-Aged 15-24 years		0.57	0.00	0.87	4.00	230
Males-Aged >=25 years		1.11	1.00	0.77	6.00	452
Total		3.27	3.00			1326

Enterprises also reported family labor employed during the last year before the project which averaged 3.16 household members per enterprise. Therefore, on average household member employment has increased slightly, by 0.11 persons/enterprise, since joining the project. This translates into 43 more members employed among all enterprises and an employment growth of 3.5% since joining the project. It should also be noted that all household members will likely derive extra income or benefits from the increasing profitability of the enterprise itself as discussed previously.

It is found that the employment of hired labor, either full-time or casual, is very rare among these 406 pig production enterprises. In total, only 28 males and 1 female were hired for full-time labor and only 4 males and no females were hired as casual labor.

Thus it appears that the DAI MSME is having only limited impacts on increasing labor employment in pig production enterprises. It is possible that labor employment is under-enumerated where labor is hired for other non-pig tasks to enable household members to have more time for pig production labor, or where labor is hired for general work that might include some work related to pig production in addition to other tasks. A further likely employment impact among household members is that pig enterprise development provides more productive work hours for family members, which is contributing to increased business income generation. This dimension of employment benefits would require further study to verify.

There may be possibilities to increase employment generation in these pig enterprises by adding DAI MSME organized training courses for producers on the potential benefits and costs of using hired labor for further business development.

A related area of project impacts is in the area of utilization of pig production service providers. These are business service enterprises and they also provide employment to rural people. The level of utilization of service providers was enumerated in terms of the number of times per year that producers would engage their services and the average cost of services on each contact.

The results are shown in the following table, including changes in service provider utilization before the project to during the project. Pig Input providers selling pig feed are now utilized by 99% of producers an average of once every two weeks per year and most expenditure is on pig feed. Other service providers including veterinarians, piglet sellers and transport services are used by 29% to 49% of producers each year.

Comparing pre-project to during project patterns, estimated average expenditure by producers on service providers has almost doubled, by 181%, to \$1,135,015. While inflation is playing some role in the increased expenditure, it is clear that clients joining the DAI MSME project are spending more on pig business services and that this is an important value added input to the pig value chain and to profitability and employment in pig business service enterprises. After joining the MSME project, the pattern is generally to slightly decrease the frequency of use of most service providers, but to spend more on average each time their services are utilized. The exceptions are a slight increase in frequency of use of Input Suppliers for pig feed and transport services.

Table 17 Pig Producers: Service Provider Utilization Rates Pre-Project & During Project 2008.

Services	Before Project				During Project			
	% Clients	Mean Times /yr	Mean Cost /Time	Est. Total Cost/yr	% Clients	Mean Times /yr	Mean Cost /Time	Est. Total Cost/yr
N=406	Times >0 %	/yr	/Time	Cost/yr	Times >0 %	/yr	/Time	Cost/yr
Veterinarian	34	1.7	\$4.60	\$3,210	29	1.2	\$7.60	\$3,756
Piglet Sellers	35	0.8	\$77.50	\$24,874	31	0.6	\$131.90	\$34,564
Pig Feed Sellers	94	21.9	\$62.20	\$552,471	99	26.1	\$93.20	\$987,472
Pig Pen Makers	39	0.5	\$52.00	\$10,512	32	0.4	\$107.80	\$18,216
Transport Serv.	40	8.3	\$10.20	\$34,291	49	13.1	\$17.10	\$91,007
Total				\$625,358				\$1,135,015

We can conclude that the DAI MSME project has had some impacts on employment mainly in terms of increasing household incomes from pig production from which all members benefit rather than increased numbers employed as household or hired labor, and a large increase in spending on pig service businesses, enabling growth and employment in these pig value chain service enterprises.

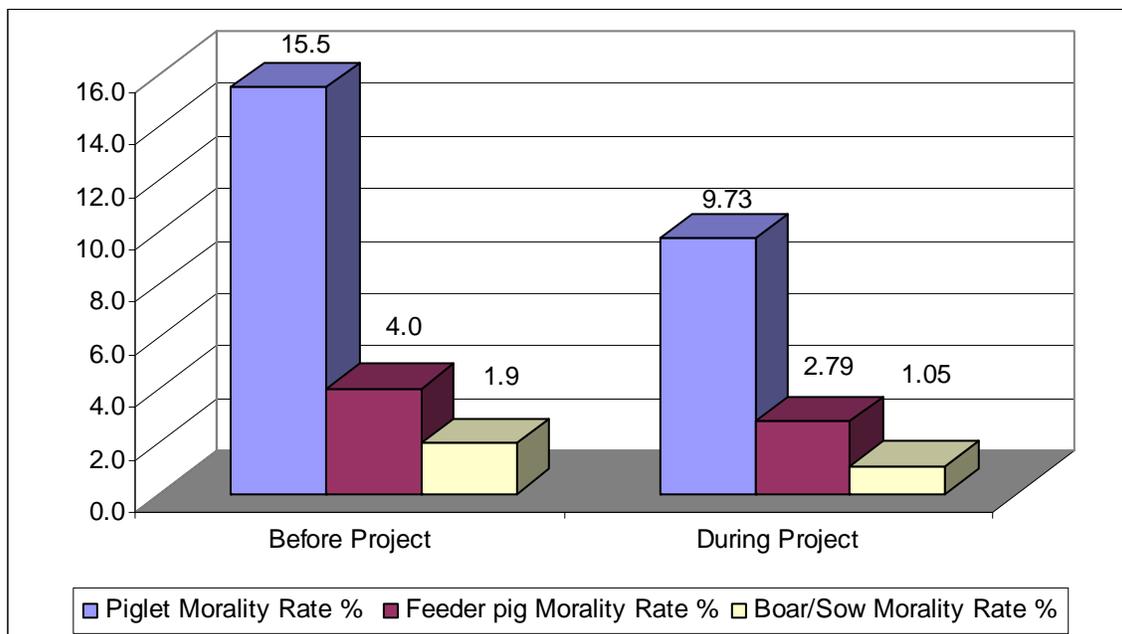
2.5. Business Productivity Impacts

A set of questions were included to enumerate MSME impacts on pig enterprise productivity. Indicators included changes to pig morality rate by type of pig, changes in live-weight at sale and changes in the period required to grow a pig to saleable size and weight. These indicators were asked for the most recent year to April 2008 and for the last year before the enterprise joined the project.

Mortality rates were asked separately for piglets, feeder pigs and boars/sows. The MSME has had a major beneficial impact in reducing average mortality rates for all types of pigs compared to pre-project rates. The piglet mortality rate has fallen from 15.5% to 9.7%, feeder pig mortality from 4% to 2.7% and boar/sow mortality from 1.5% to 1.1% as shown in the following chart.

Overall pig mortality for all types of pigs has declined from a pre-project level 21.4% to a during project 2008 level of 13.6%. The decrease in mortality since joining the MSME project has increased productivity substantially by reducing risks and decreasing overall costs of production for pig sales.

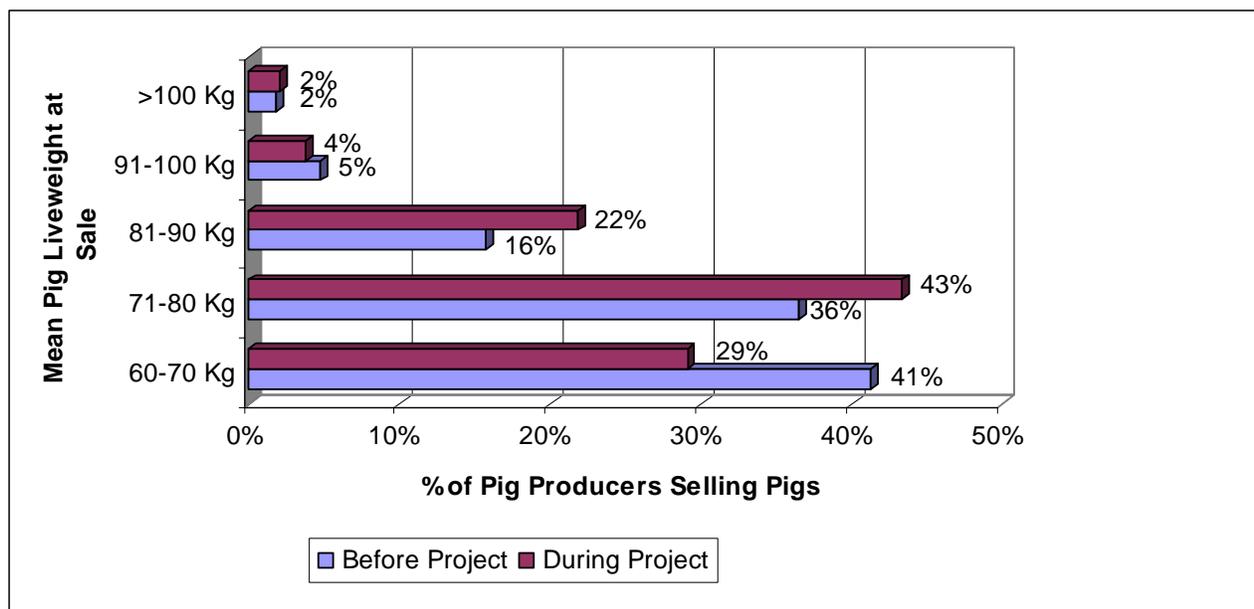
Figure 13 Pig Producer Productivity Indicators: Pig Mortality Rates 2008



This decrease in mortality has been achieved against a background of periodic pig epidemic outbreaks which is still a risk facing Pig Producers. The percentage of Pig Producers reporting any level of pig mortality from epidemic outbreaks declined from 43% pre-project to 36% during the last year of project participation.

A second productivity change indicator is the average kilogram live-weight of feeder pigs at the time of sale. The following chart shows changes in the percentage of producers by average feeder pig live-weight at sale. Comparing pre-project to the last year as an MSME client, the trend is for more producers to be selling feeder pigs at heavier average live-weights. The percentage of producers selling feeder pigs at 60-70 kg. has declined, and the percentage selling at weights of 71-90 kg. has increased. The overall mean live-weight increase has been fairly modest, from 76 kg. pre-project to 79 kg. during the last year with the project.

Figure 14 Pig Producer Productivity Indicators: Mean kg. Live-weight of Feeder pigs at Sale



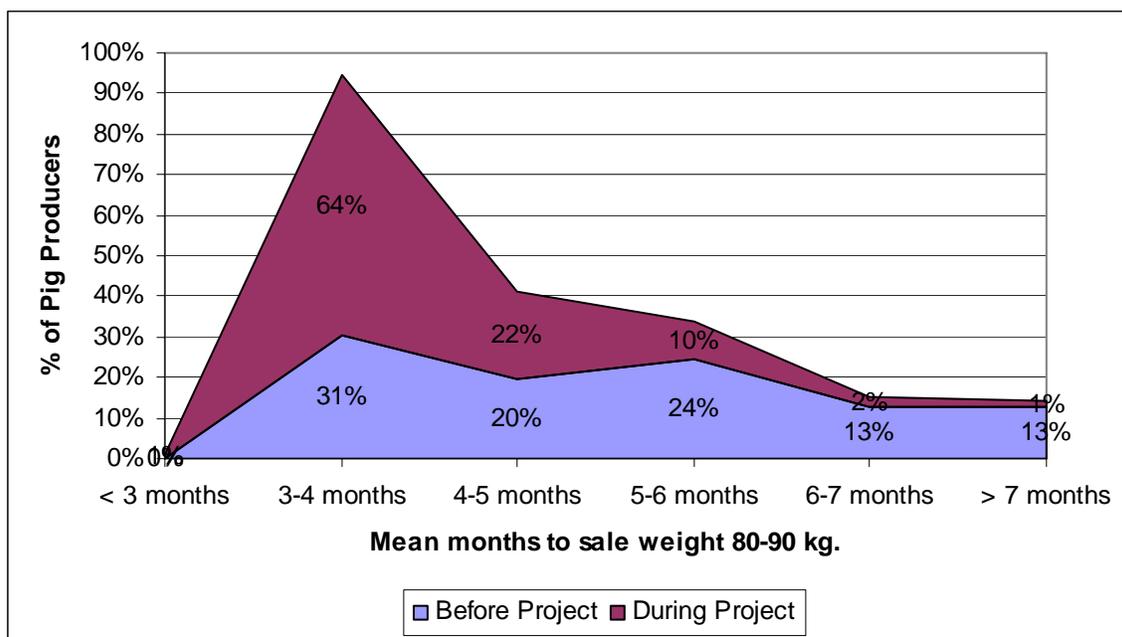
A third indicator of changes in productivity is the mean number of days/months to grow a pig to a specified live-weight of 80-90 kg. at sale. Comparing pre-project to the last year as a project client, the MSME project has had a dramatic impact in reducing the number of days taken for pigs to grow to this live-weight. The results are shown in the following chart.

Prior to joining the project, Pig Producers varied a great deal in terms of the number of days on average it would take to raise a pig to 80-90 kg. live-weight. At that time, 31% of producers could grow pigs to this weight in 3-4 months, but 44% of producers were taking 4-6 months and a further 26% were taking 6 months or more to grow pigs to this live-weight. The mean number of days to raise pigs to this live-weight pre-project was 167 days or 5.6 months.

During the last year of the project in 2008, fully 64% of producers could raise pigs to this weight in 3-4 months and a further 22% within 4-6 months. The mean number of days to raise pigs to this live-weight during the project decreased to 129 days or 4.3 months. The variations in growth periods between producers have also been cut considerably.

The shifts are clearly shown in the following chart. This is a major productivity benefit of the project for Pig Producers allowing them to cycle pigs much faster through the growth process to sale weight with consequent savings in pig input costs and labor and with greater predictability.

Figure 15 Pig Producer Productivity Indicators: Mean Number of Months to Grow a Pig to 80-90 kg.



The MSME project has had substantial impacts on increasing business productivity of client pig raisers. The main impacts have included across the board reductions in pig mortality rates and a large reduction in time required to grow pigs to weight for sale. There are also modest positive impacts found in terms of increasing average pig live-weights at sale.

2.6. Perceived Links to Poverty Alleviation

This Final Evaluation, for the first time, included some indicators to explore the broader linkages between MSME project impacts and the issue of poverty alleviation in rural Cambodia. The indicators included client producer’s estimates of the shift in proportion of total household income generated by project participation, perceptions of the importance of MSME assistance to non-project producers to contribute to poverty alleviation and the impact on client households in terms of extending education for their children.

The first indicator was Pig Producers estimates of the shift in proportion of total household income generated from all sources arising from project benefits to pig production, comparing pre-project with during project 2008. This was a difficult question to answer as very few producers keep any records of income from different activities they engage in (typically a combination of rice and other crop production, livestock production including poultry and cattle, harvesting natural resources and casual wage labor and household micro-enterprise activities).

Results indicated a moderate shift since pre-project towards pig production accounting for a larger percentage of household income from all sources. Pre-project, most producers estimated that pig production accounted for perhaps 10%-< 50% of total household income, with 33% reporting pig production as 40% more of their total income. In 2008 after joining the project, most producers estimated that pig production now accounted for perhaps 20%-< 60% of total household income with 54% reporting pig production as 40% or more of their total income.

While enumeration of total income share benefit are difficult and reported gains appear limited, these results are still of interest. They indicate that while general economic growth is occurring and while inflation and market shifts are having an impact, MSME client Pig Producers still recognize that pig production is playing a larger role in their total household incomes.

A second indicator simply asked the following question: “Many rural families in Cambodia are still poor. In your opinion, how important can the kind of support for pig businesses provided by the DAI MSME project be to reducing poverty among other rural families in Cambodia?”

Client Pig Producers expressed a clear opinion, with 45% of respondents perceiving that the extension of the assistance provided MSME to other poorer Pig Producers would be a “Very Important” contribution to rural poverty alleviation in Cambodia and a further 41% of respondents felt that it would be “Quite Important”.

The third indicator of impacts on poverty alleviation was more direct, asking client producers about potential project impacts on education retention rates and further education within their own households. Respondents were asked: “Have your benefits from joining the DAI MSME project helped you fund more years of education for your children than you originally planned for them before joining the project?”

Fully 78% of all Pig Producers answered that the project had indeed helped fund more years of education their own children. They further specified that this had benefited an average of 1.2 boys and 1.2 girls per household and had supported the extra education of a total of 370 boys and 372 girls among the 406 sample households.

These responses are from client Pig Producer entrepreneurs who are typically among the wealthier and more educated segment of the rural population. They draw linkages between MSME project assistance, increasing total household income and increasing children’s education in their own households. Furthermore they perceive very commonly that MSME assistance could lead to similar benefits among poorer rural Pig Producers, and could therefore make an important contribution to poverty alleviation in Cambodia.

2.7. Impact On Business Accounting & Business Policy Advocacy

OBJECTIVE: Component 3: Ongoing Improved MSME Access to Finance					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
3.1. Number of MSME trained in basic accounting.	Pig	No. of MSME	100	119	119%

An important component of MSME activities has been to foster improved business accounting practices. Clients are sent for training in accounting skills as a component of capacity building activities. The 2008 target was for 100 Pig Producers to adopt improved accounting as a result of project assistance. The result was that 9.8% of the 406 producers sampled had adopted. A simple extrapolation of this rate to all 1,209 MSME pig client enterprises gives a total of 119 enterprises, or 119% of target.

Another important component of MSME activities has been to foster increased participation of Pig Producers in business policy advocacy to improve the business environment for these enterprises. During the enterprise survey, we asked questions concerning participation of producers in business associations, the first step to increasing participation in advocacy.

The result is that 39% of enterprises reported that they had joined a new pig business association since joining the project. A simple extrapolation to all MSME pig clients would mean that 471 pig enterprises joined associations representing 119% of the 2008 target.

3. PIG VALUE CHAIN -VETERINARIANS

Veterinarians working with the MSME project are an important component of increasing the productivity of the pig value chain. The services they provide include capacity building activities for Pig Producers, technical advice and pig treatment including vaccines and medicines. Their services lead to a reduction in pig mortality and promotion of pig health leading to increased productivity for producers. There are 142 Veterinarian enterprises working with the MSME project. They consist of 10% of pig value chain project participants and are the most numerous type of pig service provider.

While Veterinarians provide services to MSME project, they are also pig value chain beneficiaries, as collaboration with the project has increased the demand for their business services. This is another additional component of MSME project impact on the pig value chain as a whole. While there are no specific PMA indicators related to Veterinarians, this Final Evaluation seeks to document project impacts on these important service providers in this value chain.

3.1. Demographic Profile

This survey interviewed a proportionately and randomly selected sample of 64 DAI MSME Veterinarians (45% of the total), engaged with the project for at least one production cycle and within the four of six provinces in which DAI has operated. The four provinces sampled account for 90% of the total of project Veterinarians.

The geographical distribution of DAI MSME Veterinarians by province is uneven, with 44% located in Kampong Cham province, 9% in Kratie, 23% in Prey Veng and 14% in Svay Rieng. MSME Veterinarians are 8% female and 92% male. Project staff need to seek opportunities to work with a greater number of women Veterinarians to achieve an improved gender balance.

DAI MSME Veterinarians are typically aged around 37 years and have had an average of 6.9 years experience as Veterinarians before joining the project. Their households are composed of an average of 1.8 female and 1.8 males aged over 15 years and 1.5 children aged under 15 years. They are quite highly educated in a rural Cambodian context, with 66% having secondary level education, and 34% at least some level of tertiary education. Their education level varies by province, with 88% having some tertiary education in Prey Veng, 33% in Kratie 13% in Kampong Cham and 0% in Svay Rieng.

3.2. Project Collaboration & Training Benefits

Most Veterinarians have been engaged with the DAI MSME project for a period of at least 12-24 months. The specific services they provide are Veterinarians services and 31% also sell pig vaccines and medicines.

Table 18 Veterinarians: Number of Months Working with the MSME Project.

	N	%
< 12 months	15	23%
12-24 months	38	60%
>24 months	11	17%
Total	64	100%

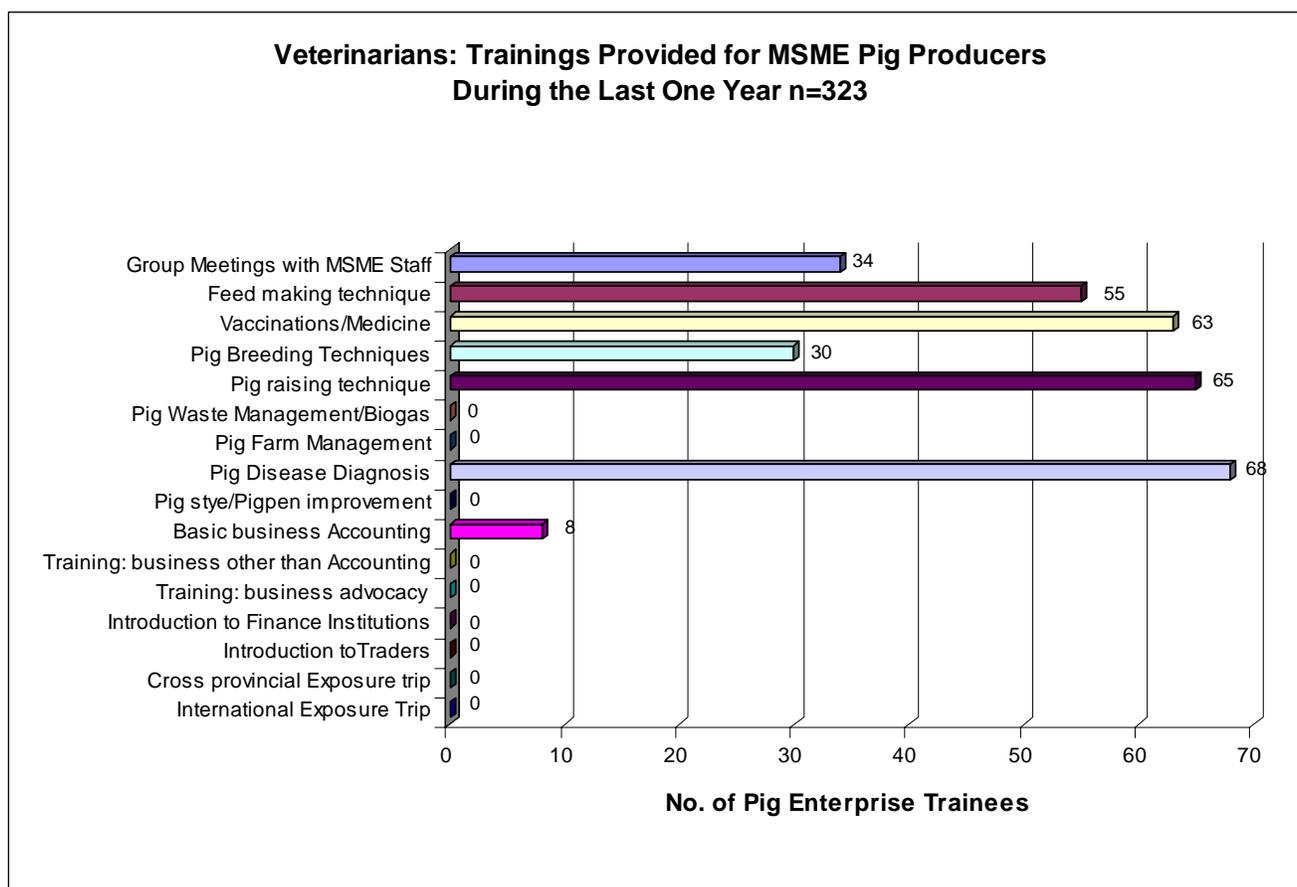
Table 19 Veterinarians: Specific Goods & Services Provided.

	N	Percent
Veterinarian service	61	95%
Pig vaccinations & medicines	20	31%
Pig feed supplements	1	2%

A core activity with the DAI MSME has been for Veterinarians to provide training and capacity building to MSME client Pig Producers in the area of pig health. So a central role for Veterinarians with the MSME project is as a training service provider to producers. Veterinarians provide training in two ways. Formal training occurs where MSME invites participants and a group training session is conducted. This is the type of training enumerated here. Informal training occurs far more frequently and consists of Veterinarians training producers through instruction and advice while providing their services on the job, for example vaccinating pigs. This type of training is not enumerated here.

Among the total sample, 22 or 34% of Veterinarians reported undertaking any type of formal training courses with pig producers. The 22 Veterinarians conducted formal training for a total of 323 producers in cooperation with the MSME project over the last year. The most common types of training included pig disease diagnosis, pig raising techniques, vaccinations and medicines, and feed making techniques. This is an average of 15 trainees /enterprise/year.

Figure 16 Veterinarians: MSME Pig Producer Client Capacity Building Activities During the Last One Year (No. of Trainees).



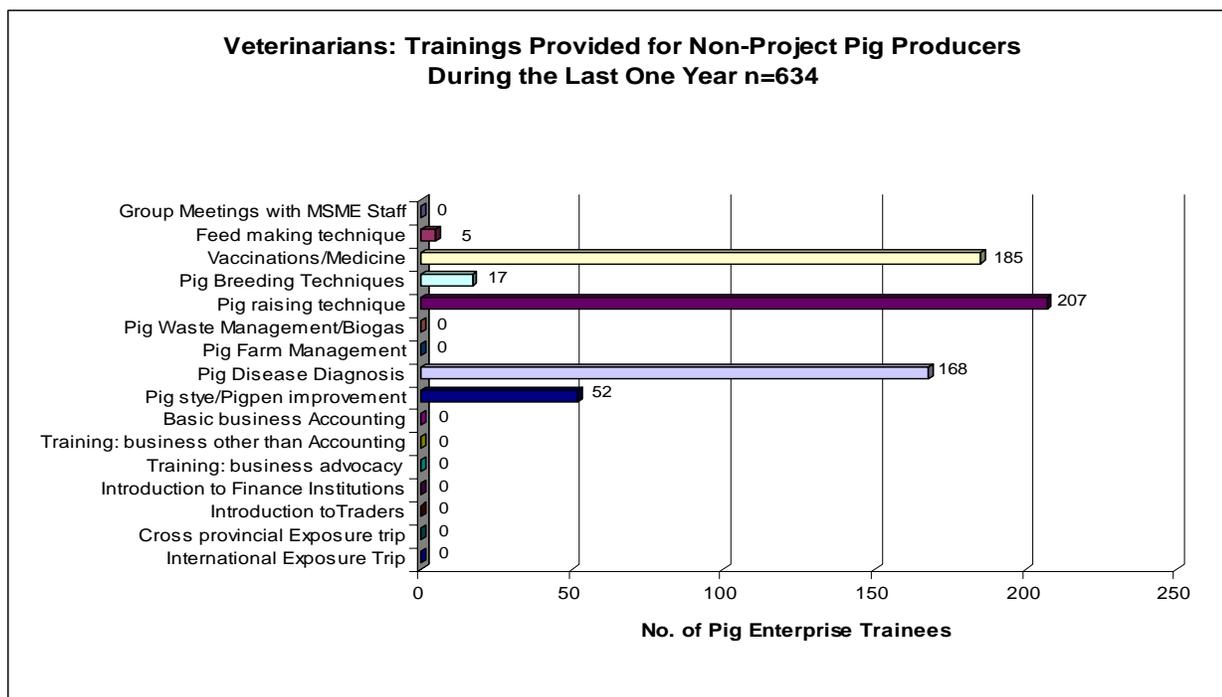
An estimate of the total number of DAI pig producers trained by the sample veterinarian enterprises over the entire project cycle can also be made. If the number of trainings during the last year are assumed to be a reasonable indication of the number of trainings for each year, for each Veterinarian, then this total estimate would equal the number of trainees last year multiplied by the number of years the veterinarian has worked with the DAI project. Calculating on this basis, the sample Veterinarians would have trained an estimated total of 499 producer trainees over the project cycle.

The sample of 64 Veterinarians is 45% of the total 142 Veterinarians working with the project. From the above sample estimation we can further estimate that all veterinarians working with the project would likely have provided training to around 1,100 DAI pig producer trainees (499 x 222%) over the project cycle, including multiple training of some individual producers.

As service providers, Veterinarians also provide training and capacity building to Pig Producers who are not MSME project clients. By working with the MSME project, Veterinarians have developed their own skills and capacities to offer training services to producers, benefiting both their own businesses and non-project producers. This is an indirect impact of the MSME. For the first time this evaluation sought to quantify the amount of training that MSME Veterinarians are providing to non-project producers.

The results from this sample of Veterinarians were that 22 enterprises reported formal training of 634 non-project Pig Producer participants independent of the MSME project over the last one year, an average of 28 training sessions/enterprise. This means that 34% of formal training undertaken by these Veterinarians is with MSME project producers and 66% is undertaken with non-project Pig Producers. This indicates that cooperation with the MSME project and its client producers has had a role in generating about twice the volume of training service business independent of the project, and that additionally, twice the number of non-project Pig Producers have benefited from trainings by these Veterinarians over the last year. These external benefits can further be multiplied by the number of years the Veterinarian has been engaged with the project, although we lack sufficient information to make a likely estimate of the numbers of external trainees. These are interesting results in terms of indirect impacts of the MSME project on the pig value chain in general.

Figure 17 Veterinarians: Non- Project Pig Producer Capacity Building Activities During the Last One Year (No. of Trainees).



While these results are interesting it should be noted that this first enumeration of the number of pig producer participants trained by Veterinarian enterprises seems likely to have under-estimated the actual numbers of trainees. This can be seen by comparing the above results with earlier results, where MSME Pig Producers are directly asked the number of participants from their enterprises that had received training since joining the project. There are three possible reasons for this difference.

One possible reason is that the number of Veterinarian enterprises engaged in training may have been under-enumerated. This may be due to uncertainty as to what represents formal (enumerated) versus informal (not enumerated) training activities. The fact that only 34% of project Veterinarian enterprises report under-taking any formal training at all seems likely to be low.

A second reason is that pig producers may have included some informal on the job training sessions along with formal training sessions arranged and implemented by Veterinarians for the project, increasing the producer-reported number of trainees. A third reason is that Veterinarians may have under-enumerated the number of trainees, in some cases reporting the number of group training sessions rather than the number of individuals trained.

3.3. Impacts on New Capital Investments & Credit, Gross Sales Volume & Revenue, Cost of Production & Gross Profit,

Impacts of the MSME project directly on Veterinarian service providers are not measured in the PMA Indicators for project performance. Nevertheless, here we examine the major characteristics of Veterinarian businesses and examine indirect MSME project impacts through a comparison of pre-project and during project indicators.

New investments in Veterinarian enterprises since joining the project are calculated as the sum of Fixed Capital Investments and Costs of Business May 2007 - April 2008.

Table 20 Veterinarians: Mean Enterprise New Investments Since Joining the MSME Project (USD).

Veterinarian	
N=64	Mean
Fixed Capital investments	\$428
Cost of Business Operations 2008	\$2,149
Total	\$2,577

Most common Fixed Capital Investments were in Veterinarian equipment and storage equipment. The mean value of these investments in this sample was increased greatly (sample mean +\$312) by an investment of \$20,000 in storage facilities by one Veterinarian. A more typical average investment would be \$125 per enterprise.

Investments in cost of business in the last year to April 2008 were a mean of \$2,149/enterprise. The majority of expenditures were on vaccines, medicines and feed supplements. Results include the costs for one very large scale Veterinarian business as indicated in the Maximum value column of the following table.

Table 21 Veterinarians: Costs of Business May 2007 to April 2008 (USD).

	N=64	Mean	Median	Std. D	Max	Sum
Office/Shop Outlet rent & maintenance		0	0	0	0	0
Vaccine		\$812	50	5,620	\$45,000	\$51,974
Medicine		\$719	171	3,505	\$28,000	\$45,989
Consumable supplies		\$12	8	18	\$100	\$754
Feed Supplements		\$493	0	3,748	\$30,000	\$31,582
Machinery Fuel & Oil		\$81	28	117	\$456	\$5,172
Machinery Repair/Maintenance		\$5	0	18	\$100	\$305
Electricity supply		\$4	0	25	\$200	\$235
Hired Labor Part-time		0	0	0	0	0
Hired Labor Fulltime		\$3	0	23	\$180	\$180
Hired Transport Costs		\$20	0	156	\$1,250	\$1,287
Trader license fees		0	0	0	0	0
Slaughterhouse fees		0	0	0	0	0
Inspection Fees		0	0	0	0	0
Other		0	0	4	\$30	30
Total		\$2,149	\$350			\$137,507

Compared to pre-project, Veterinarian costs of business have increased 228% from \$919, mainly due to an increase in the volume of business inputs purchased.

Fixed Capital Investments were financed by enterprise capital in 92% of cases, only 8% borrowed capital from any lender. Lenders were most commonly family or private money lenders and these loan amounts were under \$300/enterprise. One very large scale Veterinarian enterprise borrowed \$25,125 from pig feed and medicine Input Suppliers.

Veterinarians were also commonly credit providers. In the last year 77% had sold goods and services on credit and 94% of the borrowers were Pig Producers. The mean total credit was \$189/enterprise of which \$162/enterprise was to Pig Producers. Cash loans to clients were made by 11% of Veterinarians, mostly to producers and a mean loan amount of \$109. As raised in the earlier section on Pig producers, this result tends to confirm that Pig Producer-reported low rates of access to credit relate only to cash loans, and have not enumerated their rates of access to credit for input goods and services such as those provided by Veterinarians.

Having reported patterns of investment and expenditure, we now turn to examining Veterinarian enterprise volumes of sales and gross sales revenues. Here we provide the most recent results from the year to April 2008 and assess DAI MSME likely impacts by comparison with results from the last year before each enterprise joined the project, as reported in this survey.

The measure of Veterinarian enterprise volumes of sales was the number of customers per enterprise by type of sale. During the project in the year to April 2008, Veterinarian enterprises had an average of 238 customers/enterprise, mostly for Veterinarian services and sometimes also for medicine and vaccines sales.

Table 22 Veterinarians: Volume of Sales/Number Of Customers May 2007-April 2008.

	N=64	Mean	Median	Std. D	Max	Sum
Vet service fee		141	70	164	800	9,014
Medicine Sales		63	0	113	500	4,018
Vaccine Sales		34	0	95	540	2,176
Feed Supplement Sales		0.5	0	4	30	30
Overall		238	92			15,238

Interestingly, Veterinarians report that they were dealing a similar number of customers on average in 2008 as they were in the last year before joining the project, when each enterprise reported a mean of 248 customers.

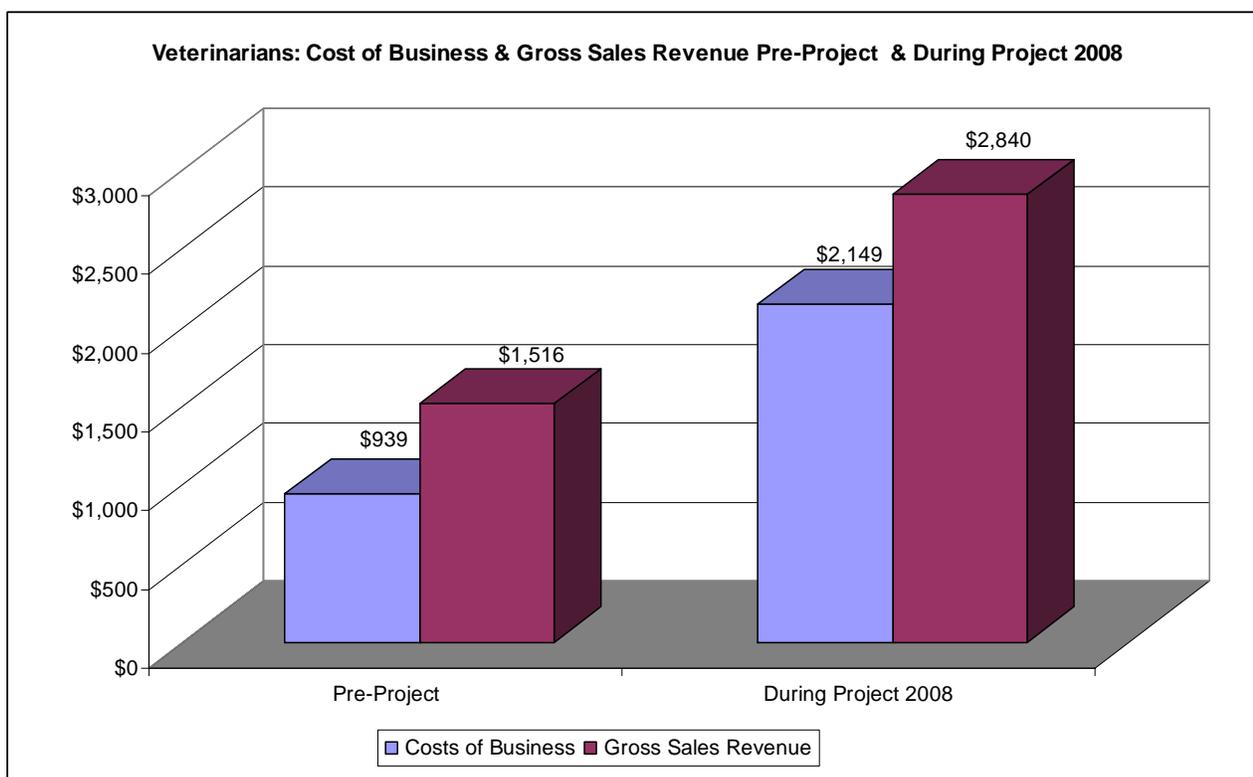
The mean Gross Sales Revenue was \$2,840/enterprise, mostly generated through sales of Veterinarian services but supported by medicine and vaccines sales. The role of one very large scale enterprise working with the MSME affects the sample mean considerably as is shown in the maximum value column.

Table 23 Veterinarians: Gross Sales Revenue May 2007-April 2008.

	N=64	Mean	Median	Std. D	Max	Sum
Vet service fee		\$1,381	390	6,244	50,000	\$88,371
Medicine Sales		\$705	0	3,778	30,000	\$45,124
Vaccine Sales		\$741	0	5,747	46,000	\$47,437
Feed Supplement Sales		\$13	0	100	800	\$800
Overall		\$2,840	571			\$181,732

Gross Sales Revenue in 2008 represented 132% of Costs of Production. The 2008 Gross Sales Revenue compares to a reported pre-project average of \$1,516/enterprise, so 2008 revenues are up 187% from pre-project levels. While revenues have been partly generated through non-MSME business sales, we can also see that revenues have greatly increased since joining the project.

Figure 18 Veterinarians: Cost of Business & Gross Sales Revenue Pre-Project & During Project 2008



Veterinarian gross profits have also grown since being with the MSME project by 120%. Further, the percentage of these enterprises making a loss has declined from 16% pre-project to 5% in 2008.

Table 24 Veterinarians: Gross Profit During Project 2008 & Pre-Project.

N=64	During Project	Before Project
------	----------------	----------------

Mean	\$691	\$577
Median	\$177	\$97
Std. Deviation	\$2,576	\$2,007
Minimum	\$-10	\$-280
Maximum	\$19,670	\$15,000
Sum	\$44,225	\$36,907

Overall, Veterinarians working with the MSME project have experienced positive impacts on their enterprises in terms of strong growth in their value of sales and increases in profit since pre-project. They are providing Veterinarian services, training and credit to Pig Producers and are contributing to the overall strengthening of the value chain through their increased business activity.

3.4. Impacts on Labor Employment & Business Service Utilization

Household member labor in Veterinarian enterprises in 2008 was a mean of 1.9 persons/enterprise. This consisted of one adult male, most commonly assisted by one adult female, or more rarely, younger men and women. Household member labor employment has grown 0.25 persons/enterprise since joining the project, a growth of 15%. Hired labor is not present in almost all of these enterprises, with only one male employed full-time among all enterprises.

3.5. Business Productivity Impacts

The measure of business productivity for Veterinarian service enterprises was the change in the mean number of service calls received from customers each week. Pre-project mean customer service calls were 3.25/week and this has grown to 3.75/week during the project in the year to April 2008. This is an increase of 15% in customer service calls since joining the project.

3.6. Perceived Links to Poverty Alleviation

Veterinarians did not report a noticeable shift since pre-project towards their Veterinarian enterprise accounting for a larger percentage of household income from all sources. Pre-project, most Veterinarians estimated their enterprise income was 10% to less than 40% of total household income, with 15% reporting their enterprise as 40% more of their total income. This largely remained the case in 2008 after joining the project, except for a slightly larger percentage reporting enterprise income share in the higher range of 20 to less than 40% of total income.

On the second indicator here, Veterinarians recognized that the kind of support for pig businesses provided by the DAI MSME project was important to help reduce poverty among other rural families in Cambodia. Among these respondents, 50% felt that MSME type project support would be “Quite Important” and 36% felt that it would be “Very Important” for rural poverty alleviation.

The third indicator of impacts on poverty alleviation asked Veterinarians if benefits from joining the DAI MSME project helped fund more years of education for their children than originally planned before joining the project. Veterinarians affirmed this benefit in 59% of cases with education supported for an average of 1.1 girls and 0.9 boys per enterprise and for a total of 40 girls and 33 boys in all 64 enterprises.

3.7. Impact On Business Accounting & Business Policy Advocacy

Among Veterinarians, only 8% kept permanent accounting records for their business and only 2% started accounting records as a result of working with the MSME project. Since joining the project, 22% of Veterinarians have joined a business association or group.

PIG VALUE CHAIN -PIG INPUT SUPPLIERS

Pig Input Suppliers working with the MSME project are an important component of increasing the productivity of the pig value chain. The services they provide include capacity building activities for Pig Producers, technical advice and pig production inputs including pig feed, and sometimes vaccines and medicines. Their services lead to an increase in live-weight gain and more rapid pig growth, leading to increased productivity for producers. There are 24 Input Suppliers working with the MSME project. They are 1% of pig value chain project participants. While small in number, as larger scale enterprises, they make an important contribution to pig value chain development.

While Input Suppliers provide services to MSME, they are also pig value chain beneficiaries as collaboration with the project has increased the demand for their business goods and services. This is another additional component of the MSME project impact on the pig value chain as a whole. While there are no specific PMA indicators related to Input Suppliers, this Final Evaluation seeks to document project impacts on these important service providers in this value chain.

3.8. Demographic Profile

This survey interviewed all 15 DAI MSME pig Input Suppliers that were engaged with the project for at least one production cycle and were available for interview within the four of six provinces in which DAI has operated. The four provinces sampled account for 83% of the total of project Input Suppliers, and the 15 enterprises interviewed represented 75% of these enterprises within these four provinces.

The geographical distribution of DAI MSME Input Suppliers by province is uneven, with 54% located in Kampong Cham province, 13% in Kratie, 13% in Prey Veng and 20% in Svay Rieng. MSME Input Suppliers are 100% male owned.

DAI MSME Input Suppliers are typically aged around 38 years and have had an average of 5.7 years experience as Input Suppliers before joining the project. Their households are composed of an average of 1.7 female and 2.0 males aged over 15 years and 1.3 children aged under 15 years. They are quite highly educated in a rural Cambodian context, with 40% having secondary level education, and 60% at least some level of tertiary education.

3.9. Project Collaboration & Training Benefits

Most Input Suppliers have been engaged with the DAI MSME project for a long period, 53% 12-24 months and 40% for >24 months. The specific goods and services that Input Suppliers provide vary by enterprise. Most enterprises supply pig feed supplements, sometimes in combination with pig vaccines and medicines. A minority specialize in pig vaccinations and medicines and related veterinary services.

Table 25 Input Suppliers: Duration of collaboration with the MSME Project

Months	Count	%
<12 months	1	7%
12 - 24 months	8	53%
> 24 months	6	40%
Total	15	100%

Table 26 Input Suppliers: Specific Goods & Services Provided.

	Frequency	Percent
Pig Feed Supplements Only	9	60%
Pig Feed Supplements, Vaccinations & Medicines	2	13%
Pig Feed Supplements, Vaccinations, Medicines & Veterinary	1	7%
Pig Vaccinations & Medicines & Veterinary Services	3	20%
Total	15	100%

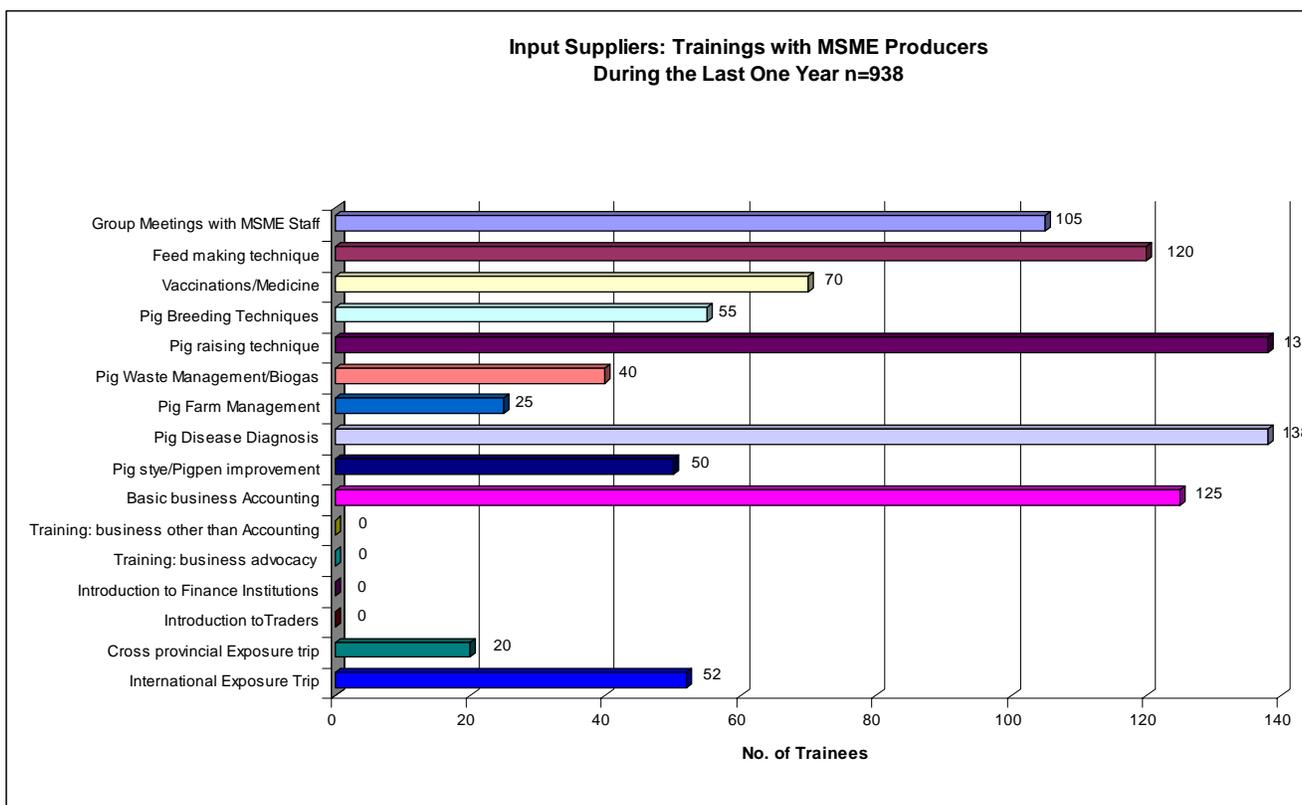
A core activity with the DAI MSME has been for Input Suppliers to provide training and capacity building to MSME client Pig Producers. Input Suppliers, like Veterinarians, can provide training in two ways. Formal training occurs where MSME invites participants and a group training session is conducted. This is the type of training enumerated here. Informal training occurs far more frequently and consists of Input Suppliers training producers through instruction and advice while on the job providing their services, for example, on using pig feed supplements. This type of training is not enumerated here.

Of the 15 Input Suppliers sampled, 7 enterprises reported undertaking formal training sessions of any type within the last one year. These 7 enterprises reported training a total of 938 producers in formal training sessions in cooperation with the MSME during the last one year, averaging 134 trainees/enterprise/year. Most training sessions have been on pig raising, disease diagnosis and feed making techniques and basic business accounting. Input Suppliers have also engaged in quite a number of Exposure Trips with the MSME Project.

An estimate of the total number of DAI pig producers trained by the sample Input Supplier enterprises over the entire project cycle can also be made. If the number of trainings during the last year are assumed to be a reasonable indication of the number of trainings for each year, for each Input Supplier, then this total estimate would equal the number of trainees last year multiplied by the number of years the Input Supplier has worked with the DAI project. Calculating on this basis, the sample Input Suppliers would have trained an estimated total of 1,363 producer trainees over the project cycle.

The sample of 15 Input Suppliers is 75% of the total 20 Input Suppliers working with the project. From the above sample estimation we can further estimate that all Input Suppliers working with the project would likely have provided training to around 1,800 DAI pig producer trainees (1,363 x 133%) over the project cycle, including multiple training of some individual producers.

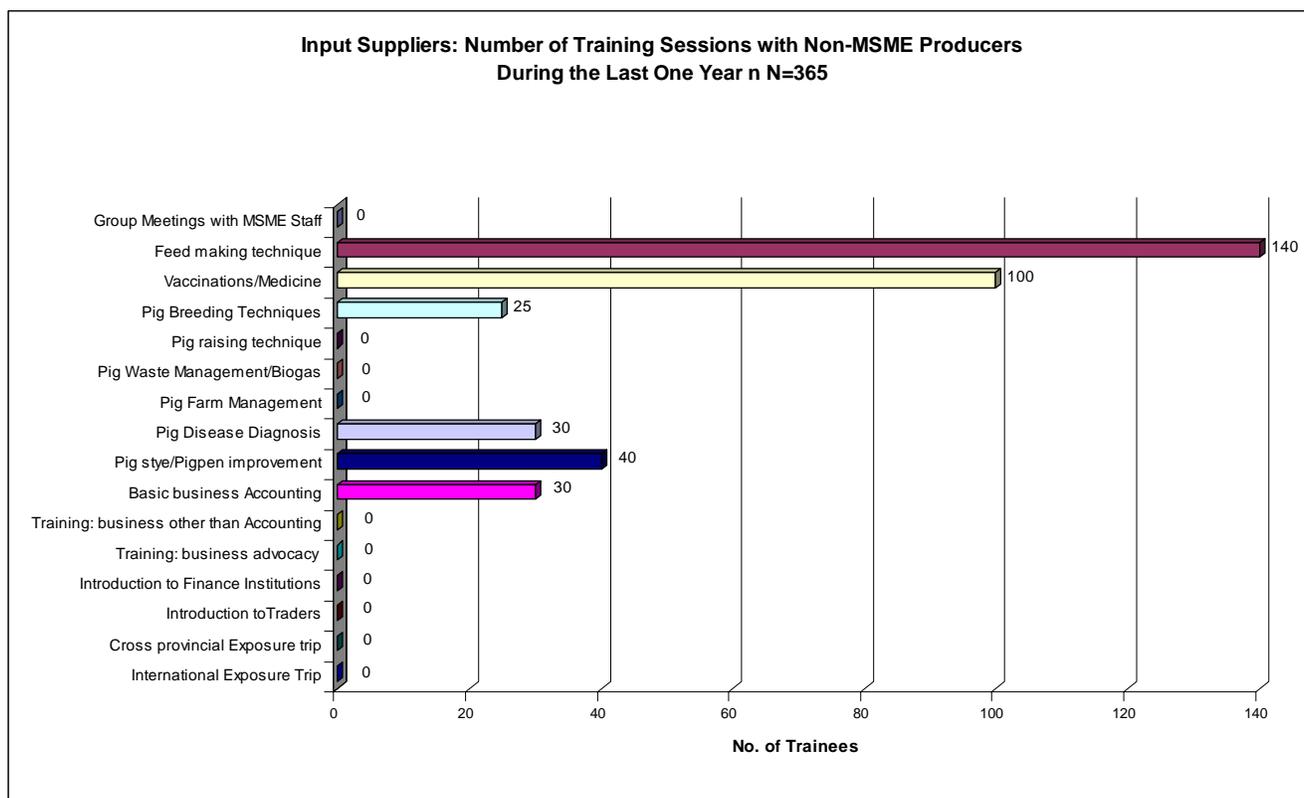
Figure 19 Input Suppliers: MSME Pig Producer Client Capacity Building Activities During the Last One Year



By working with the MSME project, Input Suppliers have developed their own skills and capacities to also offer training services to non-project Pig Producers, benefiting both their own businesses and Pig Producers in general. This is an indirect impact of the MSME and here we quantify the amount of training that MSME Input Suppliers are providing to non-project producers.

The 7 Input Suppliers engaged in training provided 365 formal training sessions independent of the MSME project to non-project Pig Producers over the last year. This is an average of 52 training sessions/enterprise. Most training sessions have been on pig feed making techniques and vaccinations. These external benefits can further be multiplied by the number of years the Input Supplier has been engaged with the project, although we lack sufficient information to make a likely estimate of the numbers of external trainees. These are interesting results in terms of indirect impacts of the MSME project on the pig value chain in general.

Figure 20 Input Suppliers: Non- Project Pig Producer Capacity Building Activities During the Last One Year



Input Suppliers have conducted 72% of training with MSME project producers and 28% with non-project Pig Producers. This indicates that cooperation with the MSME project and its client producers has had a role in generating training services for non-project pig businesses. This is an interesting result in terms of indirect impacts of the MSME on the pig value chain in general.

A comparison of the different training courses and their frequency for MSME project producers and non-project producers is of interest. Trainings for non-project Pig Producers are narrower in range and are heavily concentrated on trainings directly related to the products and services they sell. Trainings with MSME Pig Producers are broader in the range of types and are likely to result in more well-rounded capacity building of project producer enterprises, equipping them with a broader and likely more in-depth range of skills to enhance their businesses.

While these results are interesting it should be noted that, as for Veterinarians, this first enumeration of the number of pig producer participants trained by Input Suppliers seems likely to have under-estimated the actual numbers of trainees. This can be seen by comparing the above results with earlier results, where MSME Pig Producers are directly asked the number of participants from their enterprises that had received training since joining the project. There are three possible reasons for this difference.

One possible reason is that the number of Input Supplier enterprises engaged in training may have been under-enumerated. This may be due to uncertainty as to what represents formal (enumerated) versus informal (not enumerated) training activities. The fact that only 47% of project Input Suppliers enterprises report under-taking any formal training at all seems likely to be low.

A second reason is that pig producers may have included some informal on the job training sessions along with formal training sessions arranged and implemented by Input Suppliers for the project, increasing the producer-reported number of trainees. A third reason is that Input Suppliers may have under-enumerated the number of trainees, in some cases reporting the number of group training sessions rather than the number of individuals trained.

3.10. Impacts on New Capital Investments & Credit, Gross Sales Volumes & Revenue, Costs of Production & Gross Profits,

Impacts of the MSME project directly on Input Suppliers are not measured in the PMA Indicators for project performance. Nevertheless, here we examine the major characteristics of Input Suppliers businesses and examine indirect project impacts on these enterprises through a comparison of pre-project and during project indicators.

Three of the Input Suppliers working with MSME project were much larger scale businesses than the remainder, one located in Prey Veng with Gross Sales Revenue of over \$1.5 million and two enterprises located in Kampong Cham with Gross Sales Revenues over \$400,000 in 2008. The results from these large enterprises are included in the mean results calculations for all Input Suppliers, as they too are partners and beneficiaries of the MSME. Naturally, they have a large effect on overall results. These effects can be observed in the Tables in this section and in the Annex which include indicator maximum values and differences between mean and median values.

New investments in Input Supplier enterprises since joining the project are calculated as the sum of Fixed Capital Investments and Costs of Business May 2007 - April 2008. Costs of Business accounted for about 95% of total new investments by this calculation.

Table 27 Input Suppliers: Mean Enterprise New Investments Since Joining the MSME Project (USD).

	N=15	Mean
Fixed Capital investments		\$4,232
Cost of Business Operations 2008		\$101,531
Total		\$105,763

Most common Fixed Capital Investments were in storage facilities and storage equipment, shops/offices, and general business equipment. Investments were generally made in small amounts less than \$200/Item. The mean value of these investments in this sample was increased greatly by an investment of \$40,000 in storage facilities by one enterprise.

Investments in Costs of Business in the last year to April 2008 were a mean of \$105,763, a very large investment compared to other pig value chain actors. Costs for the three large scale Input Suppliers mentioned above increase the mean value for all enterprises, but their pattern of expenditure by item is similar to the smaller scale input providers. The largest costs of business were purchasing pig production inputs particularly feed supplements, but also vaccines and medicines. The mean values are increased greatly by an investment of \$400,000 in pig feed supplements by one of the largest enterprises.

Table 28 Input Suppliers: Costs of Business May 2007 to April 2008 (USD).

N=15	Mean	Median	Std. D	Max	Sum
Office/Shop Outlet rent & maintenance	\$7	\$0	\$26	\$100	\$100
Vaccine	\$2,851	\$700	\$5,435	\$21,200	\$42,770
Medicine	\$8,773	\$2,800	\$21,499	\$85,000	\$131,600
Consumable supplies	\$718	\$150	\$1,315	\$5,000	\$10,768
Feed Supplements	\$86,537	\$29,000	\$131,432	\$400,000	\$1,298,050
Machinery Fuel & Oil	\$1,036	\$0	\$3,864	\$15,000	\$15,535
Machinery Repair/Maintenance	\$10	\$0	\$39	\$150	\$153
Electricity supply	\$252	\$90	\$303	\$900	\$3,773
Hired Labor Part-time	\$431	\$0	\$945	\$3,600	\$6,465
Hired Labor Fulltime	\$230	\$0	\$430	\$1,500	\$3,445
Hired Transport Costs	\$687	\$0	\$2,281	\$8,900	\$10,300
Trader license fees	\$0	\$0	\$0	\$0	\$0
Slaughterhouse fees	\$0	\$0	\$0	\$0	\$0
Inspection Fees	\$0	\$0	\$0	\$0	\$0
Other	\$0	\$0	\$0	\$0	\$0
Total	\$101,531	\$38,525			\$1,522,958

Compared to pre-project, Input Suppliers costs of business have increased 144% from \$70,497, mainly due to an increase in the costs and volumes of pig production inputs purchased.

Fixed Capital Investments were financed by enterprise capital in 93% of cases, only 7%, or one enterprise, borrowed capital from any lender. This loan was from other Input Supplier wholesalers for a value of \$50,000.

While few Input Suppliers had borrowed funds, they acted often as credit providers. Fully 93% of input providers had sold goods and services on credit. While 86% of Input Suppliers had sold goods and services on credit to Pig Producers, 43% also reported extending this type of credit to other Input Suppliers and 14% to other pig service providers. The mean total credit for input providers/enterprise to producers was \$1,586, to other Input Suppliers \$974 and to service providers \$217. Cash loans to clients were made by only 7%, or one, Input Supplier.

Having reported patterns of investment and expenditure, we now turn to examining Input Suppliers enterprise volumes of sales and gross sales revenues. Here we provide the most recent results from the year to April 2008 and assess DAI MSME likely impacts by comparison with results from the last year before each enterprise joined the project as reported in this survey.

The measure of Input Supplier's enterprise volumes of sales was the number of customers per enterprise by type of sale. During the project in the year to April 2008, Input Suppliers had an average of 1,863 customers/enterprise. Over half of these customers were for feed supplement sales and smaller proportions for vaccine and medicine sales.

Table 29 Input Suppliers: Volume of Sales/Number Of Customers May 2007-April 2008.

N=15	Number of customers				
	Mean	Median	Std. D	Max	Sum
Medicine Sales	334	195	517	2,100	5,015
Vaccine Sales	509	180	1,252	5,000	7,640
Feed Supplement Sales	1,020	300	1,602	5,400	15,295
Other Specify	0	0	0	0	0
Overall	1,863	865			27,950

Input suppliers report that in 2008, they have 169% of the customers they had in the last year before joining the project. The pre-project mean was 1,100 customers/enterprise.

The mean Gross Sales Revenue was \$194,281/enterprise. Most income was generated through sales of feed supplements with smaller revenues derived from medicine and vaccination sales. The largest Input Supplier enterprise in the sample generated \$1.35 million alone in feed supplement sales affecting the overall mean.

Table 30 Input Suppliers: Gross Sales Revenue May 2007-April 2008.

	N=15	Mean	Median	Std. D	Max	Sum
Medicine Sales		\$15,586	\$5,000	\$39,874	\$157,500	\$233,785
Vaccine Sales		\$3,438	\$1,200	\$6,340	\$25,000	\$51,575
Feed Supplement Sales		\$175,257	\$32,250	\$351,897	\$1,350,000	\$2,628,860
Other Specify		\$0	\$0	\$0	\$0	\$0
Overall		\$194,281	\$41,700			\$2,914,220

Gross Sales Revenue in 2008 represented 191% of Costs of Production. The 2008 Gross Sales Revenue compares to a reported pre-project average of \$134,150/enterprise, so 2008 revenues are up 144% from pre-project levels. While revenues have been partly generated through non-MSME business sales, we can also see that revenues have increased substantially since joining the MSME project.

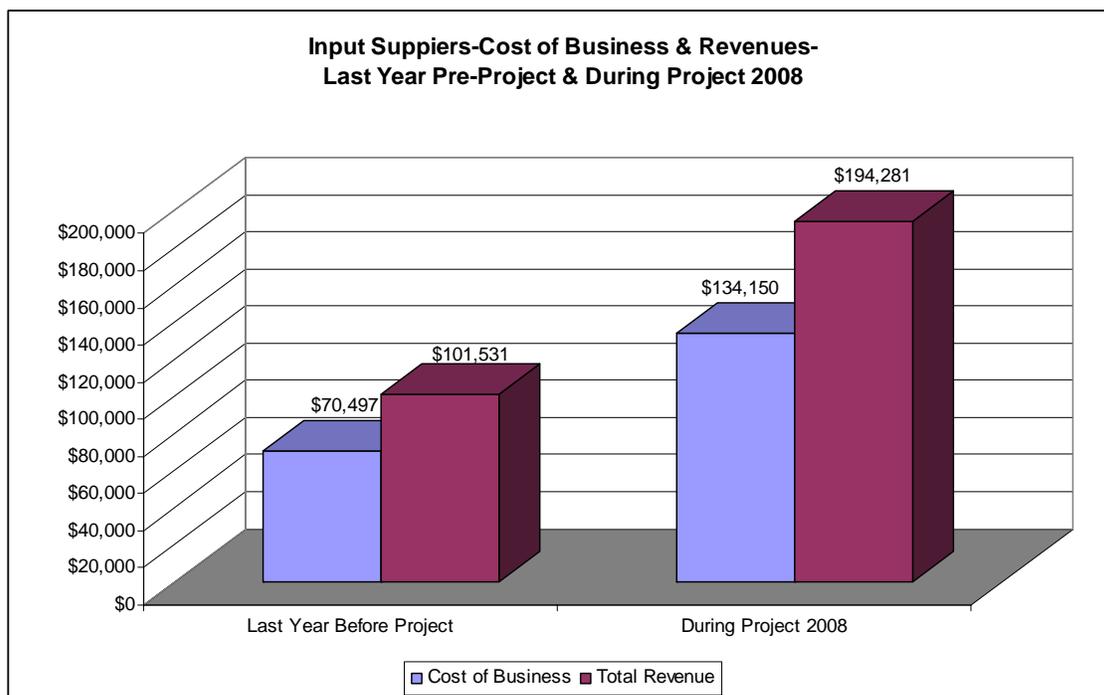
Input suppliers' gross profits have also grown since being with the MSME, from a mean profit of \$63,653 pre-project to a mean profit of \$92,751 in 2008, so profits are now 146% of pre-project levels. Furthermore, the percentage of Input suppliers making a loss has declined markedly from 27% pre-project to 0% in the last year.

Table 31 Input Suppliers: Gross Profit During Project 2008 & Pre-Project.

	N=15	Profits	
		During Project	Before Project
Mean		\$92,751	\$63,653
Median		\$6,705	\$2,000
Std. Deviation		\$330,187	\$220,899
Minimum		\$70	-\$1,830
Maximum		\$1,285,850	\$861,310
Sum		\$1,391,263	\$954,794

Overall, Input Supplier enterprises have certainly grown substantially by 2008, during collaboration with the MSME project. The following chart shows these changes in both cost of business and gross sales.

Figure 21 Input Suppliers: Cost of Business & Gross Sales Revenue Pre-Project & 2008



3.11. Impacts on Labor Employment & Business Service Utilization

Household member labor in Input Supplier enterprises in 2008 was a mean of 2.73 persons/enterprise, consisting of 0.8 adult males and 0.87 adult females aged over 24 years with 0.4 younger men and 0.4 younger women aged 15-24 years. A total of 41 household members were employed in these enterprises. Household member labor employment has grown 0.26 persons/enterprise since joining the project, a growth of 11%.

The 15 Input Supplier enterprises sampled employed a total of 15 persons as casual hired labor and 7 persons as full-time hired labor. Casual hired labor was 87% male and full-time hired labor was 80% male. Casual hired labor employment has increased 36% since joining the project while the full-time labor establishment has remained the same.

3.12. Business Productivity Impacts

The measure of business productivity for Input Supplier enterprises was the change in the mean number of customers each week. Pre-project mean numbers were 40 customers/week and this has grown to 73 customers/week during the project in the year to April 2008. This is an increase of 82% in average customer numbers per week.

3.13. Perceived Links to Poverty Alleviation

Input suppliers reported some shift since pre-project towards their enterprises accounting for a larger percentage of total household income from all sources. Pre-project, 54% of Input Suppliers estimated that their enterprises

accounted for 50% or more of their total income. In 2008, the percentage increased to 67% estimating that their enterprises accounted for 50% or more of their total income.

Input suppliers recognized that the kind of support for pig businesses provided by the DAI MSME project was important to help reduce poverty among other rural families in Cambodia. Among these respondents, 60% felt that MSME-type project support would be “Quite Important” and 40% felt that it would be “Very Important” for rural poverty alleviation.

The third indicator asked Input Suppliers if benefits from joining the DAI MSME project helped fund more years of education for their children than originally planned before joining the project. Fully 93% of Input Suppliers affirmed this benefit, with education supported for an average of 1.1 girls and 0.9 boys per enterprise, for a total of 15 girls and 12 boys, in all 15 enterprises.

3.14. Impacts On Business Accounting & Business Policy Advocacy

Among Input Suppliers, only 13% kept permanent accounting records for their business as a result of working with the MSME Project. Given the relatively large scale of some Input Supplier businesses, wider adoption of more systematic and permanent accounts recording would be an important step forward for further business development in the future.

4. PIG VALUE CHAIN - MSME TECHNOLOGY/BENEFITS SPREAD TO NON-PROJECT PIG PRODUCERS

An additional component of this Final Evaluation was to report the extent to which DAI-MSME technologies and benefits had spread to non-project Pig Producers. As this was the first time such a “spread survey” was undertaken, it was decided with the MSME team that we survey non-project Pig Producers in three villages where MSME Pig Producers were present. One village was randomly selected in Kampong Cham, Kratie and Svay Rieng provinces. In each village, 50 Pig Producers who had not worked with the MSME project for at least one full production cycle were randomly selected using non-project status screening and random household interval skip sampling. To enable such random selection, these villages had to be of at least medium size of 200 households or more to have a household population sufficient for this sampling method.

This pig value chain spread survey measured MSME technology and benefits spread at the local level, to non-project Pig Producers within the same villages as existing MSME clients. Of particular interest was the extent of the spread of MSME capacity building activities to non-project Pig Producers. Also, basic measures of pig production enterprise characteristics and volumes of production were recorded for comparison with MSME client Pig Producers. When interpreting comparative results between these non-project Pig Producers and MSME producers, it should be recalled that the non-project producer results are from a small sample of four villages.

4.1. Demographic Profile

Non-project Pig Producers had similar mean ages (37 years), household composition (2.0 female and 1.5 males aged over 15 years and 1.6 children aged under 15 years.) and years of experience raising pigs (7.2 years) as DAI MSME project clients.

The mean level of education was less on average with 47% having at least some secondary education compared to 66% of MSME Pig Producer clients. Another notable difference was in terms of gender

composition, with female Non-project Pig Producers accounting for 67% of all enterprises compared to females representing 22% of MSME Pig Producer clients. There was little variation in the proportion of female Pig Producers across the three villages surveyed. This may well reflect a greater pre-dominance of women among smaller-scale and less educated Pig Producers in the villages, who would be less likely to be MSME clients.

4.2. Improved Pig Technology Awareness & Training Among Non-Project Producers

Among this sample of Non-project Pig Producers, 100% confirmed that their primary position in the pig value chain was as a producer.

A central area of interest for this spread survey was to gain insight into the extent of training and related capacity building activities in pig production and business practices that was being undertaken by Non-project Pig Producers, and to what extent this capacity building might have spread from MSME pig production clients.

The 151 sampled enterprises reported that they were aware of improved pig production technologies/capacity building activities in total of 601 cases for all 16 types of technologies specified to them, or about 4 technologies per enterprise. The breakdown in types of technologies they reported being aware of is shown in the following table.

These producers were most commonly aware of some specific improved pig production technologies. Over 60% were aware of improved techniques in Vaccinations/Medicine, Pig raising technique and Pig Disease Diagnosis. However they were not so commonly aware of other important pig production techniques with only 42% aware of Pig sty/Pigpen improvements, and less than 30% aware of improved Feed Making techniques, Pig Breeding Techniques and improved Pig Farm Management. Awareness or recognition of the importance of improvements in non-technical business skills and exposure was far less widespread, with a maximum of 14% aware of improved business accounting practices.

Concerning adoption rates of these improved technologies, among those aware of the each technology, the most common pattern was to “partially adopt” these technologies. Overall 19% of respondents did not adopt, 65% “partially adopted” and 16% “fully adopted” the improved technologies that they were aware of with some variations by type of technology. We are not able to determine the specifics of actual components of technologies adopted, the extent to which they were adopted, or whether they were adopted correctly. However, these results do indicate that non-project producers tend mostly to at least partially adopt improved technologies that they become aware of to improve their enterprises. The MSME project has been a local level actor in increasing awareness of new technologies in the local community.

Table 32 Non-Project Pig Producer Benefits Spread Survey: Knowledge & Adoption Rates of Improved Pig Enterprise Technologies

Non-Project Pig Producers	Total	Awareness Rates	Adoption Rates Among Those Aware		
			Fully Adopted	Partly Adopted	Not Adopted
Types of Training	N	%	%	%	%
Group Meetings with MSME Staff	11	7%	0%	36%	64%
Feed making technique	44	29%	16%	57%	27%
Vaccinations/Medicine	128	85%	23%	69%	9%
Pig Breeding Techniques	32	21%	19%	31%	50%
Pig raising technique	116	77%	16%	74%	10%
Pig Waste Management/Biogas	23	15%	0%	35%	65%
Pig Farm Management	41	27%	22%	68%	10%
Pig Disease Diagnosis	93	62%	17%	77%	5%
Pig sty/Pigpen improvement	64	42%	9%	75%	16%
Basic business Accounting	21	14%	10%	43%	48%
Other Business Training	3	2%	0%	0%	100%
Training: business advocacy	5	3%	0%	20%	80%
Introduction to Finance Institutions	12	8%	0%	42%	58%
Introduction to Traders	7	5%	29%	57%	14%
Cross provincial Exposure trip	1	1%	0%	100%	0%
International Exposure Trip	0	0%	0	0	0
Totals	601	25%	16%	65%	19%

We then proceeded to ask these Pig Producers how they became aware of the new technologies they had learned and often had chosen to adopt. Three different methods of learning were specified: self-training through observation and copying (copy cat), training from MSME producers or training from Input Suppliers or other Pig Experts.

Overall, results were that these Pig Producers learned about new technologies by all three methods to some extent, with 42% learning through copy-cat methods, 18% from training by MSME client Pig Producers and 42% from Input suppliers or other pig experts. It is interesting to find that MSME client Pig Producers are making a meaningful and direct contribution to the training of non-project Pig Producers. This is not a specified role for client producers with the MSME project and yet the project is making a wider impact on skill-building among all Pig Producers through the efforts of their Pig Producer clients.

There are also likely gains in training quality when training is undertaken by MSME producers who have themselves been formally trained in these technologies rather than using the copy-cat method. MSME producers are also likely to be the source, in many cases, for the common copy-cat learning by a large proportion of non-project producers in these villages. Finally, it is likely that trainings with non-project Pig Producers by Input Suppliers and other pig experts such as Veterinarians have been facilitated by the need for initial local visits to train MSME producers.

There are some interesting variations in most common methods of learning by each type of technology. If we examine the most common types of technologies learned we can see that technologies related to pig health are most commonly learned from Input Suppliers/pig experts. In other cases where technologies relate more to pig production management (Pig raising technique, Pig Farm Management and Pig sty/Pigpen improvement) these are most commonly learned through the copy-cat method. In the case of pig Feed Making techniques, MSME producers are the ones most commonly providing training to non-project producers.

Table 33 Non-Project Pig Producer Benefits Spread Survey: How They Learned About Improved Pig Enterprise Technologies

Non-Project Pig Producers Types of Training	Total N	Self-trained observation and copy only %	Training from MSME project producer %	Training from Input Suppliers/ Pig Expert %
Feed making technique	44	27	43	30
Vaccinations/Medicine	128	11	5	84
Pig Breeding Techniques	32	47	25	28
Pig raising technique	116	56	22	22
Pig Waste Management/Biogas	23	39	26	35
Pig Farm Management	41	63	20	17
Pig Disease Diagnosis	93	37	8	56
Pig sty/Pigpen improvement	64	70	17	13
Basic business Accounting	21	62	33	5
Other Business Training	3	100	0	0
Training: business advocacy	5	20	60	20
Introduction to Finance Institutions	12	67	33	0
Introduction to Traders	7	57	14	29
Cross provincial Exposure trip	1	100	0	0
International Exposure Trip	0	0	0	0
Totals	590	42%	18%	40%

4.3. Comparative Pig Production Enterprise Characteristics: Non-Project Pig Producers Versus MSME Pig Producers

In the summary table below, some main indicators of characteristics of Non-Project pig enterprises are presented along with results for the same indicators for MSME Pig Enterprises for the last year to April 2008. This serves to provide a number of comparisons of interest and to provide another measure of project impact relative to this sample of non-project producers.

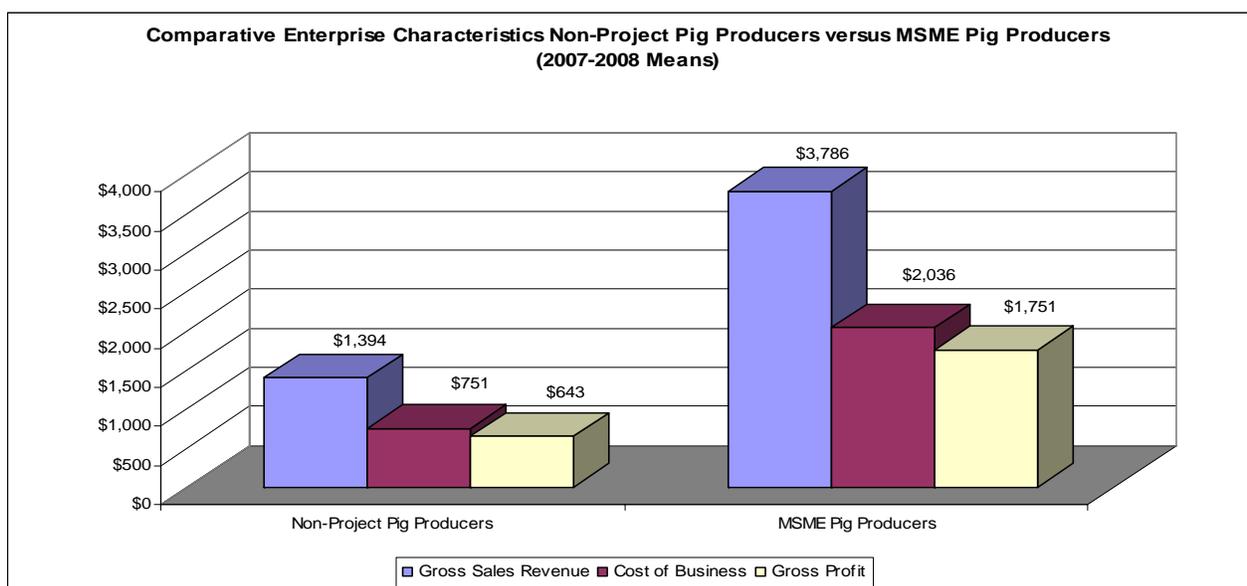
These comparisons illustrate that MSME pig producers are on average larger scale enterprises than the Non-Project Pig enterprises. Indicators for stock, costs of production, volume and value of sales, all show that MSME enterprises are about three times the size of the non-producer enterprises on average. They also employ 30% more household labor on average.

In terms of productivity indicators, Non-Project producers suffer much higher rates of piglet mortality on average, with one in four piglets dying, compared to only one in ten piglet deaths among MSME producers. Non-Project producers also sell feeder pigs at 9% lower mean live-weight and take 14% more mean days to grow pigs to 80-90 kg, in comparison to MSME producers.

Table 34 Non-Project Pig Producer Benefits Spread Survey: Comparative Enterprise Characteristics Non-Project Pig Producers versus MSME Pig Producers

Indicators	Non-Project Pig Producers	MSME Project Pig Producers
Mean Pig Stock May 2007		
Piglets	6	16
Feeder	3	8
Boars	0	3
Sows	1	0
Total	10	27
Mean Number of Head Sold 2007-2008		
Piglets	4	18
Feeder	8	19
Boars	0	0
Sows	0	1
Total	12	38
Mean Cost of Pig Production 2007-2008	\$751	\$2,036
Mean Gross Sale Revenue 2007-2008		
Piglets	\$120	\$715
Feeder	\$1,257	\$2,925
Boars	\$0	\$15
Sows	\$17	\$132
Total	\$1,394	\$3,786
Mean Gross Profit 2007-2008	\$643	\$1,751
% using investment credit any type 2008	5%	14%
Mean Household Labor in Pig Production	2.52	3.27
Piglet Morality Rate %	24%	10%
Mean Kg. Weight of Feeder Pig at Sale	72	79
Mean Days-Pig Growth to 80-90 kg Weight	147	129

Figure 22 Comparative Enterprise Characteristics Non-Project Pig Producers vs MSME Pig Producers



5. FISH VALUE CHAIN - FISH PRODUCERS

Of a total of 1,655 enterprises of all types working with the DAI MSME project in 2008, 15% or 264 businesses are enterprises in the fish value chain. Within the fish value chain, the project is so far working only with Fish Producers.

Evaluating project impacts on Fish Producers presents a number of challenges. The large number of fish and fingerlings involved make recall more difficult as does the practice of enumerating some fish types and species by kilogram and others by number of head. Further, fish production varies among the provinces assisted by DAI in that Fish Producers in Kampong Cham are generally larger scale and more commercially oriented, and Fish Producers in Prey Veng and Svay Rieng are often smaller scale and oriented to producing both fish for sale and fish for family consumption. The Fish Producers in Prey Veng and Svay Rieng are in transition to commercial production, a process that takes at least two production cycles (years) to get established and to begin seeing large increases in production levels and fish quality.

Project target criteria do not discriminate between these larger and smaller scale producers. Instead the fish project indicators use overall numerical targets for project performance. Further, baseline and midpoint evaluations lacked a strong basis for determining characteristics of MSME fish enterprises. The mid-point evaluation had a sample of only 30 Fish Producers some of who had not yet completed a full production cycle. This sample also included a few very large scale Fish Producers in Kampong Cham province which had affected mean enterprise results. By comparison the final evaluation sample is composed of 56 Fish Producers all of whom have completed a full production cycle and 57% are located in Prey Veng province. This sample too includes a few very large scale producers which affected mean enterprise results.

5.1. Demographic Profile

This survey interviewed a proportionately and randomly selected sample of 56 DAI MSME Fish Producers (21% of the total), engaged with the project for at least one production cycle and within the four of six provinces in which DAI has operated. The two provinces sampled (Kampong Cham and Prey Veng) account for 66% of the total of project Fish Producers and the majority are producers that have completed at least one production cycle with the project.

The geographical distribution of DAI MSME Fish Producers by province is uneven, with 33% located in Kampong Cham province, 14% in Kratie, 36% in Prey Veng and 17% in Svay Rieng. The final evaluation sample is drawn from the two largest MSME client Fish Producer provinces, with 57% of sample from Prey Veng and 43% from Kampong Cham. DAI MSME Fish Producers are 34% female and 66% male. A higher proportion of female producers are found in Prey Veng (41%) than in Kampong Cham (25%).

DAI MSME Fish Producers are typically aged around 42 years and have an average of 5.2 years experience raising fish before joining the project. Their households are composed of an average of 1.9 females and 1.7 males aged over 15 years and 1.2 boys and 1.2 girls aged under 15 years. They are more educated than average in a rural Cambodian context. Overall 54% have at least some level of secondary level education, with only limited variations by province and most others have a primary level education.

5.2. Project Collaboration & Training Benefits

Most Fish Producers had been engaged with the DAI MSME project for a period of at least 12-24 months and up to 36 months, and 100% confirmed that their primary position in the fish value chain was as a Fish Producer.

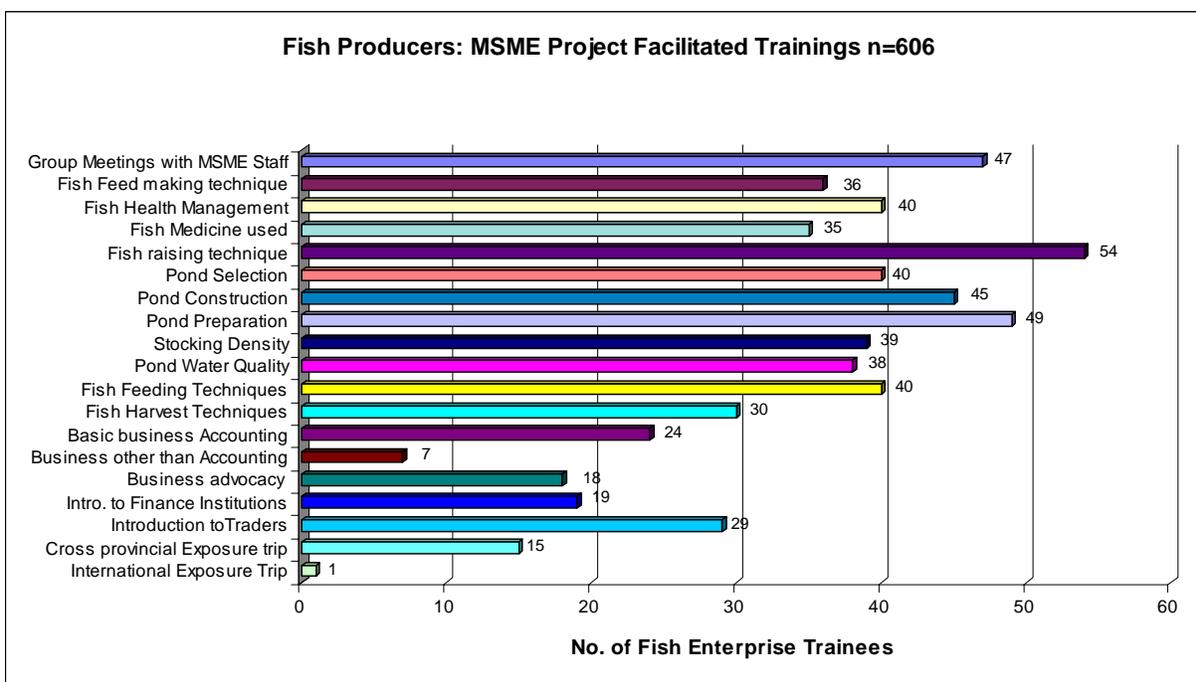
Table 35 Fish Producers: Months since joining the MSME project

Months	Count	%
<12 months	10	18%
12 - 24 months	26	46%
> 24 months	20	36%
Total	56	100%

A core activity in support of Fish Producers for the DAI MSME has been to organize technical training and related capacity building activities in fish production and business practices. The 56 sampled enterprises reported attending a total of a 606 person/training activities since joining the project, an average of 10.8 training attendances per enterprise.

The breakdown of types of courses attended and by province is shown in the following table. Participation rates are particularly high for fish production technical courses, usually in the range of about 60-90% of enterprises. For core technical training in areas, including Fish Raising Technique, Pond Construction and Pond Preparation, participation rates are over 80%. For business skills development courses, participation rates are lower, in the range of 10-50%. Business Accounting training has been provided to 43% of enterprises and Business Advocacy training has been provided to 32% of enterprises.

Figure 23 Fish Producers: MSME Project Facilitated Trainings



There are quite large variations by province in terms of the percentage of clients participating in different types of training [See Appendix Table A151]. This may reflect different locations and enterprise priorities. DAI MSME training and related capacity building activities appear to have a somewhat lower participation rate for women

(average 27%) in relation to the 34% proportion of women-owned enterprises already participating with the project. This applies to most of the fish technical training courses and also some business training courses. Project staff need to continue to monitor the rate of participation in capacity building activities for women to ensure they participate equitably in training opportunities once they have joined the project. It is possible that some males who attend the trainings are from women-owned enterprises, in which case those enterprises still gain the training benefits.

5.3. Impact on New Capital Investments & Credit, Gross Sales Volume & Revenue, Cost of Production & Gross Profit

OBJECTIVE: Component 2: Enhanced Capacity of Value Chain Firms &/or Stand-Alone Providers to Support Competitive Value Chains					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
2.3. Percent increase in value of new investments by MSME	Fish	Mean \$/MSME	\$6,886	\$4,830	70%

The value of “new investments” is defined as the sum of three investment components: fixed capital investments during the project, the value of fish stock at the start of the production cycle in May 2007 and the value of total costs of fish production, May 2007 - April 2008.

The 2008 target for average new investments per enterprise was \$6,886. The result was an average of new investments of \$4,830 or 70% of target. The tables below show the composition of new investments by component as well as the total.

Table 36 Fish Producers: Mean Value of New Investments since joining the MSME project (USD)

N=56	Mean
Fixed Capital investments	\$1,269
Fish Stock	\$1,990
Total cost of Fish Production	\$1,571
Total	\$4,830

Fixed Capital investments were generally not very common in the year to April 2008 with most investments by type made by less than 20% of enterprises, with mean investments less than \$60 per item. Investment in pond excavation was more common, with 37% of enterprises making this investment which accounts for \$434 of the total mean investment for all enterprises. Land was purchased by 14% of enterprises and the value of this investment accounts for a further \$592 of the total \$1,269 mean investment. Various “other” fixed capital investments were made by 56% of enterprises with item costs averaging \$96.

The following table shows the composition and average enterprise investment in fish costs of production for the period May 2007-April 2008. The average total enterprise investment in fish raising costs of production was \$1,571. By far the largest investment, 69% of the total, was made for fish feeds, mostly rice bran, but also including pellet fish feed, and trash fish/fishmeal. Fingerlings were the next largest expense on average.

Table 37 Fish Producers: Cost of Fish Production 2008 (USD)

	N=56	Mean	Median	Std. D	Max	Sum
Carp Brood Fish	1	0	0	4	25	55
Tilapia Brood Fish	3	0	0	14	100	192
Stunt Fish	137	0	0	371	1,969	7,647
Fingerlings	261	38	38	600	3,750	14,605
Rice Bran	599	53	53	1,620	11,000	33,547
Trash Fish/Fish Meal	131	0	0	302	1,500	7,339
Pellet Fish Feed	325	66	66	516	2,125	18,177
Wood for Feed Cooking	10	0	0	32	175	539
Cloth for Feed Cooking	17	0	0	34	160	948
Medicine	16	0	0	35	188	879
Machinery Fuel & Oil	50	21	21	73	338	2,802
Machinery	10	0	0	44	320	548
Hired Labor Part-time	1	0	0	7	50	63
Hired Labor Fulltime	3	0	0	20	150	150
Transport Costs	4	0	0	12	60	237
Fish Business Fees	0	0	0	0	0	0
Other	4	0	0	20	143	249
Total Cost		\$1,571	\$445			\$87,976

The average total enterprise cost of fish production has increased by 300% from \$507 in the last year before joining the project. This is mainly due to greater investments in fish feed of all types and in buying fingerlings.

OBJECTIVE: Component 3: Ongoing Improved MSME Access to Finance					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
3.0. Percent of MSME in target value chains that have accessed loans from any source at any time.	Fish	No of MSME	50	66	132%

An important issue for enterprises is how the Fixed Capital investments described above have been financed. Investments were financed using only their own capital in a reported 75% of enterprises. Only 25% of enterprises reported borrowing some or all of their investment capital from any kind of lender. Loans with institutional MFI's were taken by 8% of enterprises with a mean value of \$830. Loans from informal credit sources were reported by 17% of enterprises, with average loans amounts of \$266 in loans from family or friends and \$37 from private money lenders.

Extrapolating the 25% rate of enterprises accessing loans from any source from the sample to all 264 MSME Fish Producers would mean that 66 enterprises would have accessed these loans, 132% of the 2008 target.

Having reported patterns of investment and expenditure, we now turn to examining key DAI MSME impacts on fish enterprise volumes of sales and gross sales revenues. Here we provide the most recent results from the year to April 2008 and assess impacts by comparison with results from the last year before each enterprise joined the project as reported in this survey.

OBJECTIVE: Component 1: Improved Performance of USAID-Assisted Enterprises in Targeted Value Chains					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
1.1 (a) Percent change in volume of sales of program-assisted enterprises	Fish	Mean Kg./MSME	2,890	1,863	64%
1.1 (b) Change in value of sales of program-assisted enterprises	Fish	Mean \$/MSME	\$2,154	\$3,637	169%

Firstly, we examine MSME project impacts on enterprise volumes of fish sales. The mean kilograms of mature fish sold in the year to April 2008 was 1,863 kg./enterprise. This is 64% of the 2008 MSME target of 2,890 kg./enterprise. Secondly, the mean Gross Sales Revenue in the year to April 2008 was \$3,637/enterprise. This is 169% of the 2008 MSME target.

The reason for the below target mean volume of sales, as well as the above-target mean value of sales, is the large differences that exist in these values between Fish Producers in Kampong Cham and Prey Veng. Essentially, results for these indicators far exceed targets in the Kampong Cham sub-sample and are far below target in the Prey Veng sub-sample. It is the combination of these two very different results that produce the total sample means shown above. The different results for each of these sub-samples are shown in the following tables.

The average composition of sales volumes in enterprises in 2008 and the last year pre-project is shown in the following tables. While 2008 results are below target, a comparison of the current year and pre-project results do show a 153% increase in mature fish kg. sold/enterprise within the total sample. Thus within this total, sample MSME positive impacts are shown in terms of sales volume growth.

The total sample mean volume of sales is computed from very different sub-sample results by province. The volume of sales in Kampong Cham enterprises is almost ten times greater than the volume of sales in Prey Veng enterprises. The Kampong Cham results are 132% of target while the Prey Veng results are 13% of target.

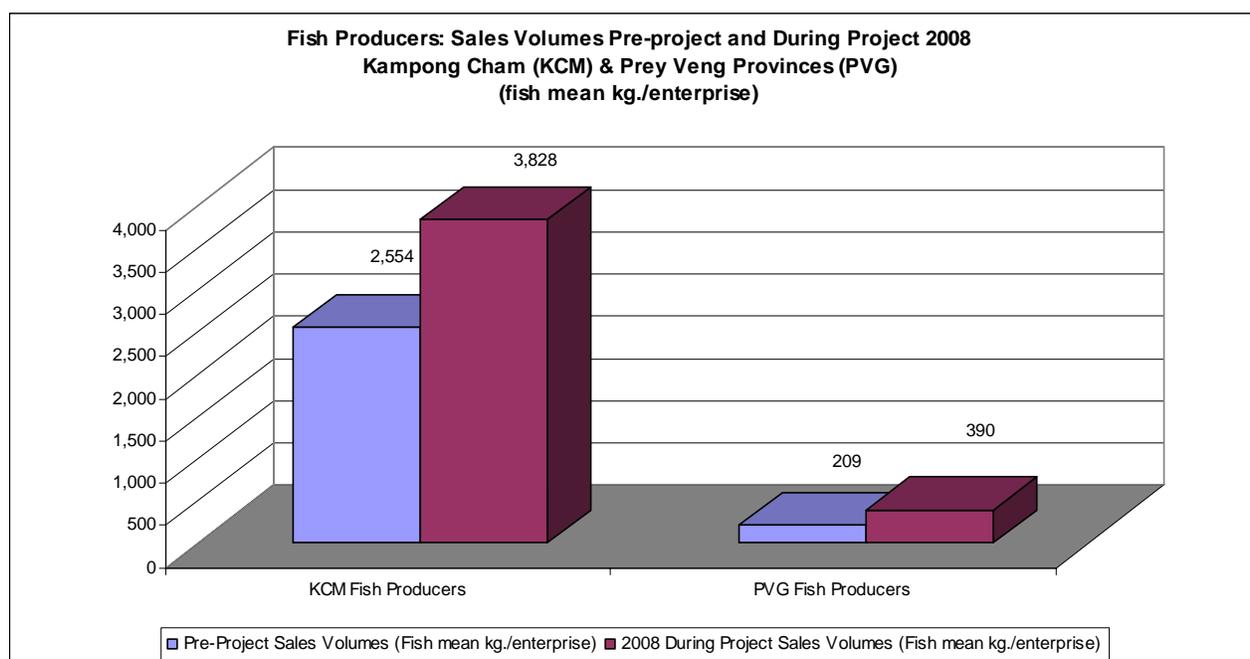
Table 38 Fish Producers: Mature Fish Sales Volumes Total & By Province 2008

	N=56	Mean	Median	Std. D	Max	Sum
Mature Fish kg.-Total Sample		1,863	560	2,611	9,500	104,348
Mature Fish kg.-KCM Only n=24		3,828	2,350	2,990	9,500	91,860
Mature Fish kg.-PVG Only n=32		390				12,488

Table 39 Fish Producers: Mature Fish Sales Volumes Total & By Province Pre- Project

	N=56	Mean	Median	Std. D	Max	Sum
Mature Fish kg.-Total Sample		1,214	250	2,558	12,000	67,995
Mature Fish kg.-KCM Only n=24		2,554	1,500	3,503	12,000	61,300
Mature Fish kg.-PVG Only n=32		209				6,695

Figure 24 Fish Producers: Sales Volumes Pre-Project & During Project 2008



Among all fish enterprises in 2008, 95% sold mature fish, 6% sold fingerlings and 77% consumed additional mature fish for family food (mean 98 kg./consuming household). Much larger quantities of fish were consumed for family food in Prey Veng province.

The average composition of Gross Sales Revenue in enterprises is shown in the following table for the total sample and for the two province sub-samples. The mean total sample Gross Sales Revenue/enterprise is \$3,851 which is 169% of target. Once again this total sample mean is calculated from very different sub-sample results by province. The value of sales in Kampong Cham enterprises is more than eight times greater than the volume of sales in Prey Veng enterprises. The Kampong Cham results are 359% of target, while the Prey Veng results are 43% of target.

Table 40 Fish Producers: Gross Sales Revenue Total & By Province 2008 (USD)

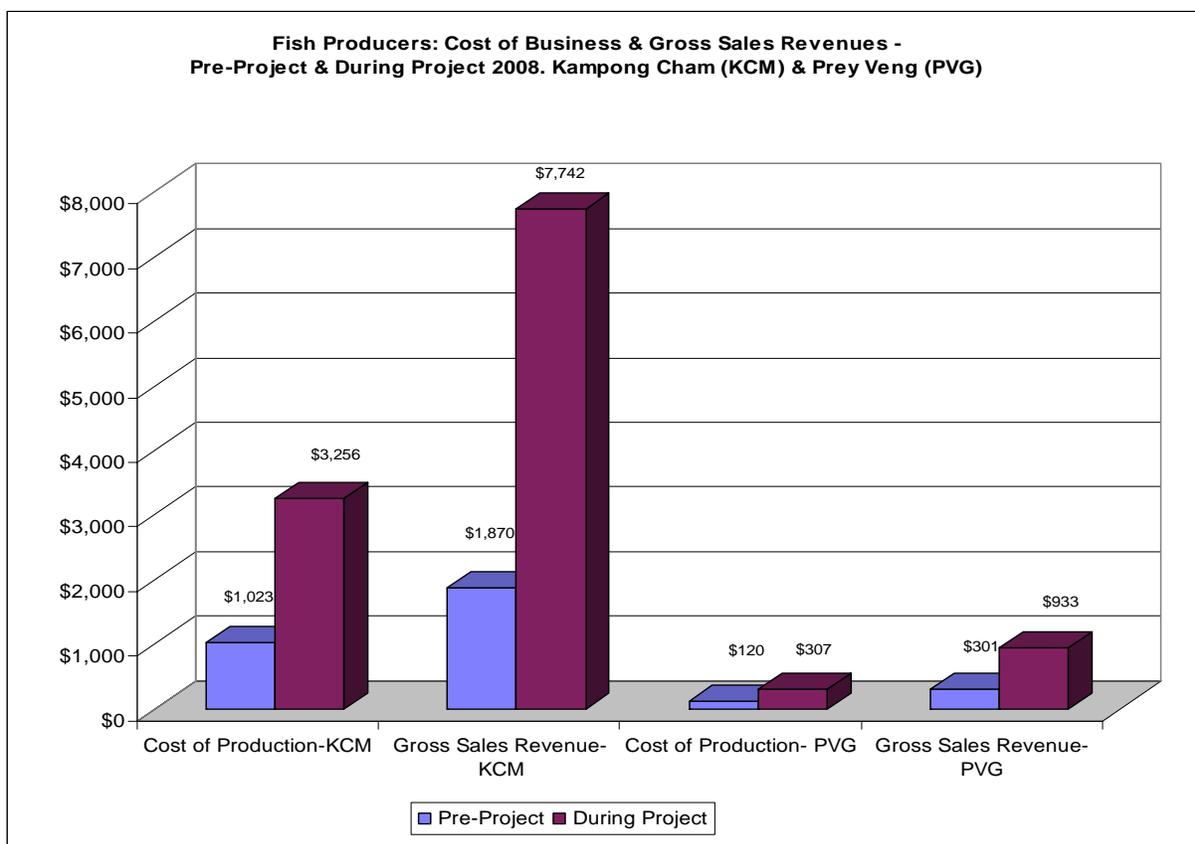
	N=56	Mean	Median	Std. D	Max	Sum
Total Sample:						
Mature Fish (Sale to Market)		3,637	810	12,216	91,000	203,660
Fingerling (Sale to Market)*		116	0	558	3,500	6,500
Total Sales Revenue		\$3,851	\$901			\$215,675
Mature Fish (kg. consumed family)		98	39	165	866	5,515
KCM sub-sample only n=24:						
Mature Fish (Sale to Market)		7,685	2,520	18,048	91,000	184,439
Fingerling (Sale to Market)*		31	0	153	750	750
Total Sales Revenue		\$7,742	\$2,538			\$185,809
Mature Fish (consumed family)		26	15	32	113	620
PVG sub-sample only n=32:						
Mature Fish (Sale to Market)		601	291	945	5,000	19,222
Fingerling (Sale to Market)*		180	0	725	3,500	5,750
Total Sales Revenue		\$933	\$438			\$29,866
Mature Fish (consumed family)		153	59			4895

* Fingerlings were sold by only 3 large scale producers (6% of sample).

A further comparison of the current year and pre-project total sample results do show a 386% increase in Gross Sales Revenue/enterprise. Thus within this sample, very positive impacts are shown on fish producers over time in terms of Gross Sales Revenue/enterprise growth.

The impact of the MSME project on fish enterprise gross sales revenue and cost of production are shown in the following chart. Results are split by province and clearly show the differences in enterprise size by province. Excellent rates of growth can be observed for fish enterprises in both provinces despite the differences in scale of the enterprises.

Figure 25 Fish Producers: Cost of Business & Revenues Pre-Project & During Project 2008



The mean Gross Profit/enterprise in 2008 was \$2,280 an increase of 489% over Gross Profits during the last year before joining the project. Results are shown in the following table. Within this sample very positive impacts are shown in terms of Gross Profit/enterprise growth.

Table 41 Fish Producers: Gross Profit 2008 & Pre-Project (USD)

	Profits	
	During Project 2008	Last Yr Before Project
N=56		
Mean	\$2,280	\$466
Median	\$377	\$142
Std. Deviation	\$9,688	\$1,024
Minimum	\$-1791	\$-416
Maximum	\$72,254	\$5,038
Sum	\$127,699	\$26,116

Gross Revenue was 238% of Costs of Production in 2008, up from 191% pre-project. The proportion of enterprises making a loss in 2008 was 7%, well down from the 18% of enterprises making a loss pre-project.

Overall, the MSME Fish Producer sample and client base were found to consist of very different enterprises, with much larger scale and more commercially-oriented businesses in Kampong Cham and much smaller scale domestic fish producers just beginning to commercialize their enterprises in Prey Veng. These large differences have affected progress towards targets, so that the volume of sales target has not been reached for the total sample, although the Kampong Cham sub-sample exceeded this target by a large margin. Even with these large differences in sub-samples, the value of sales target has been exceeded for the total sample. In addition, when comparing 2008 with pre-project results within this sample of fish enterprises, MSME impacts are shown to be very positive in terms of volume and value of sales, and gross profit growth.

5.4. Impacts on Labor Employment

Results on the employment of Fish Producer household members in 2008, either full time or part time, were an average of 3.43 household members employed per enterprise, representing most of the household labor force aged 15 years and over. Typically, employed labor included both 1.2 males and 1.2 females aged 25 years or older. An average of 0.57 females and 0.46 males aged 15-24 years were also employed. The gender distribution of household labor is quite even. In total, 192 household members were employed in these 56 enterprises.

Table 42 Fish Producers: Household Labor Employment during Project 2008 (persons)

	N=56	Mean	Median	Std. D	Max	Sum
Females-Aged 15-24 years		0.57	0.00	0.91	4	32
Females-Aged >=25 years		1.23	1.00	0.50	3	69
Males-Aged 15-24 years		0.46	0.00	0.85	4	26
Males-Aged >=25 years		1.16	1.00	0.73	5	65
Total Labor employment		3.43	3.00			192

Compared to pre-project, household member employment has increased by 0.2 persons/enterprise, or a 6% growth in employment since joining the project. This translates into 11 more members employed among all enterprises. It should also be recalled that these household members will derive extra income or benefits from the increasing profitability of the enterprise itself, as discussed previously. It is found that the employment of hired labor, either full-time or casual, is very rare among these 56 fish production enterprises. In total, only 8 males were hired for full-time labor and no casual labor was hired.

5.5. Business Productivity Impacts

A set of questions were included to enumerate MSME impacts on fish enterprise productivity, comparing 2008 results to pre-project. Indicators include estimated total kilograms of fish sold per year, fish pond productivity per m², fish mortality rates, average fish live-weights at sale and days required to grow fish to sale weight.

Results of project impacts on fish productivity are shown in the following table. The greatest productivity gain since pre-project has been the total kilograms of fish sold/enterprise, an increase of 163%. Related productivity improvements contributed to this gain, including increased fish pond size and productivity, a slight decrease in fish mortality rate, and a gain in average fish live- weight at sale. The results do not show a decrease in the average number of days required to grow fish to sale weight.

Table 43 Fish Producers: Productivity Indicators Pre-Project & During Project 2008

	N=56	Before Project	During Project
Mean estimated total kg of fish sold in one year		1,291	1,831
Mean Fish Pond Productivity/ m2		1.56	1.84
Mean Fish Morality Rate %		14.2	13.4
Mean Fish live-weight at sale-Kg.		0.81	0.84
Mean Number of days for fish growth to sale weight		193	197
Mean Fish Pond Area (m2)		680	997

5.6. Perceived Links to Poverty Alleviation

Fish Producers reported some shift since pre-project towards their enterprises accounting for a larger percentage of total household income from all sources. Pre-project, most producers estimated that fish production accounted for perhaps 10%-< 40% of total household income, with 19% reporting fish production as 40% or more of their total income. In 2008, after joining the project, most producers estimated that fish production now accounted for perhaps 10%-< 60% of total household income with 34% reporting fish production as 40% or more of their total income.

While enumeration of total income share benefits is difficult and reported gains appear limited, these results are still of interest. They indicate that while general economic growth is occurring, and while inflation and market shifts are having an impact, MSME clients still recognize that fish production is playing a larger role in their total household incomes.

Fish Producers recognized that the kind of support for fish businesses provided by the DAI MSME project was important to help reduce poverty among other rural families in Cambodia. Among these respondents, 41% felt that MSME-type project support would be “Quite Important”, and 43% felt that it would be “Very Important” for rural poverty alleviation.

The third indicator asked Fish Producers if benefits from joining the DAI MSME project helped fund more years of education for their children than originally planned before joining the project. Fully 77% of Fish Producers affirmed this benefit, with education supported for an average of 0.8 girls and 1.0 boys per enterprise, for a total of 45 boys and 34 girls among the 56 sample enterprises.

These responses from client Fish Producers draw linkages between MSME project assistance, increasing total household income and increasing children’s education in their own households. Furthermore, they perceive very commonly that MSME assistance could lead to similar benefits among poorer rural Fish Producers, and could therefore make an important contribution to poverty alleviation in Cambodia. These results are very similar overall to those reported earlier for MSME Pig Producers.

5.7. Impacts On Business Accounting & Business Policy Advocacy

OBJECTIVE: Component 3: Ongoing Improved MSME Access to Finance					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
3.1. Number of MSME trained in basic accounting.	Fish	No. of MSME	50	55	110%

An important component of MSME activities has been to foster improved accounting practices. Clients are sent for training in accounting skills as a component of capacity building activities. The 2008 target for adoption of improved business accounting practices as a result of project assistance was 50 Fish Producers. The result was that 21% of sample Fish Producers had indeed adopted improved accounting practices. A simple extrapolation of this rate to all 264 MSME fish client enterprises gives a total of 55 enterprises, or 110% of target.

Twenty-one percent of enterprises reported participation in business associations and their activities. They had joined a new fish business association and were therefore participating in policy advocacy and dialogues since joining the project. A simple extrapolation to all MSME fish clients would mean 55 enterprises joined associations, representing 9% of the 2008 target for all types of MSME enterprises.

6. FISH VALUE CHAIN - MSME TECHNOLOGY/BENEFITS SPREAD TO NON-PROJECT FISH PRODUCERS

As for the pig value chain, this Final Evaluation was to report the extent to which DAI-MSME technologies and benefits had spread to non-project Fish Producers. As this was the first time such a “spread survey” was undertaken, it was decided with the MSME team that we would survey non-project Pig Producers in two villages where MSME Fish Producers were present. One village was randomly selected in Kampong Cham, and the others in Prey province. In each village, 25 Fish Producers who had not worked with the MSME project for at least one full production cycle were randomly selected using non-project status screening and random household interval skip sampling. To enable such random selection, these villages had to be of at least medium size of 200 households or more to have a household population sufficient for this sampling method.

This fish value chain spread survey measured MSME technology and benefits spread at the local level, to non-project Fish Producers within the same villages as existing MSME producer clients. Of particular interest was the extent of the spread of MSME capacity building activities to non-project producers. Also, basic measures of fish production enterprise characteristics and volumes of production were recorded for comparison to MSME client Pig Producers. When interpreting comparative results between these non-project Fish Producers and MSME producers, it should be recalled that the non-project producer results are from a small sample of two villages.

6.1. Demographic Profile

Non-project Fish Producers were slightly younger than MSME Fish Producers, by 4 years, with a mean age of 38 years. Mean household composition also differed with Non-project Fish Producer households having slightly fewer adult male and females (1.5 females and 1.5 males aged over 15 years) and slightly more children (1.6 aged under 15 years.). The mean years of experience raising fish (3.6 years) was 1.6 years fewer than the MSME project clients.

The mean level of education was similar on average, with 51% having at least some secondary education compared to 54% of MSME Fish Producer clients. Females accounted for 39% of Non-project Producers compared to 34% among MSME Fish Producer clients.

6.2. Improved Fish Technology Awareness & Training Among Non-Project Producers

Among this sample of Non-project Fish Producers, 100% confirmed that their primary position in the fish value chain was as a producer.

A central area of interest for this spread survey was to gain insight into the extent of training and related capacity building activities in fish production and business practices that was being undertaken by Non-project Fish Producers, and to what extent this capacity building might have spread from MSME Fish Production clients.

The 51 sampled enterprises reported that they were aware of improved fish production technologies/capacity building activities in a total of 267 cases for all 12 types of technologies specified to them, or about 5 technologies per enterprise. The breakdown of types of technologies that they reported being aware of is shown in the following table.

A majority of producers were aware of some specific improved fish production technologies including Fish raising techniques, Pond Construction and Pond Preparation. However, less than 50% were aware of other important improved fish production technologies including Fish Feed making techniques, Fish Health Management, Fish Medicine, Pond Selection, Stocking Density, Pond Water Quality, Fish Feeding Techniques and Fish Harvest Techniques. Awareness levels for improved business accounting practices were very low at 2% of respondents.

Concerning adoption rates of these improved technologies, among those aware of the each technology, the most common pattern was to “partially adopt” these technologies. Overall 23% of respondents did not adopt, 68% “partially adopted” and 9% “fully adopted” the improved technologies that they were aware of, with some variations by type of technology. We were unable to determine the specifics of actual components of technologies adopted, the extent to which they were adopted, or whether they were adopted correctly. However, these results do indicate that most non-project producers tend to at least partially adopt improved technologies that they become aware of to improve their enterprises. The MSME project has been a local level actor in increasing awareness of new technologies in the local community.

Table 44 Non-Project Fish Producer Benefits Spread Survey: Knowledge & Adoption Rates of Improved Fish Enterprise Technologies

Types of Training	Total N	Awareness Rates %	Adoption Rates Among Those Aware		
			Fully	Partly	Not Adopted
			%	%	%
Fish Feed making technique	15	29%	7%	67%	27%
Fish Health Management	23	45%	0%	78%	22%
Fish Medicine used	20	39%	15%	80%	5%
Fish raising technique	46	90%	4%	85%	11%
Pond Selection	23	45%	13%	74%	13%
Pond Construction	37	73%	11%	73%	16%
Pond Preparation	28	55%	14%	79%	7%
Stocking Density	15	29%	7%	60%	33%
Pond Water Quality	17	33%	18%	65%	18%
Fish Feeding Techniques	21	41%	5%	86%	10%
Fish Harvest Techniques	21	41%	14%	76%	10%
Basic business Accounting	1	2%	0%	0%	100%
Total	267	44%	9%	68%	23%

We then proceeded to ask these Fish Producers how they became aware of the new technologies that they often had chosen to adopt. Three different methods of learning were specified: self-training through observation and copying (copy cat), training from MSME producers or training from Input Suppliers or other Fish Experts.

Overall, the results indicate that these Fish Producers learned about new technologies by all three methods to some extent, with 61% learning through copy-cat methods, 19% from training by MSME client Fish Producers and 20% from Input suppliers or other fish experts. It is interesting to find that MSME client Fish Producers are making a meaningful and direct contribution to the training of non-project Fish Producers. This is not a specified role for client producers with the MSME project, and yet, the project is making a wider impact on skill-building among all Fish Producers through the efforts of their Fish Producer clients.

Gains in training quality are also likely when training is undertaken by MSME producers who have themselves been formally trained in these technologies, rather than using the copy-cat method. MSME producers are also likely to be the source, in many cases, for the common copy-cat method of learning by a large proportion of non-project producers in these villages. Finally, it is likely that trainings with non-project Fish Producers by Input Suppliers and other fish experts has been facilitated by the need for initial local visits to train MSME producers.

There are some interesting variations in the most common methods of learning by each type of technology. If we examine the most common types of technologies learned, we can see most improved technologies of all types are learned through the copy-cat method. Fish Medicine technology is commonly learned from Input Suppliers/ fish experts, although this only accounts for 50% of those aware of these technologies. MSME producers are playing a relatively larger role than average in training non-project fish producers in Fish Raising Techniques and the less commonly recognized Stocking Density techniques.

Table 45 Non-Project Fish Producer Benefits Spread Survey: How They Learned About Improved Fish Enterprise Technologies

Non-Project Fish Producers	Total	Training		
		Self-trained observation and copy only	from MSME project producer	Training from Input Supplies/Fish Expert

Training Category	N	%	%	%
Fish Feed making technique	15	53%	20%	27%
Fish Health Management	23	61%	13%	26%
Fish Medicine used	20	30%	20%	50%
Fish raising technique	46	54%	28%	17%
Pond Selection	23	83%	17%	0%
Pond Construction	37	68%	22%	11%
Pond Preparation	28	64%	21%	14%
Stocking Density	15	40%	33%	27%
Pond Water Quality	17	59%	12%	29%
Fish Feeding Techniques	21	57%	24%	19%
Fish Harvest Techniques	21	71%	14%	14%
Basic business Accounting	1	100%	0%	0%
Total	267	62%	19%	20%

A comparison of these results with the Pig spread survey is of interest. Among Fish Producers, the method of learning improved technologies is much more often via copy-cat methods and far less commonly from Input Suppliers/ experts. Meanwhile the proportion of learning through training by MSME producers is almost exactly the same. This seems to indicate that while Non-project Fish Producers often want to learn and adopt improved technologies, there is a relative lack of availability of Input Suppliers/Fish experts for training services in comparison with the availability of Input Suppliers/Pig experts for Non-project Pig Producers. Future fish value chain strengthening efforts would benefit from increasing the number of Input Suppliers/Fish experts and their training activities with fish producers, particularly among the fish enterprises in transition to commercial production in the south-eastern province of Prey Veng.

6.3. Comparative Fish Production Enterprise Characteristics: Non-Project Fish Producers Versus MSME Fish Producers

In the summary table below, some main indicators of characteristics of Non-Project fish enterprises are presented along with results for the same indicators for MSME Fish enterprises for the last year to April 2008. This serves to provide a number of comparisons of interest and to provide another measure of project impacts relative to this sample of non-project producers.

These comparisons illustrate that MSME Fish Producers are on average somewhat larger scale enterprises than the Non-Project Fish enterprises, as indicated by comparing fish stock, the volume and particularly the value of sales. They also employ 21% more household labor on average.

In terms of productivity indicators, Non-Project producers sell fish at higher reported mean live-weight (with wider variation), but sell only 73% the total volume of fish. They take 38% more mean days to grow fish to market sale weight, in comparison to MSME project producers. Mean fish pond productivity in kg./m2 is also 66% of MSME project producers.

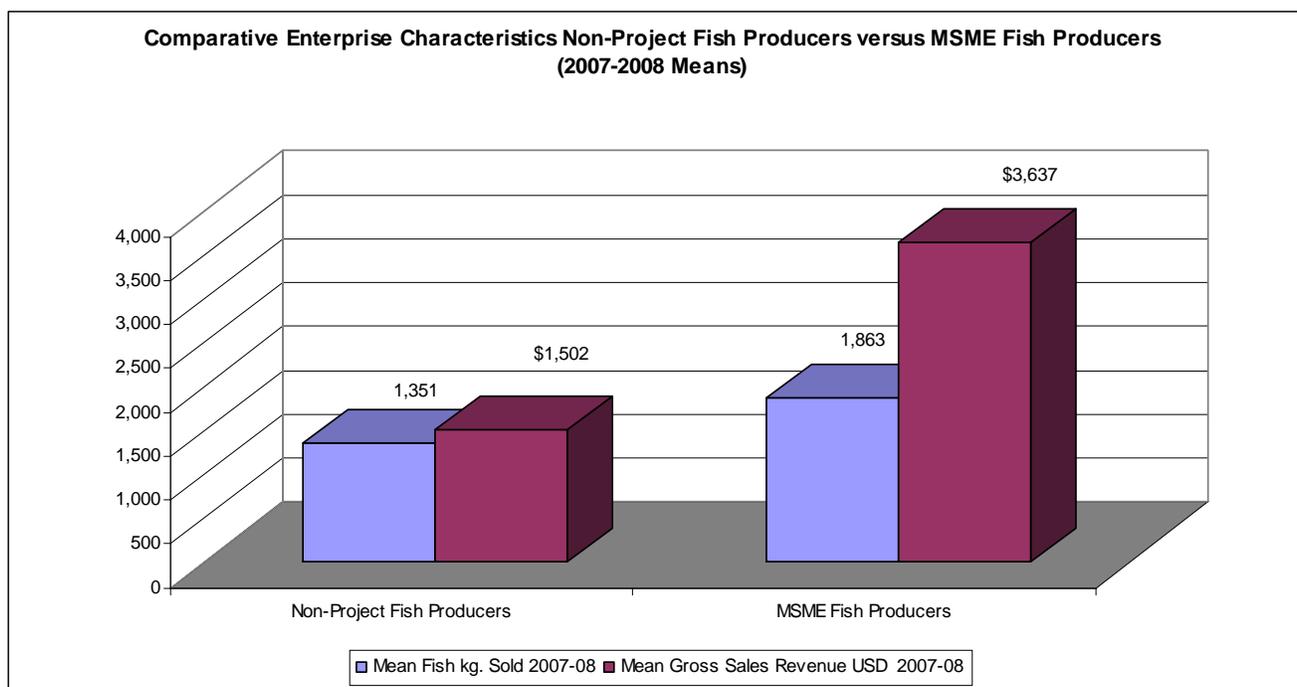
Interestingly, the use of credit to fund investments is almost twice as common at 47% among Non-Project producers. This may be related to the comparatively lower sales revenues generated in these enterprises.

Table 46 Non-Project Fish Producer Benefits Spread Survey: Comparative Enterprise Characteristics: Non-Project Fish Producers versus MSME Fish Producers

Indicators	Non-Project Fish Producers	MSME Project Fish Producers
Mean Fish Stock May 2007		
Number of Head Brood	0	4

Number of head Mature Fish	1,467	898
Number of Head Fingerling	6,119	9,923
Total	7,585	10,635
Mean Number of Kg. Sold 2007-2008		
Number of Kg of Mature Fish Sold	1,351	1,863
Mean Gross Sale Revenue 2007-2008		
Mature Fish (Sale to Market)	\$1,502	\$3,637
Mean Household Labor in Fish Production	2.67	3.23
% using credit of any type for investments	47%	25%
Fish Morality Rate %	16%	13%
Average Fish live weight at sale-Kg.	1.2	0.8
No. of days for fish growth to sale weight	271	197
Fish Kg./Pond area m2	1.2	1.8

Figure 26 Comparative Enterprise Characteristics Non- Project Fish Producers vs MSME Fish Producers



7. BRICK AND TILE MAKERS

Of a total of 1,655 enterprises of all types working with the DAI MSME project in 2008, 0.9% or 15 businesses are enterprises in the brick and tile value chain. Within this value chain, all are brick and tile makers. While numerically small, brick and tile makers are typically large scale enterprises and therefore are important to the overall assessment of MSME project impacts.

7.1. Demographic Profile

This survey interviewed a proportionately and randomly selected sample of 12 DAI MSME project brick and tile makers (80% of the total), engaged with the project for at least one production cycle and within the four of six provinces in which DAI has operated. The four sampled provinces include all MSME brick and tile makers.

The geographical distribution of brick and tile makers by province is uneven, with 60% located in Kampong Cham province, 20% in Kratie and 20% in Prey Veng. Brick and tile makers are 100% male, typically aged around 50 years and have had an average of 14.5 years experience making bricks and tiles. Their households are composed of an average of 2.7 females and 2.3 males aged over 15 years and 1.0 children aged under 15 years. They are much more educated than average in a rural Cambodian context, with 83% having at least some secondary level education.

7.2. Project Collaboration & Training Benefits

Most brick and tile makers have been engaged with the DAI MSME project for a period of at least 12-24 months and 33% have been working with the project for over 24 months.

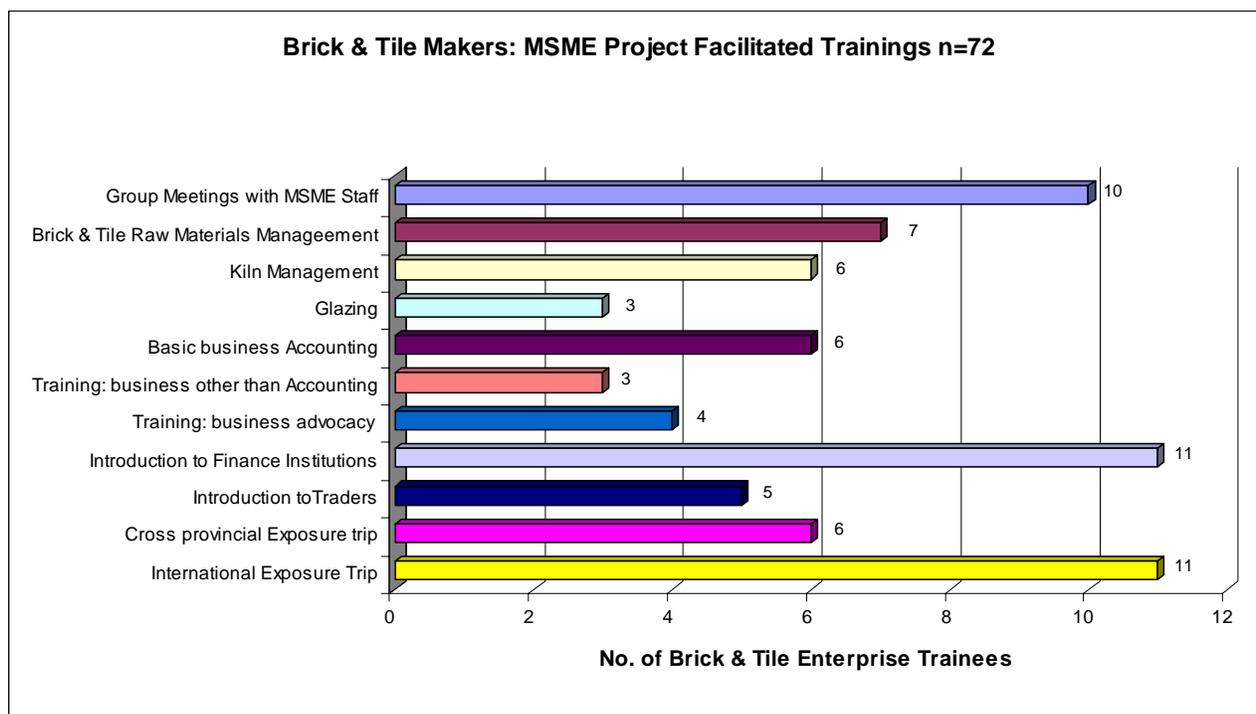
Table 47 Brick & Tile Makers: Months since joining the MSME project

	Months	Count	%
	<12 months	0	0%
	12 - 24 months	8	67%
	> 24 months	4	33%
	Total	12	100%

Brick and tile maker enterprises are almost all engaged in making brick and tile products and 33% are also engaged in either brick and tile wholesale or retail. One hundred percent sell both roof tiles and bricks, and only 8% sell wall tiles or floor tiles.

A core activity in support of brick and tile makers for the DAI MSME has been to organize technical training and related capacity building activities in brick and tile making and business practices. The 12 sampled enterprises reported attending a total of a 72 person/training activities since joining the project, an average of 6 training attendances per enterprise. The breakdown of types of courses attended and by province is shown in the following chart. Participation rates are variable by activity, reflecting individual enterprise needs.

Figure 27 Brick & Tile Makers: MSME Project Facilitated Trainings



7.3. Impacts on New Capital Investments & Credit, Gross Sales Volumes & Revenue, Costs of Production & Gross Profits,

OBJECTIVE: Component 2: Enhanced Capacity of Value Chain Firms &/or Stand-Alone Providers to Support Competitive Value Chains					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
2.3. Percent increase in value of new investments by MSME	Brick & Tile	Mean \$/MSME	\$18,000	\$115,160	640%

An important indicator of project performance is the increase in the average value of new investments in brick and tile enterprises. The value of “new investments” is defined as the sum of three investment components: fixed capital investments during the project, the value of stock at the start of the production cycle in May 2007 and the value of total costs of brick and tile making during May 2007 - April 2008.

The 2008 target for average new investments per enterprise was \$40,000. The result was an average of new investments of \$115,160 or 640% of target. This is a very great increase in investments since joining the project. The tables below show the composition of new investments by component as well as the total.

Table 48 Brick & Tile Makers: Mean Value of New Investments since joining the MSME project (USD)

	N=12	Mean
Fixed Capital investments		\$52, 279
Stock		-
Total cost of Brick & Tile Making 2008		\$62,281
Total		\$115,160

Enterprises have commonly invested large amounts in a whole range of Fixed Capital Investments to improve their businesses. The total expenditure on these assets has been \$52, 279 and the cost items are shown in the following table. Transport, construction of new kilns, land, storage facilities, machinery and equipment are all common investments among these enterprises.

Table 49 Brick & Tile Makers: Mean Value of New Investments by Type (USD)

	N=12	% of HH Buying	Mean	Median	Std.DV	Max	Sum
Land (Hectares)		58%	11,750	1,500	23,320	80,000	141,000
Business shop/office		8%	333	0	1,155	4,000	4,000
Construction of new Kilns		75%	19,333	10,000	27,277	100,000	232,000
Renovation/ Improvement-existing Kilns		8%	2,500	0	8,660	30,000	30,000
Storage facilities/structures		42%	4,500	0	8,555	30,000	54,000
Storage equipment		58%	4,217	2,300	5,111	15,000	50,600
Transport		83%	1,146	900	1,389	5,200	13,750
Machinery		58%	7,025	1,750	15,427	55,000	84,300
Equipment		50%	1,142	300	2,052	7,000	13,700
Other Fixed Capital Investments		8%	333	0	1,155	4,000	4,000
Total		100%	\$52,279	\$33,800			\$627,350

The following table shows the composition and average enterprise investment in brick and tile costs of production for the period May 2007-April 2008. The average total enterprise investment in costs of production was \$62,281. The largest investments were made in kiln wood fuel, machinery fuel and oil, labor and raw materials.

Table 50 Brick & Tile Makers: Cost of Production for the year 2008 (USD)

	N=12	Mean	Median	Std. D	Max	Sum
Office/Shop Outlet rent & maintenance		0	0	0	0	0
Brick/Tile Raw materials		11,292	10,000	9,470	40,000	135,500
Brick/Tile chemicals		681	0	1,255	4,375	8,175
Kiln Wood Fuel		14,054	13,750	10,607	36,500	168,650
Water		6,667	0	16,143	50,000	80,000
Machinery Fuel & Oil		12,079	10,550	8,193	28,700	144,950
Machinery		748	200	1,064	3,500	8,975
Electricity supply		0	0	0	0	0
Hired Labor Part-time		12,425	16,500	9,823	24,000	149,100
Hired Labor Fulltime		3,200	1,800	4,011	12,600	38,400
Hired Transport Costs		813	800	740	1,900	9,750
Business operation fees		323	225	214	750	3,870
Other		0	0	0	0	0
Overall Cost		\$62,281	\$62,623			\$747,370

The average total enterprise cost of brick and tile production has increased by 160% from \$38,849 in the last year before joining the project. Increased costs have been experienced for all major cost items described above.

OBJECTIVE: Component 3: Ongoing Improved MSME Access to Finance					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
3.0. Percent of MSME in target value chains that have accessed loans from any source at any time.	Brick & Tile	No. of MSME	15	6	40%

Fixed Capital investments described above have been financed using only their own capital in a reported 67% of enterprises. Only 33% of enterprises reported borrowing some or all of their investment capital from any kind of lender. Loans with institutional MFI's were taken by 17% of enterprises with a mean value of \$16,250. Loans from informal credit sources were reported by 25% of enterprises, with average loans amounts of \$1,250 in loans from family or friends and \$4,000 from private money lenders.

Extrapolating the 33% rate of borrowing from the sample to all 15 MSME brick and tile makers would mean that 6 enterprises would have borrowed from any source, 40% of the 2008 target. However, unlike the targets for this indicator in other value chains, the target of 15 enterprises here is the total number of these enterprises that are clients of the project. By comparison, for pig and fish producers the target numbers of firms accessing credit are a much smaller proportion of total client enterprises in those value chains.

Having reported patterns of investment and expenditure, we now turn to examining key DAI MSME project impacts on brick and tile maker enterprise volumes of sales and gross sales revenues. Here we provide the most recent results from the year to April 2008 and assess impacts by comparison with results from the last year before each enterprise joined the project as reported in this survey.

OBJECTIVE: Component 1: Improved Performance of USAID-Assisted Enterprises in Targeted Value Chains					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
1.1 (a) Percent change in volume of sales of program-assisted enterprises	Brick & Tile	Mean No. Bricks & Tiles/MSMS	540,334	338,701	63%

First we examine MSME project impacts on brick and tile maker volumes of sales. The mean number of tiles of all types sold in the year to April 2008 was 338,701 tiles/enterprise. This is 63% of the 2008 MSME project target of 540,000 tiles. Only tile volumes are measured for project targets, but as the following table shows the volume of tile production is only 32% of total volume with brick production accounting for the remaining 68% of total volume (715,942 bricks).

Benefits of the MSME project have included technological improvements to kilns, and production methods, which have increased productivity, and support to find and develop new markets, for both tiles and bricks. Here, progress against baseline and project sales volume and value targets is examined for tiles only as done in earlier studies. At the same time, the contribution of bricks to overall enterprise performance will be described in the text. In the later summary section on overall project impacts, the full value of both tile and brick production will be considered.

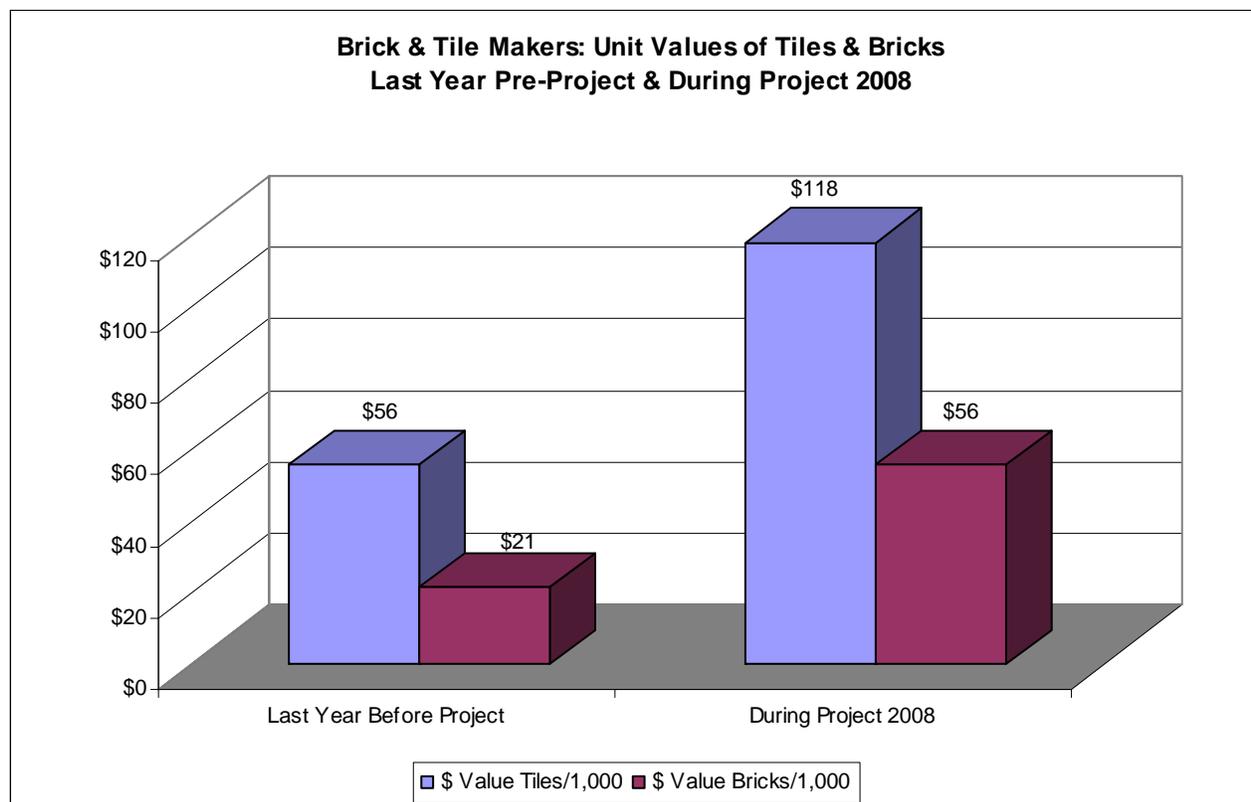
Table 51 Brick & Tile Makers: Sales Volumes 2008

	N=12	Mean	Median	Std. D	Max	Sum
Roof Tiles		338,701	317,797	189,345	741,525	4,064,407
Bricks		715,942	644,022	472,134	1,565,217	8,591,304
Total		1,054,643	945,422			12,655,711

OBJECTIVE: Component 1: Improved Performance of USAID-Assisted Enterprises in Targeted Value Chains					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
1.1 (b) Change in value of sales of program-assisted enterprises	Brick & Tile	Mean \$/MSME	\$21,156	\$39,967	189%

MSME project impacts on enterprise Gross Sales Revenue in the year to April 2008 also show very good results. The mean Gross Sales Revenue for tile production was \$39,967/enterprise. This exceeds the 2008 MSME target of \$21,156 by 189%. The quality of both tiles and bricks produced with MSME project assistance improved, resulting in increased unit values of both products, as shown in the figure below. Tiles have always been of higher value and this value has now improved to 12 cents per tile. This continues a trend noted in the 2007 Evaluation which noted an increase from a baseline value of 4 cents/tile, to a project mid-point value of 6 cents/ tile in 2007.

Figure 28 Brick & Tile Makers: Unit Values of Tiles & Bricks Pre-Project & 2008



The average composition of Gross Sales Revenue in enterprises is shown in the following table. Here, in addition to tile income, brick production is shown to contribute 46% of total revenues, for a total of \$73,400. Brick revenues are clearly important to these enterprises while not specified in the project indicators.

Table 52 Brick & Tile Makers: Gross Sales Revenue 2008 (USD)

	N=12	Mean	Median	Std. D	Max	Sum
Roof Tiles		39,967	37,500	22,343	87,500	479,600
Bricks		33,433	30,000	21,770	72,000	401,200
Total		\$73,400	\$76,425			\$880,800

This 2008 total Gross Sales Revenue for both bricks and tiles compares to a reported pre-project average of \$31,187/enterprise, an increase of 235%. This is a very large increase in revenues over the three years of project assistance.

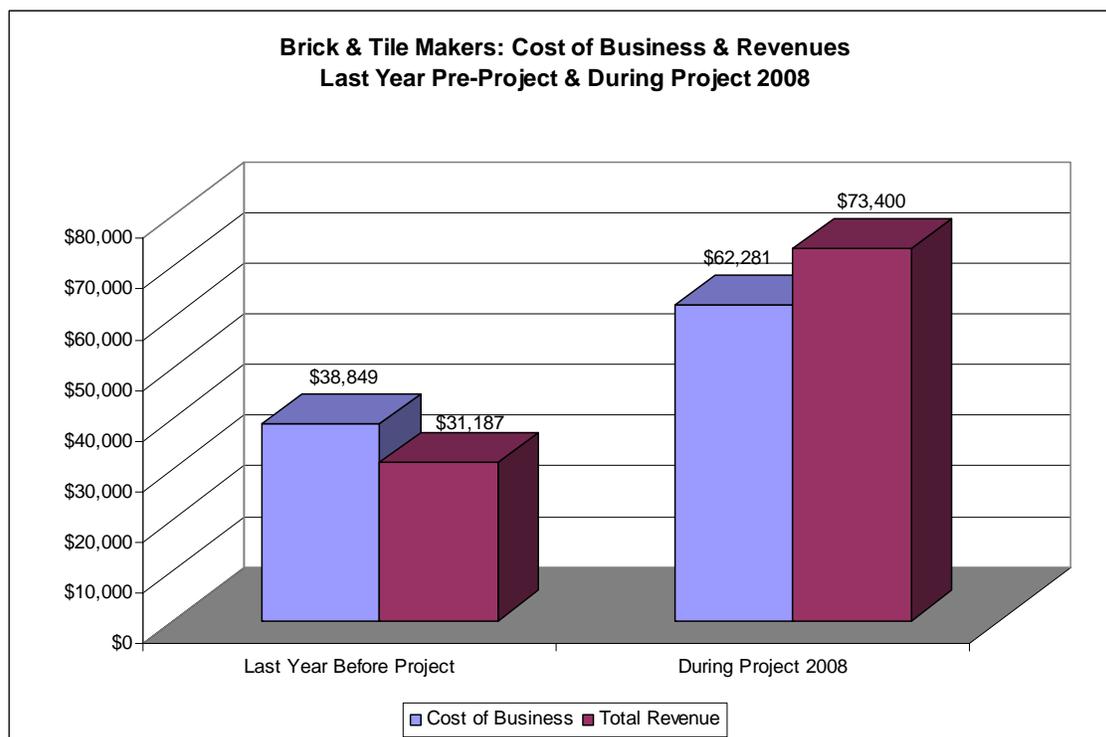
The mean Gross Profit/enterprise in 2008 for both bricks and tiles was \$11,119. Gross Profits during the last year before joining the project were negative on average due to losses in some enterprises. Results are shown in the following table.

Table 53 Brick & Tile Makers: Gross Profit 2008 & Pre-Project (USD)

	N=12	During Project 2008	Before Project
Mean		11,119	-7,662
Median		9,375	-12,569
Std. Deviation		30,353	26,949
Minimum		-37,375	-45,860
Maximum		68,000	59,955
Sum		\$133,430	\$-91,947

Gross Revenue for both bricks and tiles was 118% of Costs of Production in 2008 on average, compared to 80% of Costs of Production pre-project. The proportion of enterprises making a loss in 2008 was 33%, well down from the 67% of enterprises making a loss pre-project. Indeed, one other simple but major MSME project impact is that it has maintained the viability of these enterprises.

Figure 29 Brick & Tile Makers: Costs of Business and Gross Sales Revenues Pre-Project & 2008



Overall MSME project impacts on volumes of sales are below target, possibly due to brick and tile makers preferring to increase their volumes of brick sales, while concentrating on increasing tile quality and the higher tile unit values. Project impacts on value of sales have been very positive, exceeding project targets by large margins and showing improvements in comparison to pre-project enterprise productivity. Given the large scale of these enterprises, these results are important for evaluating overall project impacts on business productivity.

7.4. Impacts on Labor Employment

Employment of household members in brick and tile enterprise, either full time or part time average 2.3 members, typically including both 1.1 males and 0.9 females aged 25 years or older. Employment rates are low for household females 0.17 and males 0.17 aged 15-24 years. The gender distribution of household labor is even. In total, 28 household members were employed in these 12 enterprises and this has remained static compared to pre-project levels.

Brick and Tile makers do routinely hire labor both full-time and part-time. Average full-time labor per enterprise is 16 workers, of which 13 are male. Average part-time labor per enterprise is 29 workers, of which 12 are male and 17 are female.

Table 54 Brick & Tile Makers: Hired Labor Employment by Enterprise 2008 (persons)

	N=12	Mean	Median	Std. D	Max	Sum
Full-time labor-female		3.3	0	6.9	20	40
Full-time labor-male		13.0	3.0	18.7	60	156
Casual labor-female		16.7	15.0	15.2	50	200
Casual labor-male		12.3				147

Hired labor employment has increased since joining the project by 24% overall. This has generated 108 new jobs and these 12 enterprises are now employing a total hired labor force of 543 persons in 2008.

Table 55 Brick & Tile Makers: Hired Labor Employment Totals Pre-Project & 2008 (persons)

Hired Labor Employment	Pre-Project		During Project 2008	
	N	%	N	%
Full-time labor-female	30	7	40	7
Full-time labor-male	101	23	156	29
Casual labor-female	183	42	200	37
Casual labor-male	121	29	147	27
Total Labor	435	100	543	100

Brick and Tile makers, while limited in number, are major employers of hired labor. Since joining the project, there has been an employment growth of 24% in these enterprises.

7.5. Business Productivity Impacts

A set of questions were included to enumerate MSME project impacts on brick and tile enterprise productivity comparing 2008 results to pre-project. Indicators include volume of sales, and unit prices of bricks and tiles.

Results of project impacts on brick and tile enterprise productivity are shown in the following table. All indicators show gains in productivity since joining the MSME project. The greatest productivity gains, over 200%, are in the unit values of bricks and tiles sold, resulting from production changes instituted during the project, leading to higher quality and unit prices for these products. Productivity gains have also been made in terms of production volumes for bricks and tiles, but the gains here have been more modest.

Table 56 Brick & Tile Makers: Productivity Indicators Pre-Project & During Project 2008

N=12	Before Project	During Project	% Change
	Mean	Mean	
Average number of tiles sold per month	47,477	56,389	119%
Average number of bricks sold per month	36,017	38,944	108%
Average value of a sale of 1,000 tiles-riel	19	47	247%
Average value of a sale of 1,000 bricks-riel	55	118	214%

7.6. Perceived Links to Poverty Alleviation

Brick and tile makers indicated a moderate shift since pre-project towards brick and tile making accounting for a larger percentage of household income from all sources. Pre-project producers estimated that brick and tile making accounted anywhere from 30%-< 100% of total household income, with 66% reporting brick and tile making as 50% or more of their total income. In 2008 after joining the project, most estimated that brick and tile making now accounted for perhaps 50%- 100% of total household income with 91% reporting brick and tile income as 50% or more of their total income.

As brick and tile makers are large scale and capital intensive enterprises, improvements would not be expected to directly contribute to rural poverty alleviation. However, improving these enterprises has led to employment growth of 24% since joining the project, which can contribute to poverty alleviation. On average, each of these 12 enterprises employ 45 people and have employed 11 more people each since joining the project.

Brick and tile enterprises reported that benefits from the MSME project helped them fund more years of education for their children in 75% of enterprises. They further specified that this had benefited an average of 1.7 boys and 1.3 girls per household and had supported the extra education of a total of 15 boys and 12 girls among the 12 sample enterprises.

7.7. Impacts On Business Accounting & Business Policy Advocacy

OBJECTIVE: Component 3: Ongoing Improved MSME Access to Finance					
Indicator	Value Chain	Unit	Target FY2008	Actual FY2008	% of FY Target
3.1. Number of MSME trained in basic accounting.	Brick & Tile	No. of MSME	15	3	20%

The 2008 target for adoption of improved business accounting practices as a result of project assistance was 17%, or two sample enterprises, adopted these practices. With extrapolation to all brick and tile enterprises an estimated, 3 enterprises could have adopted these practices- 20% of all MSME brick and tile enterprises and 20% of the 2008 target. Improved accounting practices are likely to be relatively more important to brick and tile enterprises given the larger scale of these businesses.

8. Conclusions

The USAID-funded Cambodia Micro, Small and Medium Enterprises (MSME) Strengthening Project implemented by Development Alternatives, Inc. (DAI) will conclude its implementation after three years of operations in September 2008. The vision of the project has been to improve entrepreneurship and competitiveness for micro, small and medium enterprises (MSME) in selected value chains and target provinces by enabling improvements to the business environment in a context where many of these targeted MSME were operating in a difficult environment. Value chain linkages were under-developed, business margins were thin, and business risks were high, constraining local economic development and efforts in rural poverty alleviation.

The Project has assisted rural MSME entrepreneurs to improve opportunities and incomes by working in direct partnership with stakeholders in value chains to promote new ways of thinking and acting among local business people. The emphasis has been on increased trust and cooperation, networking, sharing information and pooling resources in ways that can benefit all MSME in the value chain. DAI has facilitated training of MSME by working directly with Input Suppliers and Veterinarians, who then train enterprises within their sectors. Practical tools have been utilized to improve products, services, business relationships and access to affordable credit.

The final results of the DAI MSME Strengthening Project have been described in this Final Evaluation. The project has had major impacts on improving the productivity and business performance of these enterprises, with wider beneficial impacts at the value chain level. These impacts, in some cases, have been quite spectacular within a three year period. The project's client enterprises and their value chains will be undoubtedly strengthened in many ways based on improved value chain synergies and improved enterprise productivity when the project ceases assistance in these provinces.

In a short three year period, not all targets could be achieved and not all potential benefits of project assistance could be fully exploited. The results shown here could be built on to further add value to these enterprises and value chains in the future. Several issues would benefit from further project support. There is room for further improvements in technical business productivity improvements and for further training in business skills and advocacy among enterprises. There could be further efforts to boost the proportion of women's enterprises involved in the project in some areas. Consideration could be given to how to further increase employment opportunities as a means of productivity growth as well as employment growth. A final area for future project support could be in the area of facilitating the spread of training and capacity building to Non-Project Producers to capitalize on a process that is already underway to some extent.

These are some of the potentials for the future. Meanwhile, the DAI MSME Strengthening Project has achieved much within the three years of its operations and will leave producer enterprises and their value chains in much better condition to do business more efficiently and profitably in the developing Cambodia's rural economy.

9. ANNEX

9.1. STUDY BACKGROUND TABLES

Table A57 Total Number of DAI MSME Clients at April 2008

Client type	Total Number of Businesses (4 Provs: KCM KTR PVG SVG)					Total Number of Businesses (2 Provs: KDL, KSP)			Total Number of Businesses (All Six Provs.)
	KCM	KTR	PVG	SVR	Total	KD	Kg.S	Total	
Pig/ Producer	405	285	130	210	1030	113	66	179	1209
Pig/ Veterinarian	62	13	32	20	127	5	10	15	142
Pig/ Input Supplier	11	2	3	4	20	1	3	4	24
Pig/ Slaughterhouse	1	0	0	0	1	0	0	0	1
Total	479	300	165	234	1178	119	79	198	1376
Fish/ Raiser	84	36	90	42	252	12	0	12	264
Total	84	36	90	42	252	12	0	12	264
Brick & Tile/ Maker	9	3	3	0	15	0	0	0	15
Total	9	3	3	0	15	0	0	0	15

9.2. PIG VALUE CHAIN-PIG PRODUCERS TABLES

Table A58 Pig Producers: Number & Gender by Province

	Total		Gender			
	N	%	Female	%	Male	%
Kampong Cham	178	44%	54	30%	124	70%
Kratie	116	29%	31	27%	85	73%
Prey Veng	49	12%	4	8%	45	92%
Svay Rieng	63	16%	0	0%	63	100%
Total	406	100%	89	22%	317	78%

Table A59 Pig Producers: Education Level by Province

	N	%	None	Primary	Secondary	Tertiary
Kampong Cham	178	44%	1%	28%	65%	6%
Kratie	116	29%	4%	28%	61%	6%
Prey Veng	49	12%	0%	22%	69%	8%
Svay Rieng	63	16%	2%	24%	71%	3%
Total	406	100%	2%	27%	66%	6%

Table A60 Pig Producers: Age & Pig Raising Experience

Table statistic of Age & Year Experience	Mean	Median	Std.DV
Age-years	38.8	38	9.4
Experience in raising pigs-years	6.4	5	5.3

Table A61 Pig Producers: Household Members

Mean of Household member	F>=15	M>=15	Girls<15	Boys<15
	Mean	Mean	Mean	Mean
Total	1.8	1.9	1.2	1.2
Kampong Cham	1.8	1.9	1.3	1.3
Kratie	1.9	1.7	1.1	0.9
Prey Veng	1.8	2.1	1.2	1.2
Svay Rieng	1.6	1.7	1.0	1.1

Table A62 Pig Producers: MSME Project Facilitated Trainings

	Total	%	K.cham	Kratie	P.Veng	S.Reing	Prov.
	N=406	Total	N=178	N=116	N=46	N=63	Total
Group Meetings with MSME Staff	336	83%	43%	32%	14%	11%	100%
Feed making technique	258	64%	45%	26%	10%	19%	100%
Vaccinations/Medicine	400	99%	44%	29%	12%	16%	100%
Pig Breeding Techniques	251	62%	44%	36%	6%	14%	100%
Pig raising technique	393	97%	44%	29%	12%	15%	100%
Pig Waste Management/Biogas	196	48%	57%	23%	5%	15%	100%
Pig Farm Management	272	67%	45%	37%	4%	14%	100%
Pig Disease Diagnosis	338	83%	47%	31%	9%	13%	100%
Pig sty/Pigpen improvement	318	78%	43%	33%	8%	15%	100%
Basic business Accounting	202	50%	32%	34%	18%	16%	100%
Training: business other than Accounting	110	27%	34%	46%	1%	19%	100%
Training: business advocacy	122	30%	31%	48%	6%	15%	100%
Introduction to Finance Institutions	90	22%	29%	37%	3%	31%	100%
Introduction to Traders	103	25%	31%	46%	4%	19%	100%
Cross provincial Exposure trip	113	28%	50%	27%	15%	9%	100%
International Exposure Trip	30	7%	43%	37%	7%	13%	100%
Total/ % Pig Producer Clients x Prov.	3,532		44%	29%	12%	16%	100%

Table A63 Pig Producers: Gender Breakdown of MSME Project Facilitated Training

	N=3,532	#Female	#Male	Total	%Female	%Male
Group Meetings with MSME Staff		70	266	336	21%	79%
Feed making technique		54	204	258	21%	79%
Vaccinations/Medicine		81	319	400	20%	80%
Pig Breeding Techniques		56	195	251	22%	78%
Pig raising technique		79	314	393	20%	80%
Pig Waste Management/Biogas		53	143	196	27%	73%
Pig Farm Management		58	214	272	21%	79%
Pig Disease Diagnosis		75	263	338	22%	78%
Pig sty/Pigpen improvement		67	251	318	21%	79%
Basic business Accounting		38	164	202	19%	81%
Training: business other than Acct.		19	91	110	17%	83%
Training: business advocacy		30	92	122	25%	75%
Introduction to Finance Institutions		23	67	90	26%	74%
Introduction to Traders		29	74	103	28%	72%
Cross provincial Exposure trip		30	83	113	27%	73%
International Exposure Trip		13	17	30	43%	57%
Total/Means		775	2757	3532	24%	76%

Table A64 Pig Producers: Reported Value Chain Diversification after MSME Project Facilitated Training

	N=375	N	% of enterprises
None		90	24%
Pig Input Service Provider		112	30%
Trader		216	58%
Veterinarian, Pig Pen seller etc. or other Service Provider		47	13%
Total		375	100%

Table A65 Pig Producers: Values of Fixed Capital Investments Since Joining the Project (USD)

	N=406	% of HH Buying	Mean	Median	Std.DV	Max	Sum
Land (Hectares)		38%	\$94	0	403	4,900	38,106
Pigsty/Pigpen (number)		52%	\$202	20	543	6,000	81,864
Trough (number)		51%	\$10	1	21	200	4,058
Feed making machine (number)		2%	\$7	0	51	550	2,670
Artificial Insemination Equipment		1%	\$2	0	18	310	620
Water pump (number)		27%	\$57	0	131	1,150	22,982
Sows (number)		48%	\$277	0	695	7,500	112,273
Boars (number)		7%	\$41	0	201	2,000	16,655
Other Fixed Capital Investments		0%	\$1	0	7	100	275
Total Investment			\$688	\$300			\$279502

Table A66 Pig Producers: Fixed Capital Investments Since Joining the Project (Quantities)

	N=406	Mean	Median	Std.DV	Max	Sum
Land (Hectares)		0.004	0.04	0	0.9	1.52
Pigsty/Pigpen (number)		1.0	1.80	0	20	421
Trough (number)		2.2	3.90	0	30	896
Feed making machine (number)		0.02	0.15	0	1	9
Artificial Insemination Equipment		0.02	0.12	0	1	6
Water pump (number)		0.3	0.47	0	2	113
Sows (number)		1.4	2.90	0		551
Boars (number)		0.14	0.66	0	8	56

Table A67 Pig Producers: Pig Stock in May 2007 (Head)

	N=406	Mean	Median	Std. D	Max	Sum
Piglets		16	10	20	200	6,316
Feeder		8	3	23	400	3,415
Pigs Boars		0	0	1	5	55
Sows		3	2	6	80	1,193
Overall		27	18			10,979

Table A68 Pig Producers: Pig Stock Value in May 2007 (USD)

Pig Stock	Average # of Head	Mean Value per Head	Total Value Pigs
Piglets	16	\$39	\$609
Feeder	8	\$154	\$1,301
Boars	0.1	\$250	\$34
Sows	6	\$200	\$588
Total			\$2,532

Table A69 MSME Pig Producers: Pig Stock Value One Year Before Joining the Project (USD)

	N=406	Mean	Median	Std. D	Max	Sum
Piglets		\$14	10	31	500	\$5,784
Feeder		\$7	2	22	400	\$2902
Pigs Boars		0	0	1	6	\$42
Sows		\$2	1	5	80	\$971
Overall		\$24	16			\$9,699

Table A70 Pig Producers: Cost of pig production one year before joining the Project (USD)

	N=406	Mean	Median	Std. D	Max	Sum
Piglets	124	124	0	282	2,500	50,188
Supplementary Feed	1,084	1,084	500	5,036	100,000	439,993
Vaccine	55	55	10	498	10,000	22,218
Medicine	24	24	5	110	2,000	9,552
Veterinary Service	7	7	0	18	157	2710
Machinery Fuel & Oil	38	38	8	78	912	15,394
Machinery Repair/Maintenance	5	5	0	20	250	2,045
Hired Labor Part-time	1	1	0	10	200	223
Hired Labor Fulltime	14	14	0	249	5,000	5,880
Transport Costs	10	10	0	22	200	4,135
Trader license fees	0	0	0	0	10	10
Slaughterhouse fees	0	0	0	0	0	0
Inspection Fees	0	0	0	0	0	0
Overall Cost		\$1,360	\$718			\$552,348

Table A71 Pig Producers: Credit- Investment Capital by source (USD)

	N=406	Count	%
Own money only		349	86%
Own money and borrow		52	13%
Borrow Only		5	1%
Total		406	100%

Table A72 Pig Producers: Credit Type (USD)

	N=52	N	%
Financial Institution		30	58%
Family and/or friends		14	27%
Private money lender		7	13%
Input suppliers (Feed & Medicine Credit)		1	2%
Total		52	100%

Table A73 Pig Producers: Credit Amount by Type (USD)

	N=57	Mean	Median	St.Dv	Max	Sum
Financial Institution		648	150	1071	5,000	36,925
Family and/or friends		761	500	752	2,000	13,700
Private money lender		392	300	245	1,000	3,920
Input suppliers (Feed & Medicine Credit)		5	0	40	300	300

Table A74 Pig Producers: Number of head sold the last year before joining the project

	N=406	Mean	Median	Std. D	Max	Sum
Piglets		15	0	39	400	6,061
Feeder		16	10	22	300	6,637
Pigs Boars		1	0	15	300	313
Sows		2	0	30	600	737
Overall Head Sold		34	20			13,748

Table A75 Pig Producers: Gross Sales Revenue: the last year before joining the project (USD)

	N=406	Mean	Median	Std. D	Max	Sum
Piglets		\$359	0	1,092	\$12,000	\$145,817
Feeder		\$1,605	\$871	2,745	\$33,000	\$651,627
Pigs Boars		\$190	0	3,722	\$75,000	\$77,104
Sows		\$447	0	7,452	\$150,000	\$181,501
Total Sale Revenue		\$2,601	\$1200			\$1,056,049

Table A76 Pig Producers: Gross Sale Revenue as a percentage of Total Cost During Project 2008 & the last year before joining the project (USD)

	During_Project	Before_Project
	186%	191%

Table A77 Pig Producers: Percentage with Gross Profit > \$0 USD

N=406	During Project		Before Project	
	Profit>0	Profits<=0	Profit>0	Profits<=0
% of Producer with Gross profit	90%	10%	82%	18%

Table A78 Pig Producers: Household Labor Employment Pre-project (persons)

	N=406	Mean	Median	Std. D	Max	Sum
Females-Aged 15-24 yrs.		0.53	0.00	0.81	3.00	217
Females-Aged >=25 yrs.		0.99	1.00	0.58	6.00	402
Males-Aged 15-24 yrs.		0.58	0.00	0.92	5.00	235
Males-Aged >=25 yrs.		1.06	1.00	0.72	6.00	429
Total Labor employment		3.16	3.00			1,283

Table A79 Pig Producers: Hired Labor Employment Pre-project & During Project (persons)

Hire Labor Employment	Before the Project		During the project	
	N	%	N	%
Full-time labor-female	0.00	0.00	1.00	3.03
Full-time labor-male	10.00	66.67	28.00	84.85
Casual labor-female	0.00	0.00	0.00	0.00
Casual labor-male	5.00	33.33	4.00	12.12
Total Labor	15.00	100.00	33.00	100.00

Table A80 Productivity Indicators Pig Mortality Pre-Project

N=392	Changes in Productivity-Mortality:			
	Mean	Median	Std. D	Max
Piglet Mortality Rate %	15.5	10.0	22.0	100
Feeder pig Mortality Rate %	4.0	0.0	12.9	100
Boar/Sow Mortality Rate %	1.9	0.0	10.2	100
Total	21.4			

Table A81 Productivity Indicators: Pig Mortality During Project 2008

N=392	Changes in Productivity-Mortality: During Project			
	Mean	Median	Std. D	Max
Piglet Mortality Rate %	9.7	1.0	17.7	100
Feeder pig Mortality Rate %	2.8	0	10.4	100
Boar/Sow Mortality Rate %	1.1	0	8.6	100
Total	13.6			

Table A82 Productivity Indicators: Pig Epidemics Pre-Project & During Project 2008

Increased mortality rate from Incidence of Pig Epidemic	Before the project		during the project	
	N	%	N	%
Yes	175	43	148	36
No	217	53	258	64
Total	392	100	406	100

Table A83 Productivity Indicators: Mean Feeder Pig Sale Weight kg. Pre-Project 2008

Valid N=337	Mean Kg of Feeder at Sale		For Valid N	
	N	%		
N/A	69	17%	Mean	76
60-70 Kg	139	41%	Median	75
71-80 Kg	123	37%	St.Dv	12
81-90 Kg	53	16%	Min	60
91-100 Kg	16	5%	Max	150
>100 Kg	6	2%	Sum	25714

Table A84 Productivity Indicators: Mean Feeder Pig Sale Weight kg. During Project 2008

Valid N=344	Mean Kg of Feeder at Sale		For Valid N	
	N	%		
N/A	62	15%	Mean	79
60-70 Kg	100	25%	Median	80
71-80 Kg	149	37%	St.Dv	14
81-90 Kg	75	18%	Min	60
91-100 Kg	13	3%	Max	250
>100 Kg	7	2%	Sum	27123

Table A85 Productivity Indicators: Months for Pig Growth to 80-90 kg. During Project 2008

Valid N=344	N	%		
N/A	62	15.27	Mean	129
< 3 months	3	29.1%	Median	120
3-4 months	220	43.3%	St.Dv	31
4-5 months	75	21.8%	Min	60
5-6 months	33	3.8%	Max	270
6-7 months	8	2.0%	Sum	44358
> 7 months	5	1.5%		
Valid Total	344			

Table A86 Productivity Indicators: Months for Pig Growth to 80-90 kg. Pre-Project

Valid N=337	N	%		
N/A	69		Mean	167
< 3 months	0	0.0%	Median	150
3-4 months	103	30.6%	St.Dv	53
4-5 months	66	19.6%	Min	90
5-6 months	82	24.3%	Max	360
6-7 months	43	12.8%	Sum	56226
> 7 months	43	12.8%		
Valid Total	337			

Table A87 Pig Producers: Pig Enterprise as Percent of Total Household Income Pre-Project & 2008

Pig Production Enterprise as % of Total HH Cash Income N=406	Pre-Project	During Project
	%	%
N/A	2	0
<10%	6	5
10%-<20%	15	7
20%-<30%	22	16
30%-<40%	21	18
40%-<50%	18	23
50%-<60%	9	15
60%-<70%	4	9
70%-<80%	1	5
80%-<90%	1	1
90%-100%	0	1

Table A88 Pig Producers: Rated Importance of MSME Assistance for Broad Rural Poverty Alleviation

N=406	N	%
Not Important	0.	0
A little Important	11	3
Somewhat Important	45	11
Quite important	167	41
Very Important	183	45

Table A89 Pig Producers: MSME Impact on Extension of Years of Children's Education

N=406	N	%
Yes	316	78
No	90	22
Total	406	100

Table A90 Pig Producers: MSME Impact Number of Children's Education Years Extended

N=406	Girls	Boys
Mean	1.2	1.2
Median	1.0	1.0
St.Dv	0.9	1.0
Sum	372	370

Table A91 Pig Producers: Adoption Rates of Improved Accounting Practices

N=406	N	%
Yes	65	16
No	341	84
Total	406	100

Table A92 Pig Producers: Adoption Rates of Improved Accounting Practices due to MSME

	N=65	N	%
Yes		40	62
No		25	38
Total		65	100

Table A93 Pig Producers: Percentage Joining Business Associations/groups since joining MSME

	N=406	N	%
Yes		158	39
No		248	61
Total		406	100

PIG VALUE CHAIN- VETERINARIANS TABLES

Table A94 Veterinarians: Number of Sample Enterprises and Owner Gender By Province

	Total		Gender			
	N	%	Female	%	Male	%
Kampong Cham	31	48%	4	13%	27	87%
Kratie	6	9%	0	0%	6	100%
Prey Veng	17	27%	1	6%	16	94%
Svay Rieng	10	16%	0	0%	10	100%
Total	64	100%	5	8%	59	92%

Table A95 Veterinarians: Education Levels By Province

	N	%	Primary	Secondary	Tertiary
Kampong Cham	31	48%	1	26	4
Kratie	6	9%	0	4	2
Prey Veng	17	27%	0	2	15
Svay Rieng	10	16%	0	10	0
Total	64	100%	1	42	21

Table A96 Veterinarians: Age & Enterprise Experience

	Mean	Median	Std.DV	Min	Max
Age-Years	37.4	37.0	8.8	23.0	60.0
Veterinarian Experience-Years	6.9	6.0	6.0	0.0	30.0

Table A97 Veterinarian: Household Members

Household Member	F>=15	M>=15	Chil<15
	Mean	Mean	Mean
Total	1.8	1.8	1.5
Kampong Cham	2.0	2.1	1.5
Kratie	1.2	1.5	2.2
Prey Veng	1.4	1.2	1.5
Svay Rieng	1.9	1.7	1.2

Table A98 Veterinarians: MSME Pig Producer Client Capacity Building Activities

	N=323	Total	%
Group Meetings with MSME Staff	34	34	11%
Feed making technique	55	55	17%
Vaccinations/Medicine	63	63	20%
Pig Breeding Techniques	30	30	9%
Pig raising technique	65	65	20%
Pig Waste Management/Biogas	0	0	0%
Pig Farm Management	0	0	0%
Pig Disease Diagnosis	68	68	21%
Pig sty/Pigpen improvement	0	0	0%
Basic business Accounting	8	8	2%
Training: business other than Accounting	0	0	0%
Training: business advocacy	0	0	0%
Introduction to Finance Institutions	0	0	0%
Introduction to Traders	0	0	0%
Cross provincial Exposure trip	0	0	0%
International Exposure Trip	0	0	0%
	323		

Table A99 Veterinarians: Non- Project Pig Producer Capacity Building Activities

Non MSME Pig Producer Training: Number of Training Sessions	Total N=634	% Total
Group Meetings with MSME Staff	0	0%
Feed making technique	5	1%
Vaccinations/Medicine	185	29%
Pig Breeding Techniques	17	3%
Pig raising technique	207	33%
Pig Waste Management/Biogas	0	0%
Pig Farm Management	0	0%
Pig Disease Diagnosis	168	26%
Pig sty/Pigpen improvement	52	8%
Basic business Accounting	0	0%
Training: business other than Accounting	0	0%
Training: business advocacy	0	0%
Introduction to Finance Institutions	0	0%
Introduction to Traders	0	0%
Cross provincial Exposure trip	0	0%
International Exposure Trip	0	0%
Total	634	100%

Table A100 Veterinarians: Mean New Investments Since Joining the MSME Project (Quantities).

	N=64	% of HH Buying	Mean	Median	Std.DV	Max	Sum
Land (Hectares)		2%	2.3	0.0	18.8	150	150
Business shop/office		0%	0.0	0.0	0.0	0	0
Storage facilities/structures		2%	313	0.0	2,500	20,000	20,000
Storage equipment		17%	10	0.0	63	500	646
Transport		0%	0	0.0	0.0	0	0
Machinery		8%	63	0.0	256	1,700	4,050
Equipment		45%	29	0.0	100	660	1,836
Other Fixed Capital Investments		8%	14	0.0	47	280	684
Total Investment							27366

Table A101 Veterinarians: Sources of Capital for Investment 2008.

	N=79	Count	%
Own money only		59	92%
Own money and Credit		5	8%
Total		64	100%

Table A102 Veterinarians: Sources of Credit for Investment 2008.

	N=5	N	%
Family and/or friends		3	50%
Private money lender		1	17%
Input suppliers (Feed & Medicine Credit)		1	17%
Total		5	83%

Table A103 Veterinarians: Credit Loan Amounts 2008 (USD).

	N=5	Mean	Median	St.Dv	Min	Max	Sum
Family and/or friends	237	200	220	30	520	950	
Private money lender	300	300		300	300	300	
Input suppliers (Feed & Medicine Credit)	25,125	25,125	35,179	250	50,000	50,250	

Table A104 Veterinarians: Proportion with Sale of Goods & Services on Credit 2008.

	N=64	N	%
Yes	49	77%	
No	15	23%	
Total	64	100%	

Table A105 Veterinarians: Types of Clients with Good & Services on Credit 2008.

	N=49	N	%
Input supplier	2	4%	
Producer	46	94%	
Trader	1	2%	
Service provider	2	4%	

Table A106 Veterinarians: Credit Amounts for Good & Services by Client Type 2008 (USD).

	N=49	Mean	Median	St.Dv	Max	Sum
Input supplier	21	0	143	1000	1015	
Producer	162	75	430	3000	7934	
Trader	1	0	7	50	50	
Service provide	5	0	29	20	250	
Overall Credit	189	80			9250	

Table A107 Veterinarians: Proportion with Cash Loan Credit to Clients 2008.

	N=64	N	%
Yes	7	11%	
No	57	89%	
Total	64	100%	

Table A108 Veterinarians: Types of Clients with Cash Loan Credit 2008.

	N=7	N	%
Producer	5	71%	
Trader	1	14%	
Service provider	1	14%	

Table A109 Veterinarians: Cash Loan Credit Amounts By Type of Client 2008 (USD).

	N=63	Mean	Median	St.Dv	Max	Sum
Producer	86	100.0	86	250	600	
Trader	8.6	0.0	23	60	60	
Service provider	14	0.0	38	100	100	
Total	109				760	

Table A110 Veterinarians: Costs of Business Pre-Project (USD).

	N=64	Mean	Median	Std. D	Max	Sum
Office/Shop Outlet rent & maintenance	0	0	0	0	0	0
Vaccine	255	18	1,290	10,000	16,313	
Medicine	361	73	1,329	10,000	23,104	
Consumable supplies	9	4	13	50	577	
Feed Supplements	243	0	1,875	15,000	15,550	
Machinery Fuel & Oil	47	10	74	342	3,027	
Machinery Repair/Maintenance	2	0	6	25	149	
Electricity supply	2	0	19	150	150	
Hired Labor Part-time	0	0	0	0	0	
Hired Labor Fulltime	3	0	23	180	180	
Hired Transport Costs	17	0	125	1,000	1,073	
Trader license fees	0	0	0	0	0	
Slaughterhouse fees	0	0	0	0	0	
Inspection Fees	0	0	0	0	0	
Other	0	0	0	0	0	
Total	939	165				60,122

Table A111 Veterinarians: Volume of Sales/Number Of Customers Pre-Project.

	N=64	Mean	Median	Std. D	Max	Sum
Vet service fee	147	55	203	900	9,413	
Medicine Sales	51	0	93	400	3,242	
Vaccine Sales	50	0	170	1200	3,195	
Feed Supplement Sales	0	0	3	25	25	
Overall	248					15,875

Table A112 Veterinarians: Gross Sales Revenues Pre-Project.

	N=64	Mean	Median	Std. D	Max	Sum
Vet service fee	\$529	\$194	928	\$5,200	\$33,864	
Medicine Sales	\$472	0	2,527	\$20,000	\$30,222	
Vaccine Sales	\$505	0	2,832	\$20,000	\$32,318	
Feed Supplement Sales	\$10	0	78	\$625	\$625	
Overall	\$1,516	\$283				\$97,029

Table A113 Veterinarians: Household Labor Employment Pre-Project.

Table Statistic	HH members Labor: Before Joining MSME					
	N=64	Mean	Median	Std. D	Max	Sum
Females-Aged 15-24 years	0.2	0.0	0.9	7	14	
Females-Aged >=25 years	0.4	0.0	0.6	2	25	
Males-Aged 15-24 years	0.2	0.0	0.4	2	11	
Males-Aged >=25 years	0.8	1.0	0.7	5	54	
Total Labor employment	1.6	1.0	1.6	10	104	

Table A114 Veterinarians: Household Labor Employment During the Project 2008.

Table Statistic N=64	HH members Labor: During the project				
	Mean	Median	Std. D	Max	Sum
Females-Aged 15-24 years	0.2	0.0	0.8	6	13
Females-Aged >=25 years	0.5	0.0	0.6	2	30
Males-Aged 15-24 years	0.2	0.0	0.4	2	12
Males-Aged >=25 years	1.0	1.0	0.9	5	65
Total Labor employment	1.9	1.0	1.5	8	120

Table A115 Veterinarians: Household Labor Pre-Project & During the Project 2008 (Persons).

N=64	Before the Project		During the project	
	N	%	N	%
Females-Aged 15-24 years	14	13	13	11
Females-Aged >=25 years	25	24	30	25
Males-Aged 15-24 years	11	11	12	10
Males-Aged >=25 years	54	52	65	54
Total Labor employment	104	100	120	100

Table A116 Veterinarians: Hired Labor Employment Pre-Project & During the Project 2008.

N=64	Before the Project		During the project	
	N	%	N	%
Full-time labor-female	0	0	0	0
Full-time labor-male	1	100	1	100
Casual labor-female	0	0	0	0
Casual labor-male	0	0	0	0
Total Labor	1	100	1	100

Table A117 Veterinarians: Productivity Indicators Pre-Project & During the Project 2008.

Productivity Indicator N=64	Number of Customers				
	Mean	Median	Std. D	Max	Sum
Veterinarian -mean service calls per week - Pre Project	3.2	3.0	3	10	208
Veterinarian -average service calls per week -During Project 2008	3.7	3.0	3	11	240

Table A118 Veterinarians: Vet. Enterprise as Percent of Total Household Income Pre-Project & 2008

Veterinarian Enterprise as % of Total HH Cash Income N=64	Pre-Project	During Project
	%	%
N/A	9%	0
<10%	11%	15%
10%-<20%	24%	13%
20%-<30%	13%	20%
30%-<40%	9%	15%
40%-<50%	10%	9%
50%-<60%	3%	4%
60%-<70%	3%	4%
70%-<80%	0%	1%
80%-<90%	0%	0%
90%-100%	0%	0%

Table A119 Veterinarians: Rated Importance of MSME Assistance for Broad Rural Poverty Alleviation

Veterinarians: Importance of the project To Poverty Alleviation N=64	Important of the project	
	N	%
Not Important	0	0%
A little Important	2	3%
Somewhat Important	7	11%
Quite important	32	50%
Very Important	23	36%

Table A120 Veterinarians: MSME Impact on Extension of Years of Children’s Education

	N=64	N	%
Yes		38	59%
No		26	41%
Total	64	64	100%

Table A121 Veterinarians: MSME Impact Number of Children’s Education Years Extended

N=64	Years Ed. Extended	
	Girls	Boys
Mean	1.1	0.9
Median	1.0	1.0
St.Dv	1.0	0.9
Sum	40	33

9.3. PIG VALUE CHAIN- PIG INPUT SUPPLIERS TABLES

Table A122 Input Suppliers: Number of Sample Enterprises & Owner Gender by Province

	Total		Gender			
	N	%	Female	%	Male	%
Kampong Cham	8	53%	0	0%	8	53%
Kratie	2	13%	0	0%	2	13%
Prey Veng	2	13%	0	0%	2	13%
Svay Rieng	3	20%	0	0%	3	20%
Total	15	100%	0	0%	15	100%

Table A123 Input Suppliers: Education Level by Province

	Total		Education Level		
	N	%	Primary	Secondary	Tertiary
Kampong Cham	8	53%	0	2	6
Kratie	2	13%	0	1	1
Prey Veng	2	13%	0	0	2
Svay Rieng	3	20%	1	2	0
Total	15	100%	1	5	9

Table A124 Input Suppliers: Age & Enterprise Experience

	Mean	Median	Std.DV	Min	Max
Age-Years	38.5	38.0	11.8	23.0	58.0
Experience as an Input Provider-Years	5.7	5.0	4.4	0.0	15.0

Table A125 Input Suppliers: Household Members

Household members	F>=15	M>=15	Chil<15
	Mean	Mean	Mean
Total	1.7	2.0	1.3
Kampong Cham	1.6	2.0	1.0
Kratie	1.0	1.5	2.5
Prey Veng	2.5	2.5	1.5
Svay Rieng	1.7	2.0	1.0

Table A126 Input Suppliers: MSME Project Facilitated Trainings

	Total N=938	% Total
Group Meetings with MSME Staff	105	11%
Feed making technique	120	13%
Vaccinations/Medicine	70	7%
Pig Breeding Techniques	55	6%
Pig raising technique	138	15%
Pig Waste Management/Biogas	40	4%
Pig Farm Management	25	3%
Pig Disease Diagnosis	138	15%
Pig sty/Pigpen improvement	50	5%
Basic business Accounting	125	13%
Training: business other than Accounting	0	0%
Training: business advocacy	0	0%
Introduction to Finance Institutions	0	0%
Introduction to Traders	0	0%
Cross provincial Exposure trip	20	2%
International Exposure Trip	52	6%
	938	100%

Table A127 Input Suppliers: Non- Project Pig Producer Capacity Building Activities

	Total N=365	% Total
Group Meetings with MSME Staff	0	0%
Feed making technique	140	38%
Vaccinations/Medicine	100	27%
Pig Breeding Techniques	25	7%
Pig raising technique	0	0%
Pig Waste Management/Biogas	0	0%
Pig Farm Management	0	0%
Pig Disease Diagnosis	30	8%
Pig sty/Pigpen improvement	40	11%
Basic business Accounting	30	8%
Training: business other than Accounting	0	0%
Training: business advocacy	0	0%
Introduction to Finance Institutions	0	0%
Introduction to Traders	0	0%
Cross provincial Exposure trip	0	0%
International Exposure Trip	0	0%
	365	100%

Table A128 Input Suppliers: Mean New Investments Since Joining the MSME Project (Quantities).

N=15	% of HH Buying	Mean	Median	Std.DV	Max	Sum
Land (Hectares)	7%	\$67	\$0	\$258	\$1,000	\$1,000
Business shop/office	20%	\$187	\$0	\$522	\$2,000	\$2,800
Storage facilities/structures	27%	\$3,850	\$0	\$10,383	\$40,000	\$57,750
Storage equipment	20%	\$45	\$0	\$130	\$500	\$670
Transport	13%	\$37	\$0	\$97	\$300	\$550
Machinery	7%	\$33	\$0	\$129	\$500	\$500
Equipment	20%	\$14	\$0	\$36	\$105	\$209
Other Fixed Capital Investments	0%	\$0	\$0	\$0	\$0	\$0
Total Investment	53%	\$4,232	\$4			\$63,479

Table A129 Input Suppliers: Costs of Business Pre-Project (USD).

N=15	Cost of Business				
	Mean	Median	Std. D	Max	Sum
Office/Shop Outlet rent & maintenance	\$87	\$0	\$229	\$700	\$1,300
Vaccine	\$1,662	\$225	\$2,660	\$9,200	\$24,925
Medicine	\$5,265	\$2,000	\$11,347	\$45,000	\$78,975
Consumable supplies	\$934	\$100	\$1,918	\$7,200	\$14,010
Feed Supplements	\$61,099	\$20,000	\$98,290	\$330,000	\$916,490
Machinery Fuel & Oil	\$504	\$0	\$1,936	\$7,500	\$7,556
Machinery Repair/Maintenance	\$122	\$0	\$464	\$1,800	\$1,830
Electricity supply	\$269	\$40	\$509	\$1,800	\$4,030
Hired Labor Part-time	\$106	\$0	\$207	\$650	\$1,590
Hired Labor Fulltime	\$246	\$0	\$426	\$1,500	\$3,685
Hired Transport Costs	\$204	\$0	\$521	\$2,000	\$3,060
Trader license fees	\$0	\$0	\$0	\$0	\$0
Slaughterhouse fees	\$0	\$0	\$0	\$0	\$0
Inspection Fees	\$0	\$0	\$0	\$0	\$0
Other	\$0	\$0	\$0	\$0	\$0
Total	\$70,497	\$23,350			\$1,057,451

Table A130 Input Suppliers: Sources of Capital for Investment 2008.

N=15	MSME Credit	
	Count	%
Own money only	14	93%
Own money and borrow	1	7%
Total	15	100%

Table A131 Input Suppliers: Sources of Credit for Investment 2008.

N=1	N	%	\$
Input suppliers (Feed & Medicine Credit)	1	100%	50,000
Total	1	100%	

Table A132 Input Suppliers: Proportion with Sale of Goods & Services on Credit 2008.

	Clients on Credit	
	N	%
N=15		
Yes	14	93%
No	1	7%
Total	15	100%

Table A133 Input Suppliers: Types of Clients with Good & Services on Credit 2008.

	Type of clients on credit	
	N	%
N=14		
Input supplier	6	43%
Producer	12	86%
Service provider	2	14%

Table A134 Input Suppliers: Credit Amounts for Good & Services by Client Type 2008 (USD).

	Credit Amounts				
	Mean	Median	St.Dv	Max	Sum
N=14					
Input supplier	\$974	\$0	\$2,607	\$10,000	\$14,613
Producer	\$1,586	\$250	\$2,688	\$10,000	\$23,784
Service provide	\$217	\$0	\$589	\$2,000	\$3,250
Overall Credit	\$2,776	\$750			\$41,646

Table A135 Input Suppliers: Costs of Business Pre-Project (USD).

Input Suppliers	Cost of Business before project				
	Mean	Median	Std. D	Max	Sum
N=15					
Office/Shop Outlet rent & maintenance	\$87	\$0	\$229	\$700	\$1,300
Vaccine	\$1,662	\$225	\$2,660	\$9,200	\$24,925
Medicine	\$5,265	\$2,000	\$11,347	\$45,000	\$78,975
Consumable supplies	\$934	\$100	\$1,918	\$7,200	\$14,010
Feed Supplements	\$61,099	\$20,000	\$98,290	\$330,000	\$916,490
Machinery Fuel & Oil	\$504	\$0	\$1,936	\$7,500	\$7,556
Machinery Repair/Maintenance	\$122	\$0	\$464	\$1,800	\$1,830
Electricity supply	\$269	\$40	\$509	\$1,800	\$4,030
Hired Labor Part-time	\$106	\$0	\$207	\$650	\$1,590
Hired Labor Fulltime	\$246	\$0	\$426	\$1,500	\$3,685
Hired Transport Costs	\$204	\$0	\$521	\$2,000	\$3,060
Trader license fees	\$0	\$0	\$0	\$0	\$0
Slaughterhouse fees	\$0	\$0	\$0	\$0	\$0
Inspection Fees	\$0	\$0	\$0	\$0	\$0
Other	\$0	\$0	\$0	\$0	\$0
Total	\$70,497	\$23,350	\$100,927	\$342,150	\$1,057,451

Table A136 Input Suppliers: Volume of Sales/Number Of Customers Pre-Project.

	N=15	Number of customers before project				
		Mean	Median	Std. D	Max	Sum
Medicine Sales		327	150	583	2000	4910
Vaccine Sales		298	100	756	3000	4470
Feed Supplement Sales		475	100	882	3200	7120
Other Specify		0	0	0	0	0
Overall		1100	350			16500

Table A137 Input Suppliers: Volume of Sales/Number Of Customers 2008

	N=15	Number of customers				
		Mean	Median	Std. D	Max	Sum
Medicine Sales		334	195	517	2100	5015
Vaccine Sales		509	180	1252	5000	7640
Feed Supplement Sales		1020	300	1602	5400	15295
Other Specify		0	0	0	0	0
Overall		1863	865			27950

Table A138 Input Suppliers: Gross Sales Revenues Pre-Project.

	N=15	Total Revenue before project				
		Mean	Median	Std. D	Max	Sum
Medicine Sales		\$12,718	\$2,250	\$38,130	\$150,000	\$190,770
Vaccine Sales		\$2,425	\$125	\$4,140	\$15,000	\$36,375
Feed Supplement Sales		\$119,007	\$24,250	\$213,989	\$800,000	\$1,785,100
Other Specify		\$0	\$0	\$0	\$0	\$0
Overall		\$134,150	\$35,500			\$2,012,245

Table A139 Input Suppliers: Percentage with Gross Profit > \$0 USD

	N=15	During Project		Before Project	
		Profit>0	Profits<=0	Profit>0	Profits<=0
% of enterprises with gross profit		100%	0%	73%	27%

Table A140 Input Suppliers: Household Labor Employment Pre-Project

	N=15	Mean	Median	Std. D	Max	Sum
Females-Aged 15-24 years		0.40	0.00	0.63	2.00	6.00
Females-Aged >=25 years		0.87	1.00	0.64	2.00	13.00
Males-Aged 15-24 years		0.40	0.00	0.74	2.00	6.00
Males-Aged >=25 years		0.80	1.00	0.56	2.00	12.00
Total Labor employment		2.47	3.00	1.41	5.00	37.00

Table A141 Input Suppliers: Household Labor Employment During the Project 2008.

	N=15	Before the Project		During the project	
		N	%	N	%
Females-Aged 15-24 years		6	16	8	20
Females-Aged >=25 years		13	35	13	32
Males-Aged 15-24 years		6	16	6	15
Males-Aged >=25 years		12	32	14	34
Total Labor employment		37	100	41	100

Table A142 Input Suppliers: Household Labor Pre-Project & During the Project 2008 (Persons).

	N=15	HH members Labor: During the project				
		Mean	Median	Std. D	Max	Sum
Females-Aged 15-24 years		0.5	0.00	0.83	3.00	8.00
Females-Aged >=25 years		0.9	1.00	0.64	2.00	13.00
Males-Aged 15-24 years		0.40	0.00	0.63	2.00	6.00
Males-Aged >=25 years		0.93	1.00	0.59	2.00	14.00
Total Labor employment		2.73	3.00	1.16	5.00	41.00

Table A143 Input Suppliers: Hired Labor Employment Pre-Project & During the Project 2008.

	N=15	Before the Project		During the project	
		N	%	N	%
Full-time labor-female		1	6	1	5
Full-time labor-male		6	33	6	27
Casual labor-female		0	0	3	14
Casual labor-male		11	61	12	55
Total Labor		18	100	22	100

Table A144 Input Suppliers: Hired Labor Daily Pay Rates During the Project 2008.

	N=15	Daily Rate of Workers: During the Project (riel)				
		Mean	Median	Std. D	Max	Sum
Full-time labor-female		8000	8000	0	8000	8000
Full-time labor-male		6000	6000	1826	8000	24000
Casual labor-female		12000	12000	0	12000	12000
Casual labor-male		10250	11000	4646	15000	41000

Table A145 Input Suppliers: Hired Labor Daily Pay Rates Pre-Project 2008.

Input Suppliers	N=15	Daily Rate of Workers: Before Joining MSME (riel)				
		Mean	Median	Std. D	Max	Sum
Full-time labor-female		8000	8000	0	8000	8000
Full-time labor-male		6000	6000	1825	8000	24000
Casual labor-female		0	0	0	0	0
Casual labor-male		8000	9000			

Table A146 Input Suppliers: Productivity Indicators Pre-Project & During the Project 2008.

	N=15	Productivity Indicator: During the Project				
		Mean	Median	Std. D	Max	Sum
Input Suppliers-average customers/ week - Pre Project		40	35	34	125	602
Input Suppliers-average customers/ week -During Project 2008		73	62	57	200	1,093

Table A147 Input Suppliers: Enterprise as Percent of Total Household Income Pre-Project & 2008

% of Total HH Cash Income N=64	Pre-Project	During Project
	%	%
10%<-20%	8%	7%
20%<-30%	8%	0%
30%<-40%	8%	13%
40%<-50%	23%	13%
50%<-60%	15%	20%
60%<-70%	8%	0%
70%<-80%	8%	20%
80%<-90%	15%	13%
90%-100%	8%	13%
	100%	100%

Table A148 Input Suppliers: Rated Importance of MSME Assistance for Broad Rural Poverty Alleviation

	N=15	N	%
Not Important		0	0%
A little Important		0	0%
Somewhat Important		0	0%
Quite important		9	60%
Very Important		6	40%

Table A149 Input Suppliers: MSME Impact on Extension of Years of Children's Education

	N=15	Extended Education?	
		N	%
Yes		14	93%
No		1	7%
Total		15	100%

Table A150 Input Suppliers: MSME Impact Number of Children's Education Years Extended

	N=15	Benefits to Children	
		Girls	Boys
Mean		1.1	0.9
Median		1.0	1.0
St.Dv		0.7	0.8
Min		0.0	0.0
Max		2.0	2.0
Sum		15	12

9.4. FISH VALUE CHAIN-FISH PRODUCERS TABLES

Table A151 Fish Producers: MSME Project Facilitated Trainings

Items	Total	%	K.cham	P.Veng
	N=606	Total	N=289	N=317
Group Meetings with MSME Staff	47	84%	71%	94%
Fish Feed making technique	36	64%	63%	66%
Fish Health Management	40	71%	92%	56%
Fish Medicine used	35	63%	96%	38%
Fish raising technique	54	96%	100%	94%
Pond Selection	40	71%	63%	78%
Pond Construction	45	80%	92%	72%
Pond Preparation	49	88%	88%	88%
Stocking Density	39	70%	75%	66%
Pond Water Quality	38	68%	75%	63%
Fish Feeding Techniques	40	71%	92%	56%
Fish Harvest Techniques	30	54%	67%	44%
Basic business Accounting	24	43%	50%	38%
Training: business other than Accounting	7	13%	29%	0%
Training: business advocacy	18	32%	38%	28%
Introduction to Finance Institutions	19	34%	33%	34%
Introduction to Traders	29	52%	50%	53%
Cross provincial Exposure trip	15	27%	29%	25%
International Exposure Trip	1	2%	4%	0%
Total	606			

Table A152 Fish Producers: MSME Project Facilitated Trainings Gender Balance

Table Frequency	MSME Capacity Building Gender Balance		
	N=606	% Female	% Male
Group Meetings with MSME Staff	47	23%	77%
Fish Feed making technique	36	28%	72%
Fish Health Management	40	23%	78%
Fish Medicine used	35	26%	74%
Fish raising technique	54	24%	76%
Pond Selection	40	25%	75%
Pond Construction	45	24%	76%
Pond Preparation	49	22%	78%
Stocking Density	39	31%	69%
Pond Water Quality	38	24%	76%
Fish Feeding Techniques	40	33%	68%
Fish Harvest Techniques	30	30%	70%
Basic business Accounting	24	33%	67%
Training: business other than Accounting	7	43%	57%
Training: business advocacy	18	22%	78%
Introduction to Finance Institutions	19	32%	68%
Introduction to Traders	29	24%	76%
Cross provincial Exposure trip	15	53%	47%
International Exposure Trip	1	100%	0%
Total	606	27%	73%

Table A153 Fish Producers: Fixed Capital Investments since joining the Project by Type

	N=56	% of HH Buying	Mean \$	Median	Std.DV	Max	Sum
Land (Hectares)		14%	592	0	2,686	18,000	33,175
Fish Pond Excavation- cubic m.		37%	434	0	1,566	10,500	24,309
Cement Tank		4%	10	0	67	500	543
Cooking Pan & Cooker		18%	57	0	167	900	3,210
Feed making machine (number)		14%	54	0	158	700	3,025
Water pump (number)		11%	18	0	65	320	1,010
Tilapia brood stock-Kg.		14%	3	0	13	88	187
Carp Fish brood stock-Head		12%	4	0	21	150	236
Other Fixed Capital Investments		56%	96	20	254	1,350	5,369
Total			1269	94			

Table 154 Fish Producers: Gross Sales Revenue Pre-Project (USD) Total & By Province

	N=56	Mean	Median	Std. D	Max	Sum
Mature Fish (Sale to Market)		905	239	1,749	7,800	50,694
Fingerling (Sale to Market)		20	0	150	1,125	1,125
Overall Sale Revenue		973	331	1,738	7,833	54,509
Mature Fish (consume in family)		48	19	82	338	2,690

Table A155 Fish Producers: Household Labor Employment Pre-Project (persons)

	N=56	Mean	Median	Std. D	Max	Sum
Females-Aged 15-24 years		0.57	0.00	0.87	3.00	32.00
Females-Aged >=25 years		1.14	1.00	0.52	2.00	64.00
Males-Aged 15-24 years		0.45	0.00	0.78	3.00	25.00
Males-Aged >=25 years		1.07	1.00	0.76	5.00	60.00
Total Labor employment		3.23	3.00	1.95	10.00	181.00

Table A156 Fish Producers: Hired Labor Employment During Project 2008 (persons)

	N=56	Mean	Median	Std. D	Max	Sum
Full-time labor-female		0.00	0.00	0.00	0.00	0.00
Full-time labor-male		0.02	0.00	0.13	1.00	1.00
Casual labor-female		0.00	0.00	0.00	0.00	0.00
Casual labor-male		0.13	0.00	0.51	3.00	7.00

Table A157 Fish Producers: Hired Labor Employment Pre-Project 2008 (persons)

	N=56	Mean	Median	Std. D	Max	Sum
Full-time labor-female		0.00	0.00	0.00	0.00	0.00
Full-time labor-male		0.02	0.00	0.13	1.00	1.00
Casual labor-female		0.00	0.00	0.00	0.00	0.00
Casual labor-male		0.05	0.00	0.23	1.00	3.00

Table A158 Fish Producers: Productivity Indicators During Project 2008

	N=56	Mean	Median	Std. D	Max
Estimated total kg of fish sold in one year	1,733	560	2,476	9,500	
Fish Pond Productivity / m2	1.74				
Fish Morality Rate %	13.41	10.00	13.6	50	
Average Fish live weight at sale-Kg.	0.74	1.00	0.4	1.20	
Num. of days for fish growth to sale weight	197	240	120	365	
Fish Pond Area (m2)	997	550	1,385	7,200	

Table A159 Fish Producers: Productivity Indicators Pre-Project

	N=56	Mean	Median	Std. D	Max
Estimated total kg of fish sold in one year	1,061	250	2,330	12,000	
Fish Pond Productivity / m2	1.56				
Fish Morality Rate %	14	10	14	60	
Average Fish live weight at sale-Kg.	0.7	1.0	0.4	1.0	
Number of days for fish growth to sale weight	193	240	132	365	
Fish Pond Area (m2)	680	400	785	4,000	

9.5. BRICK & TILE VALUE CHAIN- BRICK & TILE MAKERS TABLES

Table A160 Brick & Tile Makers: Number & Gender by Province

	N	%	Male	%
Kampong Cham	7	58%	7	100%
Kratie	3	25%	3	100%
Prey Veng	2	17%	2	100%
TOTAL	12	100%	12	100%

Table A161 Brick & Tile Makers: Education Level by Province

and Education Level by Province	N	%	None	Primary	Secondary	Tertiary
Kampong Cham	7	58%	0	1	5	1
Kratie	3	25%	0	0	3	0
Prey Veng	2	17%	0	0	2	0
Total	12	100%	0	1	10	1

Table A162 Brick & Tile Makers: Age & Enterprise Experience

Table statistic of Age & Year Experience	Mean	Median	Std.DV	Min	Max
Age-Years	49.8	51	7.1	37	61
Experience in brick/tile making--Years	14.5	16	5.1	5	22

Table A163 Brick & Tile Makers: Household Members

	F>=15	M>=15	Child <15
	Mean	Mean	Mean
Total	2.7	2.3	1.0

Table 164 Brick & Tile Makers: Roles in the Value Chain

N=12	N	%
Brick & Tile Making	11	92%
Brick & Tile Wholesale	4	33%
Brick & Tile Retail	4	33%
Other (specify)	0	0%

Table 165 Brick & Tile Makers: Specific Goods & Services Provided

N=12	N	%
Roof Tiles	12	100%
Floor /Wall Tiles	1	8%
Bricks	12	100%

Table A166 Brick & Tile Makers: MSME Project Facilitated Trainings

Training/Capacity Building Activities N=72	N	%
Group Meetings with MSME Staff	10	83%
Brick & Tile Raw Materials Management	7	58%
Kiln Management	6	50%
Glazing	3	25%
Basic business Accounting	6	50%
Training: business other than Accounting	3	25%
Training: business advocacy	4	33%
Introduction to Finance Institutions	11	92%
Introduction to Traders	5	42%
Cross provincial Exposure trip	6	50%
International Exposure Trip	11	92%
Total	72	100%

Table A167 Brick & Tile Makers: Fixed Capital Investments Since Joining the Project (Quantities)

	N=12	Mean	Median	Std.DV	Max	Sum
Land (Hectares)	0.75	0.53	0.86	2	9.05	
Business shop/office	0.08	0	0.29	1	1	
Construction of new Kilns	1.17	1	1.11	4	14	
Renovation Improvement of existing Kilns	0.25	0	0.87	3	3	
Storage facilities/structures	0.75	0	1.14	3	9	
Storage equipment	15.42	1.5	26.56	80	185	
Transport	9.67	9	9.16	30	116	
Machinery	1.25	1	1.42	4	15	
Equipment	2.08	0.5	3.48	12	25	

Table A168 Brick & Tile Makers: Credit- Investment Capital by source (USD)

	N=12	Count	%
Own money only	8	67	
Own money and borrow	2	17	
Borrow Only	2	17	
Total	12	100	

Table A169 Brick & Tile Makers: Credit Type (USD)

	N=4	N	%
Financial Institution	2	17%	
Family and/or friends	1	8%	
Private money lender	2	17%	
Total	5	42%	

Table A170 Brick & Tile Makers: Credit Amount by Type (USD)

	N=4	Mean	Median	St.Dv	Max	Sum
Financial Institution		16250	7500	23585	50000	65000
Family and/or friends		1250	0	2500	5000	5000
Private money lender		4000	3000	4899	10000	16000

Table A171 Brick & Tile Makers: Proportion with Sale of Goods & Services on Credit 2008.

	N=12	N	%
Yes		8	67%
No		4	33%
Total		12	100%

Table A172 Brick & Tile Makers: Types of Clients with Good & Services on Credit 2008.

	N=8	N	%
Brick & Tile Retailer		2	25%
Builders/Construction firms		6	75%

Table A173 Brick & Tile Makers: Credit Amounts for Good & Services by Client Type 2008 (USD).

	N=8	Mean	Median	St.Dv	Max	Sum
Brick & Tile Retailer		\$688	\$0	\$1,751	\$5,000	\$5,500
Builders/Construction firms		\$13,875	\$11,500	\$16,120	\$50,000	\$111,000
Overall Credit		\$14,563	\$11,500			\$116,500

Table A174 Brick & Tile Makers: Cost of production Pre-Project (USD)

	N=12	Mean	Median	Std. D	Max	Sum
Office/Shop Outlet rent & maint.		0	0	0	0	0
Brick/Tile Raw materials		6,817	6,000	4,512	20,000	81,800
Brick/Tile chemicals		392	0	866	3,000	4,700
Kiln Wood Fuel		10,433	11,750	6,141	20,000	125,200
Water		1	0	3	10	10
Machinery Fuel & Oil		9,022	7,956	5,664	17,520	108,267
Machinery		408	150	848	3,000	4,900
Electricity supply		0	0	0	0	0
Hired Labor Part-time		84,17	10,225	7,225	20,000	101,000
Hired Labor Fulltime		2,508	1,800	3,451	12,000	30,090
Hired Transport Costs		681	500	877	3,000	8,175
Business operation fees		170	100	190	700	2,045
Other		0	0	0	0	0
Overall Cost		\$38,849	\$45,683			\$466,187

Table A175 Brick & Tile Makers: Mean Unit Prices for Bricks & Tiles Pre-Project (USD)

	N=12	Mean	Median	Std. D	Max
Roof Tiles		\$56	\$49	\$32	\$100
Bricks		\$21	\$22	\$5	\$30

Table A176 Brick & Tile Makers: Mean Unit Prices for Bricks & Tiles 2008 (USD)

	N=12	Mean	Median	Std. D	Max
Roof Tiles		\$118	\$81	\$69	\$219
Bricks		\$47	\$45	\$3	\$50

Table 177 Brick & Tile Makers: Volume of Sales Pre-Project (USD)

Table Frequency	Estimate Total number of bricks/tiles sold: Before Project				
	N=12	Mean	Median	Std. D	Max
Roof Tiles	329,226	229,018	308,149	1,250,000	3,950,709
Bricks	607,143	552,381	448,853	1,752,381	7,285,714
Total	936,369	985,712			11,236,423

Table 178 Brick & Tile Makers: Number of Customers Pre-Project (Persons)

	N=12	Mean	Median	Std. D	Max
Roof Tiles		99	95	60	210
Bricks		58	33	43	120
Total		157			310

Table 179 Brick & Tile Makers: Number of Customers 2008 (Persons)

	N=12	Mean	Median	Std. D	Max
Roof Tiles		113	100	68	250
Bricks		245	43	590	2,100
Total		358			2,310

Table 180 Brick & Tile Makers: Gross Sales Revenue Pre-Project (USD)

	N=12	Mean	Median	Std. D	Max	Sum
Roof Tiles		18,437	12,825	17,256	70,000	221,240
Bricks		12,750	11,600	9,426	36,800	153,000
Total		\$31,187	\$30,450			\$374,240

Table 181 Brick & Tile Makers: Costs of Business Pre-Project (USD)

	N=12	Mean	Median	Std. D	Max	Sum
Office/Shop Outlet rent & maint.	0	0	0	0	0	0
Brick/Tile Raw materials	6817	6000	4512	20000	81800	
Brick/Tile chemicals	392	0	866	3000	4700	
Kiln Wood Fuel	10433	11750	6141	20000	125200	
Water	1	0	3	10	10	
Machinery Fuel & Oil	9022	7956	5664	17520	108267	
Machinery	408	150	848	3000	4900	
Electricity supply	0	0	0	0	0	
Hired Labor Part-time	8417	10225	7225	20000	101000	
Hired Labor Fulltime	2508	1800	3451	12000	30090	
Hired Transport Costs	681	500	877	3000	8175	
Business operation fees	170	100	190	700	2045	
Other	0	0	0	0	0	
Overall Cost		\$38,849	\$45,683			\$466,187

Table A182 Brick & Tile Makers: Household Labor Employment Pre-Project (persons)

	N=12	Mean	Median	Std. D	Max	Sum
Females-Aged 15-24 years	0.17	0.00	0.39	1.00	2.00	
Females-Aged >=25 years	0.92	1.00	0.51	2.00	11.00	
Males-Aged 15-24 years	0.17	0.00	0.39	1.00	2.00	
Males-Aged >=25 years	1.08	1.00	0.29	2.00	13.00	
Total Labor employment	2.33	2.00	0.89	4.00	28.00	

Table A183 Brick & Tile Makers: Hired Labor Employment Pre-Project 2008 (persons)

	N=12	Mean	Median	Std. D	Max	Sum
Full-time labor-female	2.5	0.0	5.0	15	30	
Full-time labor-male	8.4	3.0	10.2	30	101	
Casual labor-female	15.3	15.0	16.0	50	183	
Casual labor-male	10.1	10.0	7.1	20	121	

Table A184 Brick & Tile Makers: Hired Labor Daily Pay Rates Pre-Project (riel)

	Mean	Median	Std. D	Max	Sum
Full-time labor-female	9000	6000	6083	16000	27000
Full-time labor-male	10743	9300	5430	20000	75200
Casual labor-female	5625	6000	744	6000	45000
Casual labor-male	5556	6000	726	6000	50000

Table A185 Brick & Tile Makers: Hired Labor Daily Pay Rates 2008 (riel)

	Mean	Median	Std. D	Max	Sum
Full-time labor-fem.	11333	7000	7506	20000	34000
Full-time labor-male	12900	13000	5462	20000	90300
Casual labor-female	7200	8000	1549	8000	72000
Casual labor-male	7200	8000	1549	8000	72000

Table A186 Brick & Tile Makers: Productivity Indicators Pre-Project

	N=12	Mean	Median	Std. D	Min	Max
Average number of tiles sold per month	47,477	23,733	48,743	4,500	150,000	
Average number of bricks sold per month	36,017	31,500	24,093	0	80,000	
Average value of a sale of 1,000 bricks-riel	55	41	32	20	100	
Average value of a sale of 1,000 Tiles-riel	19	19	8	0	28	

Table A187 Brick & Tile Makers: Productivity Indicators 2008

	N=12	Mean	Median	Std. D	Min	Max
Average number of tiles sold per month	56,389	45,000	47,544	5,500	150,000	
Average number of bricks sold per month	38,944	32,500	31,917	2,500	100,000	
Average value of a sale of 1,000 bricks-riel	118	81	69	45	219	
Average value of a sale of 1,000 bricks-riel	47	45	3	43	50	