Esso Exploration & Production Chad Inc.

Village Impact Quarterly Report

Land Use Mitigation Action Plan

Fourth Quarter 2009

Prepared by the EMP Department

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List of Acronyms & terms used in this report

HH	Household.
CdM	Household Chief (Chef de Ménage)
HHM	Household Member. Include the CdM and all it dependents, regardless their age.
LT	Land Take.
Eligible	Generic term to designate an individual that may be eligible to the EMP Resettlement Program.
Potential Eligible	Individual that may be eligible to the EMP Resettlement Program. Analysis must be completed.
True Eligible	Individual eligible to the EMP Resettlement Program.
EMP-IS	EMP Information System: manages Land Acquisition, Socioeconomic and Land return data.
Land Survey	Formally called Cadastre survey. Refer to the measurement of every field, fallow & house of households.
Project Footprint	Total area occupied by the project at a given time (e.g. Compensated but not returned land)

Executive Summary

The Quarterly Village Report provides information to Esso Exploration & Production Chad Inc (EEPCI) management and the International Finance Corporation (IFC) on the progress made in calculating, analyzing and reducing the EEPCI Oil Project (Project) land use impact on villages and households.

Tracking and analysis of land use impact is the purpose of Village Impact Classification and the "Watch List". The classification follows the movement of a village from one category to another in order to judge the effectiveness of Land Use Mitigation Action Plan (LUMAP) or to signal when ongoing project land take requires the Project to review the situation and adjust plans as per the Environmental Management Plan (EMP) principles.

The village impact classification (high, approaching high, medium and low) is also used to:

- Improve the targeting of mitigation activities by defining an OFDA village's specific problems
- Determined eligibility (actual versus estimated land acquisition) for Supplemental Community Compensation

The Fourth Quarter 2009 (4Q09) Village Impact Assessments status is the same as the Third Quarter

- 4 high impact villages
- 4 approaching high villages
- 4 moderate impact villages
- 12 low impact villages

LUMAP maintains a "Watch List" (approaching high) that tracks village land take and return. As of December 2009, three (3) of the moderate impact villages remain in approaching high category because of continuing land acquisition and number of people eligible:

- Bela
- Maikeri
- Mouarom

Now that the survey teams have completed Bero, they have started on a full village survey of Maikeri.

The primary accomplishments of this quarter are:

- Completion of Bero 1-4 and Madjo Bero
- Kome oil field in fill drilling program progressing on a fault block by fault block basis. The Village Land Use Surveys are now complete and will allow immediate identification of any land user whose land will be acquired. Annex 5.5 describes the fault block approach to in fill drilling.
- The manner in which the fault block in fill drill program interfaces and aligns with the goals of the LUMAP to rapidly identify At Risk households and ensure appropriate Resettlement options is also described in Annex

The village land use survey work plan for 1st quarter of 2010 includes:

- Analysis of the Bero data and development of a Site Specific Plan.
- Continued surveillance of the implementation of Site Specific Plans in villages where they are already under way as well as a complete survey of Maikeri.

Village classification

1.1. Summary

The Village classification is calculated using a land use (area of temporary and permanent take) and two socioeconomic criteria (less than 2/3 Corde (c) per HH Member (HHM) before project and currently). Each criterion classifies a village into one of four categories: High, Approaching High, Moderate and Low. **The final categorization** of a village is done **according to its worst placement** by any of the criteria. It should be noted that the socio-economic criterion made possible by the investigation of the village using the new Village Land Survey methodology a more direct measure of impact through the number of currently non-viable individuals among the total population of the village. For villages where the survey is not complete, we have had to rely on declared data collected during compensation; therefore the criterion becomes individuals made non-viable by Project compared to the population of the village.

Once the Village Land Use Survey is complete in a given village, a Site Specific Plan is developed to address heavy impacts. After the site specific plan is completed, the modification in impact is shown on the table below, which represents the **current Quarter's situation**. Any residual impact in villages where Site Specific action is ongoing is reflected by not altering villages in the midst of SSP.

Table 1 : Village Classification Quarter Just Ended

Categories	Village
High	• Bégada • Ngalaba • Béro • Madjo • Danmadja
Approaching High (Watch List)	• Mouarom • Maikeri • Béla
Moderate	• Mbanga • Madana Nadpeur • Maïnani • Missimadji
Low	• Dokaidilti • Dildo • Kaïrati • Bendo • Ndoheuri • Komé • Miandoum • Naïkam • Merméouel • Morkété • Koutou Nya • Maïmbaye

- What has changed? – Madjo and Bero village surveys have been completed during the fourth Quarter and it turns out that fewer people in these villages find themselves in a non-viable situation than indicated by the compensation data.

Table 2: Site Specific Plan Development

Village	Site Specific Plan Developed?	Site Specific Plan Implemented?	Residual Impact
Dokaidilti	Yes	Yes	Low
Dildo	Yes	Yes	Low
Ngalaba	Yes	Yes	TBD
Bégada	Yes	Yes	TBD
Béla	Yes	Yes	Moderate
Danmadja	Yes	Yes	TBD
Madjo	Yes	Awaiting Approval	TBD
Mbanga	Yes	Yes	TBD
Mouarom	Yes	Yes	TBD
Bero 1-4	No	No	TBD

TBD: To Be Determined

1.2. Land Use Criteria

This section covers the project land use part of the classification. The criterion is the **% of Permanent + Temporary Not Returned** area of the village. The thresholds for the different categories are shown in annex 6.1. Villages are sorted by % according to this criterion, from the highest to the lowest value. Note that some villages can pass from High to Moderate or Moderate to Low as temporary land is returned, or move up as land is acquired.

Table 3: Land Use by Village in OFDA.

Village	Total Village Area (ha)	Permanent + Temporary Not Returned		
		Past Quarter (% of Village Area)	Current Quarter (% of Village Area)	Delta (Hectares)
Dokaïdilti	812.4	**15.9**	**15.9**	**0**
Bégada	2478.6	**12.7**	**13.3**	**+ 15.7**
Béro	4239.7	**12.5**	**13.2**	**+ 29.8**
Ngalaba	1879.4	**13.1**	**13.2**	**+ 7.1**
Danmadja	449.4	**11.5**	**12.5**	**+ 4.4**
Mouarom	1585.4	**9.5**	**9.5**	**- 0.2**
Maïkéri	1208.1	**8.6**	**9.1**	**+ 5.9**
Béla	2315.1	**8.3**	**9**	**+15.2**
Dildo	1961.3	**8.9**	**8.9**	**0**

Mbanga	3050.4	**6.0**	**6.0**	**- 1.5**
Madjo	1921.3	**5.7**	**5.9**	**+ 3**
Missimadji	840.6	**3.7**	**5.5**	**+15.4**
Madanan N.	323.1	**5.2**	**5.2**	**0**
Maïnani	1696.2	**4.5**	**4.5**	**+ 0.8**
Ndoheuri	830.2	**3.1**	**3.1**	**+ 7.1**
Kaïrati	179.9	**2.2**	**2.2**	**0**
Merméouel	1121.2	**1.8**	**1.8**	**0**
Bendo	809.0	**1.4**	**1.7**	**+1.8**
Miandoum	4133	**1.6**	**1.6**	**0.4**
Naïkam	1773	**1.4**	**1.4**	**0**
Morkété	524.2	**0.7**	**1.2**	**2.9**
Komé	2569.3	**1.1**	**1.1**	**0**
Koutou Nya	1819.6	**0.6**	**0.6**	**+ 1.8**

- Total balance of -25.9 ha (we have returned 25.9 ha more land than what we acquired in 3Q09, probably because of Borrow Pit returns)

Begada and Bero in the Kome field have been the focus of in fill drilling, Bela and Danmadja for the Bolobo fields. Maikeri's laterite borrow pit has been extended at one end and the remainder returned. A pressure injection well for water was dug at Missimadji.

The calculation of land acquired is not straightforward: new facilities are now overlapping old facilities. Simple addition or subtraction would compute the same area twice to determine how much land has been acquired or returned (delta column) compared to the previous quarter.

The following charts detail land use in the High and "Approaching High" villages listed in Table 1

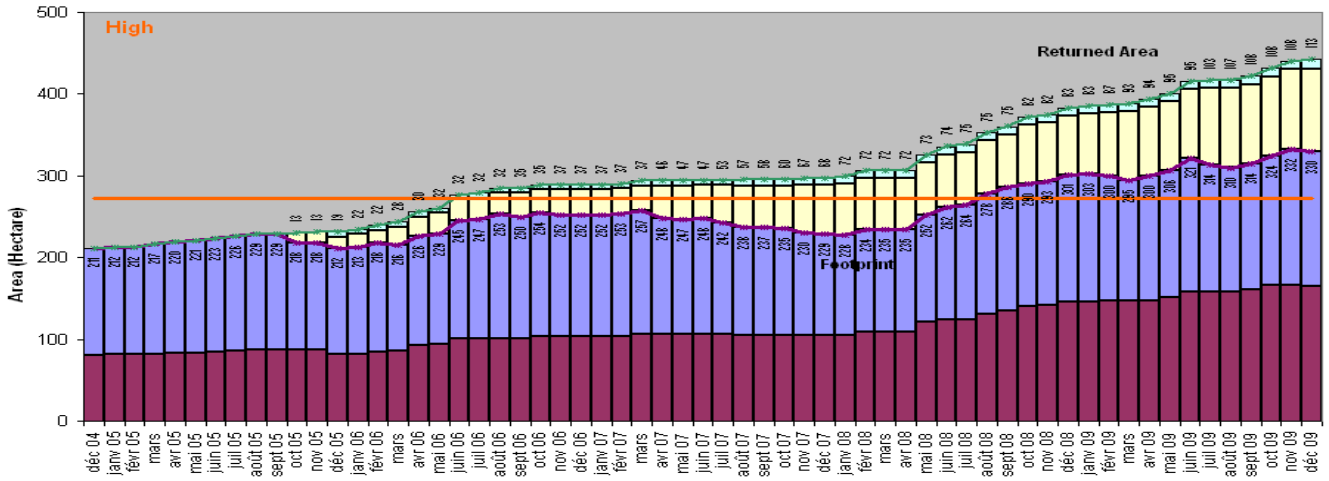


Chart 1: Land Acquired and Returned in Begada

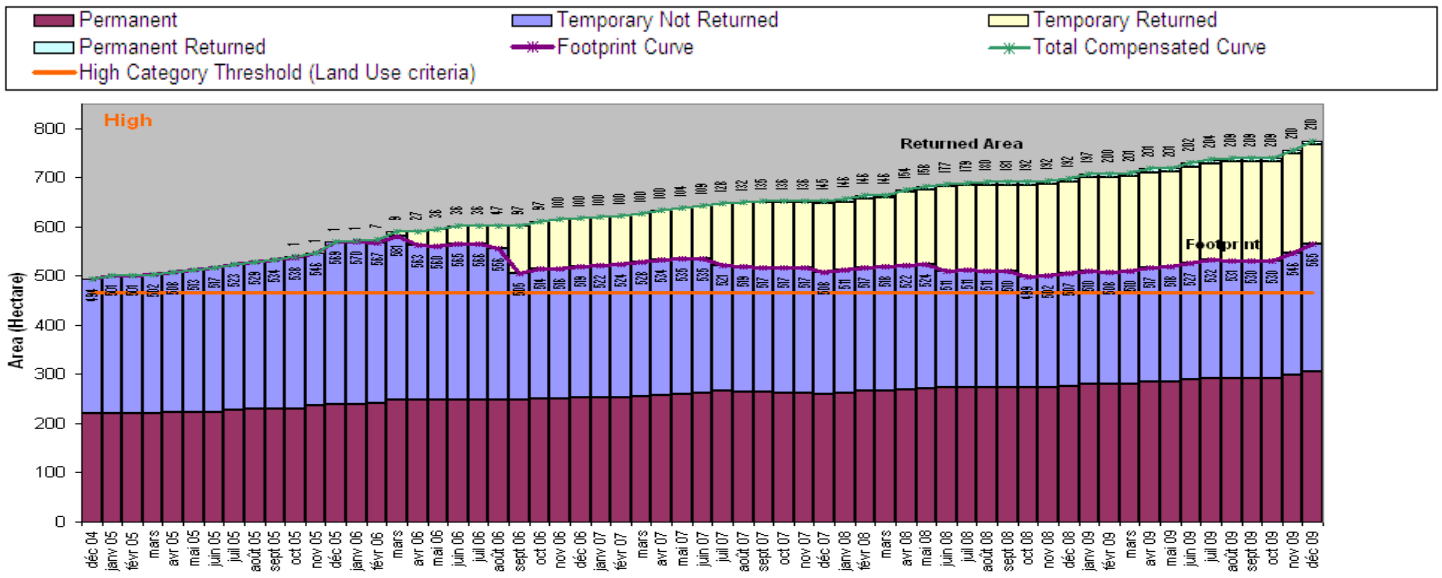


Chart 2: Land Acquired and Returned in Bero

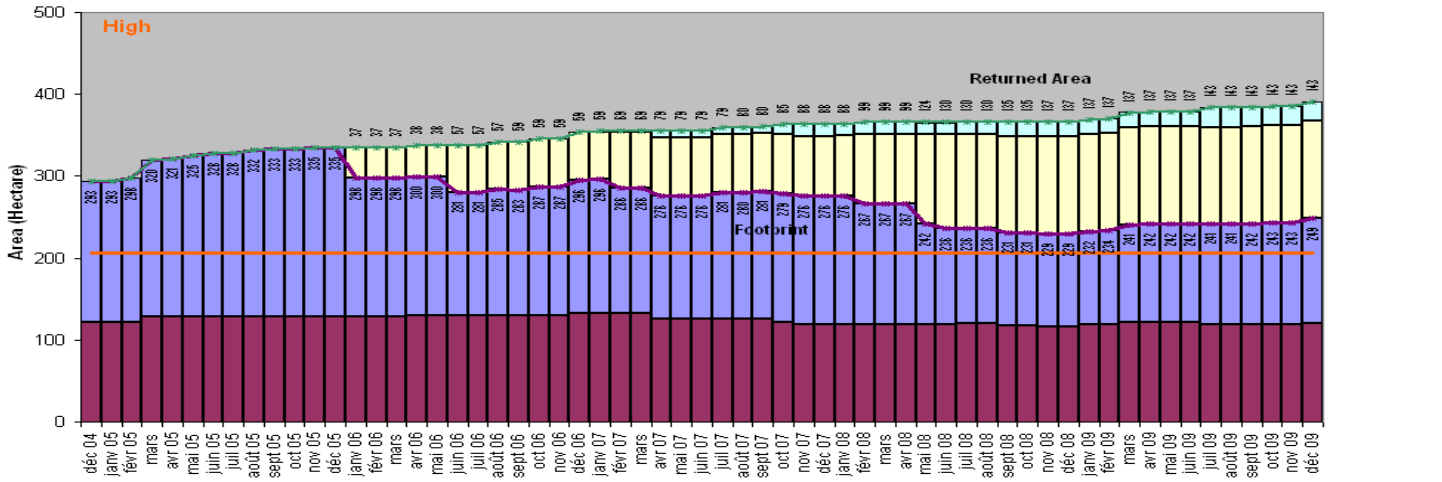


Chart 3: Land Acquired and Returned in Ngalaba

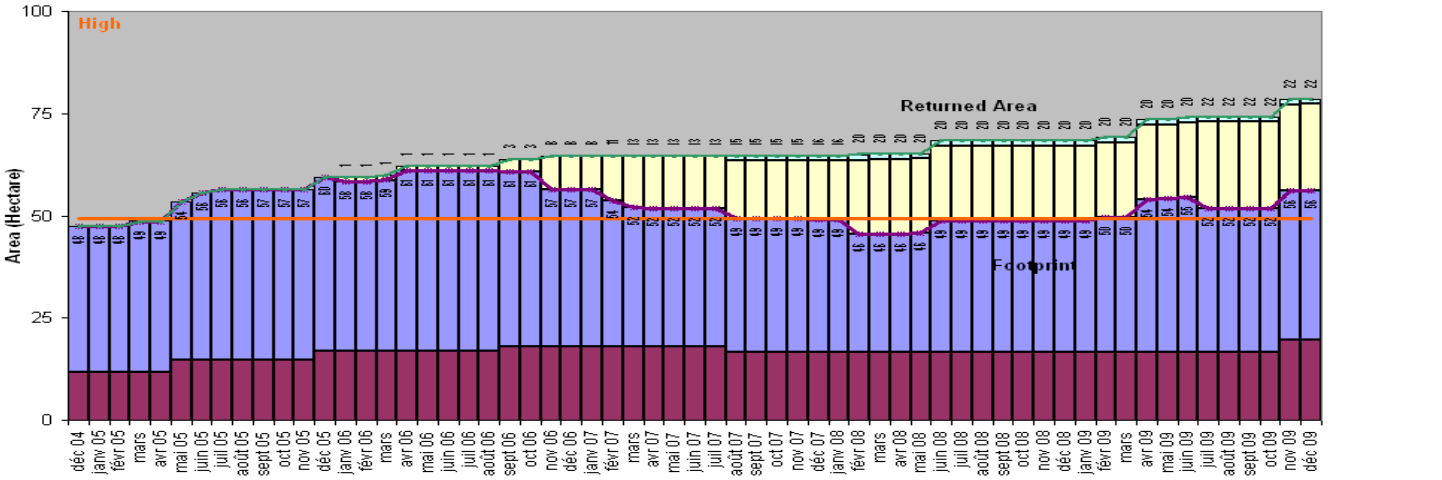
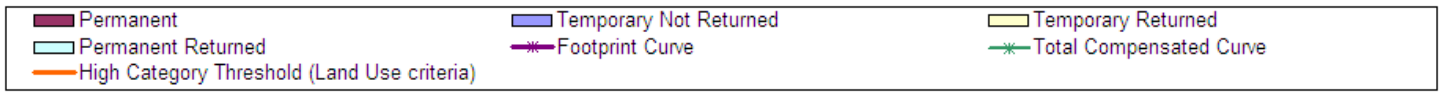


Chart 4: Land Acquired and Returned in Danmadjia



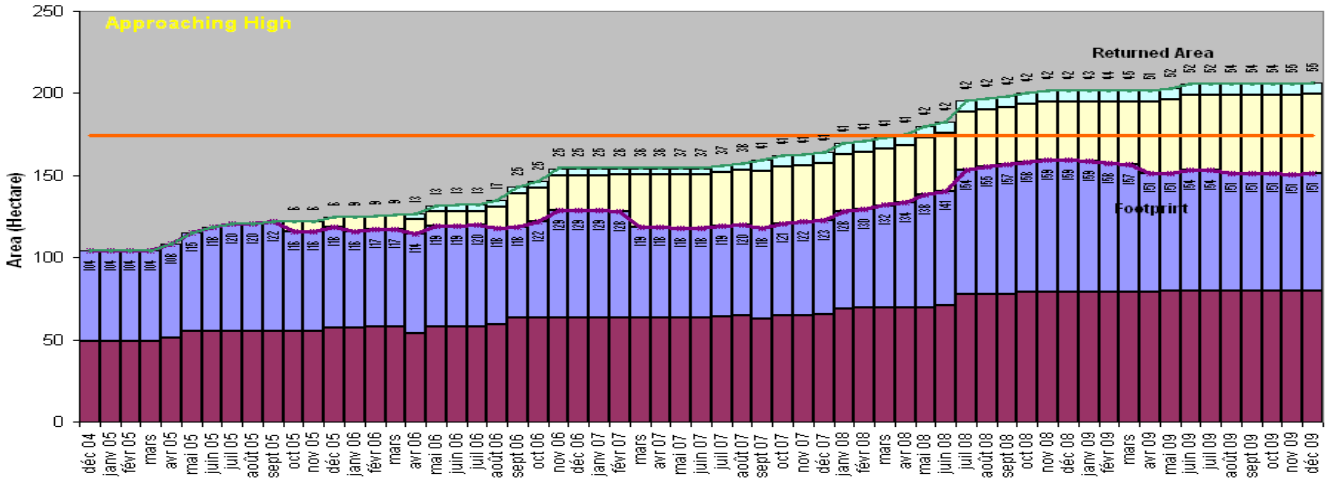


Chart 5: Land Acquired and Returned in Mouarom

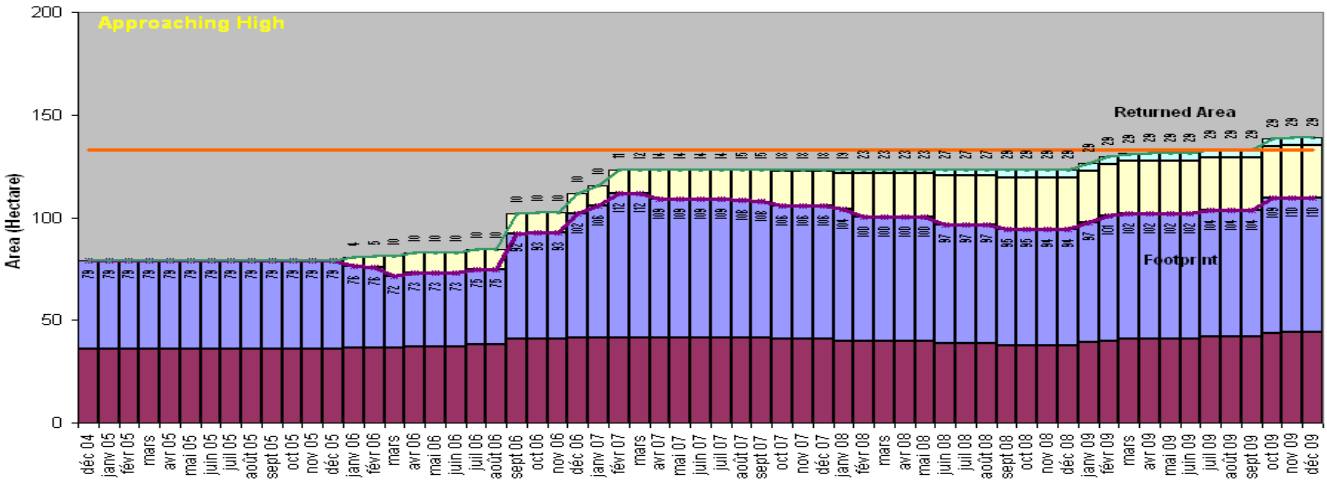


Chart 6: Land Acquired and Returned in Maikeri

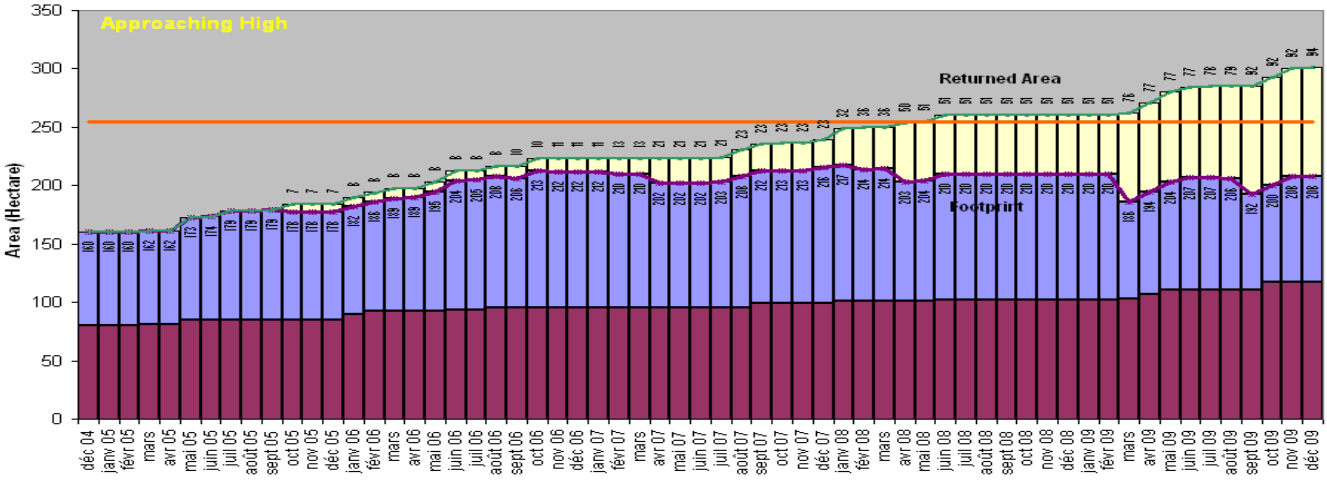
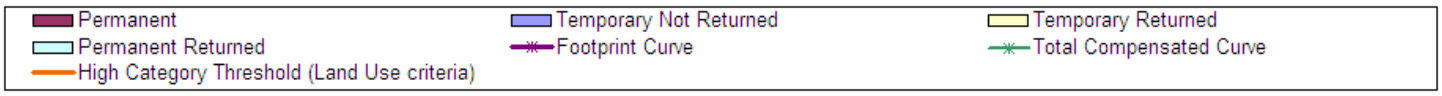


Chart 7: Land Acquired and Returned in Bela



1.3 Socioeconomic Criteria

Two socioeconomic criteria were used to calculate the Project's social impact indicated in the next table (Table 4). The data are derived from the compensation database (See the annex for more details):

1. Individuals already non-viable before they surrendered land to the project ,and
2. Individuals made non-viable by project land-take

Please note that the villages in this table are those where no village wide land survey has been done whereas now that Bero's survey is complete it has been moved to the survey table.

Table 4: Percentage of individual made non-viable by project land take according to compensation database

Total non-viable individuals today	Value Now	Since Last Quarter	Made non-viable by project	Value Now	Since Last Quarter
Missimadji	31 %	↑ 5 %	Missimadji	12 %	↑ 1 %
Maïnani	19 %	↓ 1 %	Maïnani	12 %	
Bendo	15 %		Naïkam	4 %	
Madana Nadpeur	14 %	↑ 1 %	Madana Nadpeur	3 %	↑ 1 %
NDoheuri	7 %		NDoheuri	2 %	
Naïkam	6 %		Morkété	2 %	
Komé	6 %	↑ 2 %	Miandoum	1 %	
Miandoum	5 %		Kaïrati	1 %	
Merméouel	4 %		Merméouel	1 %	
Morkété	4 %		Komé	1 %	
Kaïrati	2 %		Bendo	1 %	

As highlighted by the table, villages with a slight percentage are the ones impacted by the infill operations. Based on declarative data as shown in the table above, villages remain in the same category as past quarter.

The number of non-viable households below 2/3 c. of land per HHM is much more reliable in villages with complete Village Survey data. Using this data when available to calculate the number of people in non-viable households gives the following results:

Table 5: Non-Viable Project Affected Individuals Out of Entire Resident Population Reclassification with Measured criterion from Village Survey.

Village	Measured Non-viable Project-affected Individuals*	Declared Non-viable Project-affected Individuals
Bégada	2.6%	12%
Bela	0.8%	7%
Béro	9.0%	17%
Danmadjia	10.6%	19%
Dildo	2.6%	7%

Dokaidilti	1.3%	15%
Madjo	6.0%	19%
Mbanga	4.0%	19%
Mouarom	0.5%	14%
Ngalaba	6.8 %	17%

*This number excludes all non-viable households with a resettlement option

Completed during the fourth quarter of 2009, Bero is new in this list. Section 3 presents the first results for this village.

- The number of affected Individuals using precisely measured land and HH surveys that exclude anyone from belonging to more than one HH in the same village yield very different and less dire results.
- Data presented for the ten villages indicates that none is in the high impact category based on the socioeconomic impact criterion of number of vulnerable individuals.
- The table just above uses, as the original calculation also did, only the amount of land accessible to the HH and the number of HHM, without any other alleviating income data.
- The column with declaration (right) is computed by using data (Area cultivated, Number of dependents) gathered in the compensation database but the population found during the Village Survey instead of the less reliable and less current census data used in table 4. The differences in numbers demonstrate that declarative data was often incorrect.
- A Resettlement Option will be offered to each of the HH remaining as non-viable Project-affected but not yet assisted HH.

2. Acquired Land Monitoring

The following is a list of all compensated facilities (called by EMP "Compensation Subjects") during the quarter. For each subject a Land Take occurred.

Table 6: Summary of all compensated Subjects in Quarter.

Village	Land Acquired		Nbr Individual
	Permanent	Temporary	
Abassana			13
Atan			11
Bégada	5.3	15.2	92
Béla	6.5	10.1	24
Bemboura			3
Bendo	1.1	0.7	2
Béro	13.3	17.1	167
Bolobo			1
Dandili			1
Danmadjia	2.9	1.4	32
Dildo			11
Doba			43
Dogoï			3
Koutou Nian	0.9	0.9	6
Madanan Nadpeur			2
Madjo		3.0	0
Madjo-Doba			1
Maïkéri	2.1	3.8	25
Maïnani	0.8	0.6	3
Manboye			1
Mbanga		0.8	10
Mékapti I			1
Miandoum	0.2	0.2	0
Missimadji	7.0	8.5	2
Morkete		2.9	15
Mouarom	0.4	0.4	3
NDoheuri	0.1	7.1	1
Ngalaba	1.6	5.6	39
Total	**42.2**	**78.3**	**512**

Note that the "Nbr Individual" column refers to the farmer's village of residence, which is not necessarily the same village as the village area where the compensated land is located. An individual from one village can be compensated for land he/she owns/uses in another village. Note also that the "Total individuals compensated" line at the bottom of the chart does not match the actual sum of the number of individuals listed in "Nbr Individual" column because some individuals have been compensated more that once and have declared different villages of residency.

3. Socioeconomic monitoring

3.1. Village Land Survey

Table 7: Total number of HH Survey by village.

Village	Survey completed		Total HH expected	Status	Theoretical % completed
	3rd Quarter	Total			
Bégada I	-	**154**		**Completed**	100%
Bégada II	-	**109**		**Completed**	100%
Béla I	-	**79**		**Completed**	100%
Béla II	-	**65**		**Completed**	100%
Dokaïdilti	-	**85**		**Completed**	100%
Dildo	-	**275**		**Completed**	100%
Mbanga I	-	**152**		**Completed**	100%
Mbanga II	-	**107**		**Completed**	100%
Ngalaba	-	**249**		**Completed**	100%
Danmadja	-	**102**		**Completed**	100%
Mouaroum	-	**85**		**Completed**	100%
Madjo	-	**126**		**Completed**	100%
Bero	-	**611**		**Completed**	100%
Total	-	**2050**			

Bero was completed during the fourth quarter. Results are presented at section 3.3.

All field operations in High Impact villages was completed in the fourth quarter and results will presented at the end of the first quarter of 2010.

3.2. Completed Villages

This section provides some analysis of the Village Land Use Survey Data for completed villages. The results have been put in a table to allow comparisons.

Table 8: Available Land.

	Dokaidilti	Dildo	Ngalaba	Danmadja	Mouarom	Begada	Bela	Mbanga	Madjo	Bero
Village Area in Hectares	686	1887	2118	480	1352	3321	2200	3068	2148	5786
Settlement area in Hectares (% village)	24 (3%)	46 (2%)	97 (5%)	34 (7%)	23 (2%)	56 (2%)	35 (2%)	62 (2%)	27 (1%)	145 (2.5%)
Project Perm. Land Take + Temp. No Returned in Hectares (% village)	79 (12%)	185 (10%)	253 (12%)	61 (13%)	149 (11%)	288 (7%)	172 (8%)	189 (6%)	135 (6%)	617 (10.5%)
Available Land inside the village limit in Hectares (% village)	583 (85%)	1656 (88%)	1768 (83%)	385 (80%)	1180 (87%)	2977 (90%)	1993 (91%)	2817 (92%)	1986 (92%) incl 483 of Flooded Area	5024 (87%)
Available Land Density inside the village limit (Hectares/Person)	1.09	1.23	1.34	0.68	2.64	2.32	2.38	1.88	2.34 1.77 excl Flooded Area	1.3
Cultivated (Field) or Owned (Fallow) outside the village in Hectares (% of total land of the residents)	40 (8%)	106 (6%)	69 (4%)	122 (23%)	217 (26%)	76 (3%)*	73 (4%)	70 (3%)*	114 (10%)	614 (11%)
Total Cultivated (Field) or Owned (Fallow) of the residents in Hectares (% of total land of the residents)	490	1561	1601	487	850	2763	1666	2270	1110	5499
Available Land Density inside and outside the village limit (Hectares/Person)	0.92	1.16	1.21	0.85	1.90	2.15	1.99	1.51	1.88 1.31 excl. Flooded Area	1.42

Table 9: Use of Available Land.

	Dokaidilti	Dildo	Ngalaba	Danmadja	Mouarom	Begada	Bela	Mbanga	Madjo	Bero
Cultivated (Field) or Owned (Fallow) by non-residents inside the village limit in Hectares (% of available land inside village limit)	121 (21 %)	141 (9 %)	141 (8 %)	17 (4 %)	531 (45%)	272 (9%)	389 (20%)	577 (20%)	504 (25%)	553 (11%)
Cultivated Field Farmed by Resident inside the village limit in hectares (% of available land)	302 (52 %)	668 (40 %)	1043 (59 %)	241 (63 %)	291 (25%)	1190 (40%)	755 (39%)	1122 (40%)	443 (22%)	2004 (40%)
Fallow Owned by Resident inside the village limit in hectares (% of available land)	149 (26 %)	792 (48 %)	553* (31 %)	124 (32 %)	342 (29%)	1497 (50%)	838 (42%)	1078 (38%)	553 (28%)	2414 (48%)
Ratio Fallow/Field	0.49	1.19	0.53	0.51	1.18	1.26	1.11	0.96	1.25	1.20

* 63 Ha of bush included in fallow

Table 10: Social summary for Completed Village Land Survey.

	Dokaidilti	Dildo	Ngalaba	Danmadja	Mouarom	Begada	Bela	Mbanga	Madjo	Bero
Nbr of Residents	534	1346	1324	570	447	1285	837	1501	848	3867
Men	243	657	668	284	216	608	434	718	418	1923
Women	291	689	656	286	231	677	403	783	430	1944
Avg Age in Years	19	20	20	19	19	19	18	18	17	18
Nbr HH	85	275	250	101	85	259	144	269	133	611
Avg. HH size (# HH Members)	6.3	4.9	5.3	5.7	5.3	5.0	5.9	5.6	6.4	6.4
Avg. cordes Land per HH inside and outside village	11.3	11.2	12.6	10.3	19.6	20.7	22.8	16.6	16.0	13.7
Avg. Resettlement Factor (Based on all land inside and outside village)	1.80 Corde/HHM	2.29 cordes/HHM	2.39 cordes/HHM	1.8 Corde/HHM	3.69 cordes/HHM	4.17 cordes/HHM	3.88 cordes/HHM	2.95 cordes/HHM	2.5 cordes/HHM	2.16 cordes/HHM
% Area cultivated (Field) or owned (Fallow) by women out of total area "owned" by village residents inside and outside village	15%	17%	29%	22%	14%	30%	12%	22%	28 %	18.5%

Bero is by far the biggest village of the 10 surveyed in terms of land area:

- 5786 ha versus the 2nd highest, Begada, at 3321 ha.
- Bero has over the past few years split into 4 villages, all contiguous except for Bero 1
- The four villages are contiguous but tend to farm the fields adjacent to their residential area. Another quartier is located at the far end of village territory, where a farm hamlet was set up but has become a commercial center for the Project's camp.
- 11% of Bero's land is cultivated by outsiders; by the same token 11% of the land farmed by Bero residents lies outside the village territory, mostly in Mbanga.
- 48% of Bero's land is in fallow.
- The number of cordes per average HHM is 3 times the necessary minimum of field and fallow, which is 2/3 corde per HHM. Bero is 7th out of 10 in the average per HHM; Danmadja and Dokaidilti have less.

Bero's population is also larger than the other ten villages'.

- In descending order of size the villages are Bero (3867); Mbanga (1501); Dildo (1346); Ngalaba (1324); Begada (1285); Madjo (848); Bela (837); Danmadja (570), Dokaidilti (534) and, last, Mourarom (447)
- But in terms of arable land available to the residents, land both inside the village territory and outside, Bero lies right in the middle of the pack.
- Average land distribution does not reflect the skewed land holdings in most villages. Bero has the largest percent of Non-Viable HH (and NV individuals) of the ten villages, close to 20%.

The following tables present Resettlement Factor distribution of the compensated households surveyed in all completed villages.

Table 11: Land Distribution

Resettlement Factor Range	Bégada				Mbanga			
	Nbr HH	Nbr Individual	% HH	% Individual	Nbr HH	Nbr Individual	% HH	% Individual
0.000 - 0.499	7	40	3.7	3.8	5	32	2.35	2.5
0.500 - 0.667	3	31	1.6	3.0	5	29	2.35	2.2
0.668 - 0.999	10	80	5.3	7.7	13	120	6.1	9.3
1.000 - 1.499	41	257	22.0	24.7	64	484	30.2	37.4
1.500 - ...	126	634	67.4	60.8	125	630	59.0	48.6
Total	187	1042	100	100	212	1296	100	100

Resettlement Factor Range	Béla				Ngalaba			
	Nbr HH	Nbr Individual	% HH	% Individual	Nbr HH	Nbr Individual	% HH	% Individual
0.000 - 0.499	3	23	3.5	4.2	8	48	3.9	4.1
0.500 - 0.667	2	18	2.3	3.3	9	66	4.4	5.6
0.668 – 0.999	1	3	1.2	0.5	15	92	7.2	7.9
1.000 – 1.499	17	127	20.0	23.1	83	539	40.1	46.0
1.500 - ...	62	379	73.0	68.9	92	427	44.4	36.4
Total	85	550	100	100	207	1172	100	100

Resettlement Factor Range	Mouarom				Danmadjia			
	Nbr HH	Nbr Individual	% HH	% Individual	Nbr HH	Nbr Individual	% HH	% Individual
0.000 - 0.499	1	2	1.4	0.5	7	55	8.0	10.1
0.500 - 0.667	1	4	1.4	1.0	5	32	5.7	5.9
0.668 - 0.999	3	16	4.2	4.0	13	79	14.8	14.5
1.000 - 2.499	28	164	39.4	41.3	45	297	51.1	54.6
2.500 - ...	38	211	53.5	53.2	18	81	20.4	14.
Total	71	397	100	100	88	544	100	100

Resettlement Factor Range	Dokaidilti				Dildo			
	Nbr HH	Nbr Individual	% HH	% Individual	Nbr HH	Nbr Individual	% HH	% Individual
0.000 – 0.499	5	52	6.85	10.5 %	4	29	3.9	4.9
0.500 – 0.667	4	33	5.48	6.6 %	5	30	4.9	5.0
0.668 – 0.999	12	87	16.44	17.5 %	16	116	15.7	19.4
1.000 – 1.499	31	247	42.47	49.7 %	45	268	44.1	44.8
1.500 - ...	21	78	28.77	15.79 %	32	155	31.4	25.9
Total	73	497	100	100 %	103	599	100	100 %

Resettlement Factor Range	Madjo				Béro			
	Nbr HH	Nbr Individual	% HH	% Individual	Nbr HH	Nbr Individual	% HH	% Individual
0.000 – 0.499	8	71	7.34	9.48	66	455	14.6	14.8
0.500 – 0.667	4	24	3.67	3.2	20	130	4.4	4.2
0.668 – 0.999	9	60	8.26	8.01	44	329	9.7	10.7
1.000 – 1.499	50	363	45.87	48.46	160	1146	35.2	37.2
1.500 - ...	38	231	34.86	30.84	164	1020	36.1	33.1
Total	109	749	100	100	454	3080	100	100

When the vulnerable HH data from the Village Land Surveys is computed, the results are as follows; note this information pertains only to compensated HH and individuals; uncompensated vulnerable individuals in the villages have not been included except as part of the Entire Resident Population. The table also excludes individuals who have received a resettlement benefit and are, in principle, no longer non-viable.

Non-Viable Project Affected Individuals Out of Entire Resident Population
Reclassification with Measured criterion from Village Survey.

Village	Measured Non-viable Project-affected Individuals*	Declared Non-viable Project-affected Individuals
Bégada	2.6%	12%
Bela	0.8%	7%
Béro	9.0%	17%
Danmadjia	10.6%	19%
Dildo	2.6%	7%
Dokaidilti	1.3%	15%
Madjo	6.0%	19%
Mbanga	4.0%	19%
Mouarom	0.5%	14%
Ngalaba	6.8 %	17%

*This number excludes all non-viable households with a resettlement option

Threshold Criteria 3 Numerical Data from Village Survey		
High	**15.1%**	**100.00%**
Approaching High	**10.1%**	**15.0%**
Moderate	**5.1%**	**10.0%**
Low	**0%**	**5.0%**

Land Return Monitoring in 3-Fields[1]

3.3. Compensated and Returned Land by Land Use Type

This section presents the compensated and returned areas. The compensated land is divided in four Land Use Types:

1) Permanent with Public Access
2) Permanent with No Public Access

} Permanent Land Use

3) Temporary Returned Without Restriction
4) Temporary Returned With Restriction

} Temporary Land Use

The chart in Figure 4.1 shows the current portion of each Land Use Type out of the total Compensated Land. The land returned is noted only in the table and does not appear in the chart. The "Returned" column shows the number of hectares returned (on the left) and the percentage of returned area out of the total compensated area (on the right), for each land use type.

[1] 3-Fields Area includes the oil concessions of Miandoum, Bolobo and Komé

	Total areas in Hectares			4Q09		
Land Use Type	**Compensated**	**Returned**		**Compensated**	**Returned**	
1) Permanent With Public Access	640.9	31.1	5%	21.9	0.6	3%
2) Permanent With No Public Access	895.3	91.8	10%	20.4	1.0	5%
Sub Total Permanent	**1536.2**	**122.9**	**8%**	**42.3**	**1.6**	**4%**
3) Temporary Returned Without Restriction	451.8	334.8	74%	21.9	0.0	0%
4) Temporary Returned With Restriction	1611.3	569.7	35%	55.0	9.0	16%
Sub Total Temporary	**2063.1**	**904.5**	**44%**	**76.9**	**9.0**	**12%**
TOTAL (Permanent + Temporary)	***3599.3***	***1027.4***	29%	***119.2***	***10.6***	9%

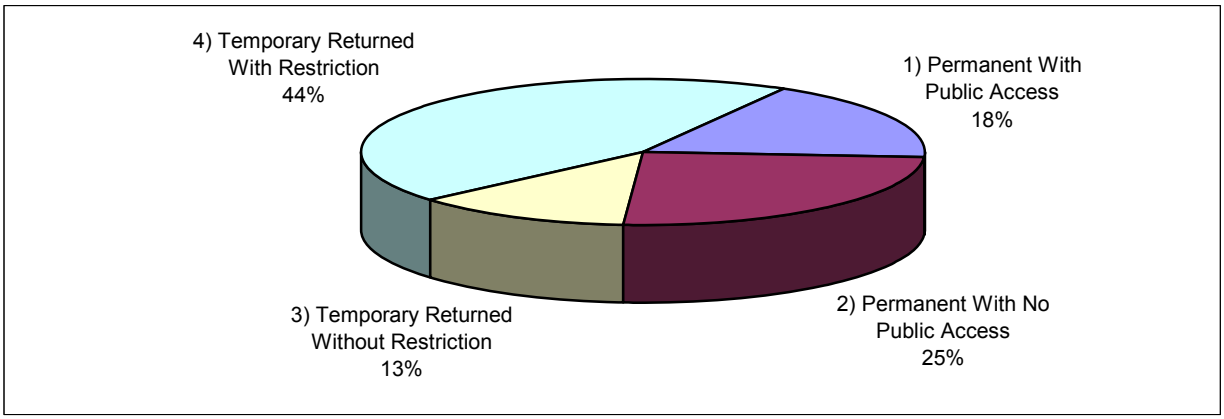


Figure 2: Total Compensated and Returned Land in OFDA

3.4. Compensated and Returned Land by Facility Type

The tables and charts on the next pages show the different types of facility in each of the four land use types, as well as their acquired or returned status. Since the infill program brings new wells in areas already drilled, it is not rare to see that the new pads will fall on existing roads or flowlines right of way. Therefore the area already acquired for an initial facility type (or land use) is just transferred to another one, without affecting the global footprint.

	Total Compensated			4Q09		
Facility Type	**Compensated**	**Returned**		**Compensated**	**Returned**	
Main Road	73.9	0.0	0.0%	0.0	0.0	0.0%
Access Road	567.0	31.1	5.5%	21.9	0.6	2.7%
Total	640.9	31.1	4.9%	21.9	0.6	2.7%

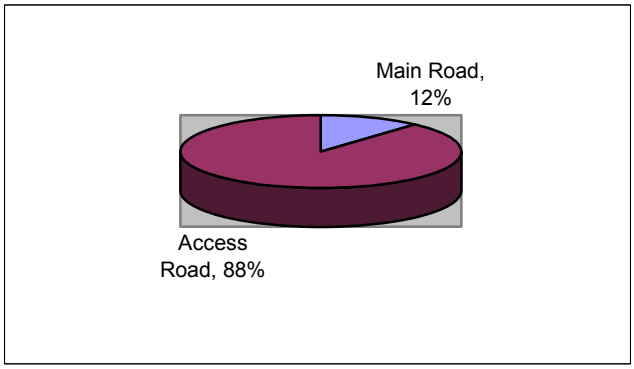
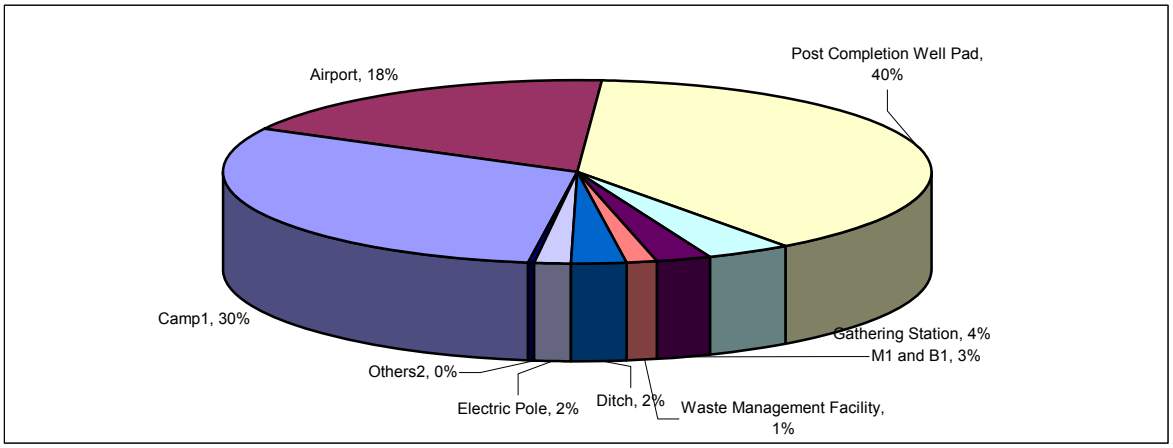


Figure 3: Land Use Type 1) Permanent with Public Access (Areas in hectares)

The main road, although it occupies a substantial area, now serves as an economic artery, second only to the national highway, for moving local production from the OFDA region, zones south of the OFDA, and bordering portions of the Central African Republic. Farmers going to their fields heavily use the project's secondary, access roads, which are frequented by the many bicycles, hand carts; oxcarts and motorcycles inhabitants have acquired with their compensation money.

	Total Compensated			*4Q09*		
Facility Type	**Compensated**	**Returned**		**Compensated**	**Returned**	
Camp[1]	271.8	0.0	0.0%	0.0	0.0	0.0%
Airport	164.5	64.1	39.0%	0.0	0.0	0.0%
Post Completion Well Pad	346.7	13.5	3.9%	20.3	1.0	4.9%
Gathering Station	34.3	4.6	13.4%	0.0	0.0	0.0%
M1 and B1	24.1	9.6	39.8%	0.0	0.0	0.0%
Waste Management Facility	12.2	0.0	0.0%	0.0	0.0	0.0%
Ditch	22.3	0.0	0.0%	0.0	0.0	0.0%
Electric Pole	13.5	0.0	0.0%	0.0	0.0	0.0%
Others[2]	3.4	0.0	0.0%	0.1	0.0	0.0%
Total	892.8	91.8	10.3%	20.4	1.0	4.9%

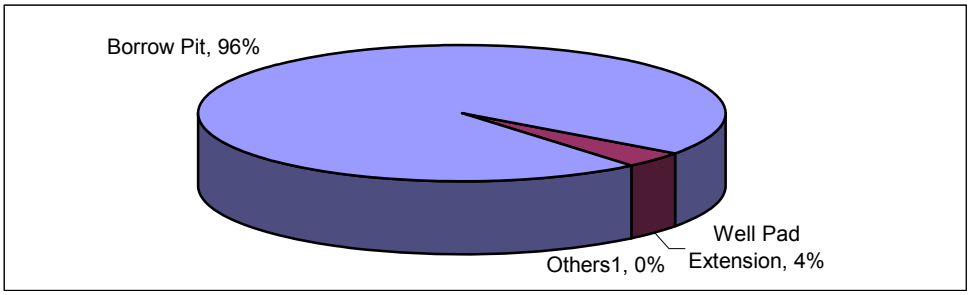


1. Kome Base, Kome 5, Lagoon, Leach Field
2. Piezometers, Service Area, Water Well

Figure 4: Land Use Type 2) Permanent with No Public Access (Areas in hectares)

Even if the original land use of category 2 is "Permanent with no public access", when a piece of land is not needed by the project the facilities are returned to population. 10% of the area compensated as "permanent with no public access" has therefore been returned.

	Total Compensated			4Q09		
Facility Type	**Compensated**	**Returned**		**Compensated**	**Returned**	
Borrow Pit	433.7	324.3	74.8%	21.6	0.0	0.0%
Well Pad Extension	17.8	10.5	59.0%	0.3	0.0	0.0%
Others[1]	0.3	0.0	0.0%	0.0	0.0	0.0%
TOTAL	451.8	334.8	74.1%	21.9	0.0	N/A

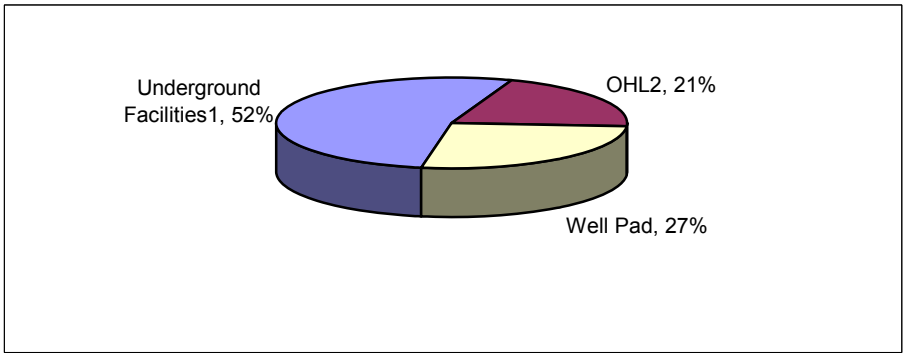


1. Water Line Access & Soil Boring

Figure 5: Land Use Type 3) Temporary Returned Without Restriction (Areas in hectares)

Current borrow pit reclamation work is returning quality arable land to the villagers even though the arable quality of these land areas prior to laterite mining by the Project was very low.

	Total Compensated			4Q09		
Facility Type	**Compensated**	**Returned**		**Compensated**	**Returned**	
Underground Facilities[1]	848.8	164.0	19.3%	29.7	1.8	6.1%
OHL[2]	330.2	63.0	19.1%	0.0	0.0	0.0%
Well Pad	428.8	342.7	79.9%	25.3	7.1	28.1%
TOTAL	1607.8	569.7	35.4%	55.0	8.9	16.2%



1. Flowline, Gathering Line, Water Injection Line, Trunkline, Pipeline, Underground cable
2. 33 Kv, 66 Kv, 132 Kv

Figure 6: Land Use Type 4) Temporary Returned With Restriction (Areas in hectares)

The export pipeline right of way in the OFDA is 47.2 ha (30 m * 15.8 km). Half of the total right of way (23.6 ha) has been returned without restriction; only 7.5 m on each side of the center line has been returned with restrictions. The restrictions on using land covering underground facilities are not onerous. No planting of trees, digging of holes, or construction of buildings, all of which might damage the lines or prevent easy access when needed. Otherwise any cultivation is allowed. Acquisition of a special work-over rig for well maintenance has further reduced the well pad area from the 1 Ha. used for drilling and no restrictions apply to the restored and returned portion . The areas under the 66Kv and 33Kv and other electrical lines present more of a challenge. The greatest problem is accessing the

power poles for repairs – frequent enough in this lightning-prone area. How access is achieved is constrained by hazards related to safety: the growth of high grasses or normal crops during the rainy season impedes visibility for repair crews and security patrols, who risk colliding with people, cars, animals, bicycles, etc. making their way along the obscured footpaths. The risk is increased at night. Secondly, crops or grasses will be burned off intentionally or by bush fires at the end of the agricultural season, depositing carbon on the lines and increasing the probability of short circuits. EEPCI plans to resolve this seeming dilemma by returning the land to the community but with restrictions on the types of crops (short cycle, short stemmed) and an access corridor for Project to gain access when necessary.

3.5. Project Footprint

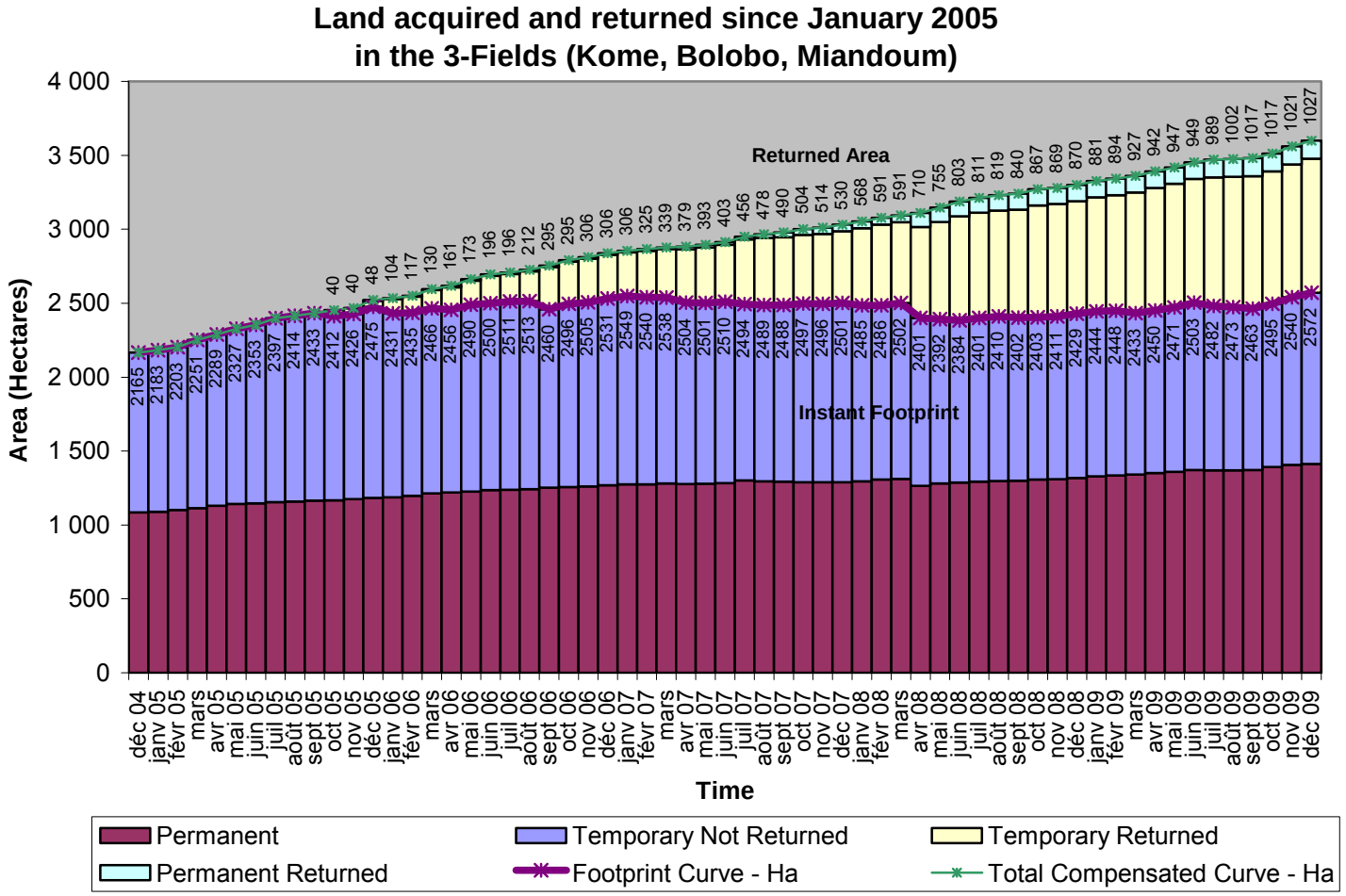


Chart 9: Footprint Chart

The footprint of permanently and still temporarily occupied acquired land continues to remain stable because the land returned is about the same as the land acquired. The land returned is not the only factor that counterbalances the infill land take. The second factor is because the infill wells falls in already drilled area. An area already compensated for an initial facility type is simply reused for the in fill, without requiring much additional land acquisition. Working by the fault block approach in reclaiming land i.e. postponing reclamation until the work in the fault block has been completed,

reduces the risk of wasting top soil by re-acquiring newly reclaimed land. Top soil in the OFDA and elsewhere in southern Chad is scarce.

4. Annex

4.1. Land Use Criteria

The criteria concerning Land Use impact represents the percentage of village area used by the project within each village. The boundaries of the village used to set the village area are not official and are computed based on a global survey of the village limits. The thresholds between levels of impact represent "natural breaks" or large numerical gaps in between villages.

Calculation of Land Use Impact

The final percentage used to classify the village's level of impact is computed by adding the "temporary" land not yet returned land to the land permanently used by the project

$$\frac{\sum \text{Permanent Not Returned} + \text{Temporary Not Returned}}{\sum \text{Village Area}}$$

Thresholds	
High	≥11%
Approaching High	7% - 10.9%
Moderate	3% - 6.9%
Low	0% - 2.9%

4.2. Socioeconomic Criteria

Village level impact of project land take depends both on absolute amounts of land taken or returned and the way in which land resources are divided within the village. In some villages people depend mainly on farming for their livelihood. In others a portion of the inhabitants depend on fishing as well as farming; fishing families in these villages often have (and need) less farmland than in inland villages and may already be below the general threshold of agricultural viability (2/3 corde per HHM). Attributing all household non-viability to Project land acquisition in these villages would overstate the Project impact.

To reflect the difference in project impact in these two types of villages, the social criteria using compensation database information were set according to 1) the number of people **already non-viable** before they were compensated for land and 2) those who were **made non-viable** when they lost land to the project.

Completed village land surveys have demonstrated that the declarative data used to calculate non-viability often overstates the number of people dependent on the household's land and understated the amount of land available. Therefore the number of non-viable households found through a village survey presents a more accurate picture of project impact. Such data was not available when the Land Use Impact list was first calculated but now, as measured data has become available for each village, the pre-project non-viability criterion has been dropped. When the survey is complete and village is open to **reclassification** only the current but accurate criterion of currently non-viable HH (compensated and not compensated) has been used.

Changes in a village's position within the land use impact table therefore reflect both the measured return / continued acquisition of land and the measured number of households currently non-viable because of limited land access. Although this picture does not allow a **retrospective** view of a household's situation the first time it seceded land to the project, the accuracy of the data on the non-viability of households overrides the interest in distinguishing impact in fishing-farming and simple farming villages.

5.2.1 Initial Classification with Compensation Data

Criterion 1: % all non-viable individuals / all individuals in the village

Description: Percentage of all project-affected individuals in the village currently below the resettlement factor of 2/3.

Rule:

$$\frac{\sum \text{(All individuals below 2/3 corde after land take)}}{\text{Village Population}}$$

Threshold:

Threshold Criteria 2		
	Min	Max
High	50.1%	100%
Approaching High	30.1%	50%
Moderate	20.1%	30%
Low	0%	20%

This criterion includes people who were already non-viable before the Project.

Criterion 2: % individuals in the village made non-viable by project land take / all individuals in village

Description: Percentage of the number of individuals that were economically viable before surrendering land/feeling any project impact (the resettlement factor > 2/3) but who became agriculturally non-viable upon surrendering land/ after project impact (the resettlement factor < 2/3).

Rule:

$$\frac{\sum \text{(All individuals that were not eligible } \textbf{before} \text{ land take \& are eligible } \textbf{after} \text{ Land take)}}{\text{Village Population}}$$

Threshold:

Threshold Criteria 3		
High	20.1%	100.00%
Approaching High	15.1%	20.00%
Moderate	9.1%	15.00%
Low	0%	9%

This criterion cannot be calculated with village land survey results and is no longer applied when a change in village impact classification is calculated.

5.2.2 Reclassification with Village Survey data

Description: When a village reclassification is calculated and village survey data is available, a single criterion is used. This criterion represents all the members of the non-viable compensated households compared to the population of the village

Rule:

$$\frac{\sum \text{All members of non-viable compensated Households}}{\text{Village Population}}$$

*This statistic excludes non-viable households with resettlement options

Threshold:

Threshold Criteria 3		
High	15.1%	100.00%
Approaching High	10.1%	15.0%
Moderate	5.1%	10.0%
Low	0%	5.0%

5.3. List of Severely impacted Household in Bero

Not affected by Project

Quartier	No HH	CdM	ID CdM	Age	File	Area	Nbr Tr	On F	Off F	Survey	Type	ID Survey	Field	Area Now	HhM	Fct Now
Béro I	HH000858	Mme. Ndoledjangar, Tabita	ID024525	26	1	0.336				2008-05-26	FT	ES003881	0	0	3	0
Béro II	HH000975	Mme. Ndeyamlar, Christine	ID022812	54	5	0.161	1		2007	2009-06-13	VilSur	ES005864	0	0	3	0
Béro II	HH001034	Mme. Noudjibe, Rachel	ID022293	45	5	2.187	1		2006	2008-01-31	Suivit	ES003499	0	0	4	0
Béro II	HH001297	M. Djimsanodji, Mathias	ID021667	25	3	1.447				2008-09-15	VilSur	ES004348	0	0	5	0
Béro II	HH001415	M. Mbaïogao, Firmin	ID021651	20	1	0.324				2008-10-09	VilSur	ES004483	0	0	3	0
Béro III	HH001444	Mme. Nehouman, Odette	ID024399	34	1	2.375	1		2007	2009-09-10	VilSur	ES006319	0	0	7	0
Bero IV	HH001621	M. Mbaïhounoum, César	ID020515	25	10	2.545				2008-12-23	VilSur	ES004740	0	0	7	0
Bero IV	HH001802	M. Nado, Valery	ID020516	27	5	2.501	1	2008		2009-01-29	VilSur	ES004945	0	0	7	0
Béro I	HH001804	M. Mbaïndiguim, Sylvestre	ID020650	34	3	0.685				2009-02-05	VilSur	ES004947	0	0	8	0
Béro II	HH002095	M. Poimian, Nasson	ID041582	23	2	0.328				2009-04-23	VilSur	ES005670	0	0	4	0
Bero IV	HH002101	M. Djéguedem, Nikaise	ID028739	22	2	0.629				2009-04-14	VilSur	ES005678	0	0	5	0
Béro II	HH002248	M. Djérabété, Basil	ID020910	20	1	0.062				2009-06-13	VilSur	ES005849	0	0	4	0
Béro I	HH002257	M. Toudjialdongar, Gabriel	ID041604	39	1	0.04				2009-06-11	VilSur	ES005858	0	0	7	0
Béro II	HH002314	M. Ngarmbatlao, François	ID029740	57	7	1.351	1		2007	2009-12-12	VilSur	ES005919	0	0	9	0
Béro I	HH002317	M. Mbairabe, Maxime	ID043762	24	1	0.244				2009-07-02	VilSur	ES005922	0	0	6	0
Bero IV	HH002326	Mme. Morememe, Rahab	ID028742	24	5	3.129				2009-05-20	VilSur	ES005931	0	0	5	0
Bero IV	HH002357	M. Djekonbe, Roger	ID046975	27	0					2009-07-18	VilSur	ES005962	0	0	3	0
Béro I	HH002414	M. Mbangro, Mbaiodji	ID047343	38	0					2009-07-10	VilSur	ES006020	0	0	7	0
Béro I	HH002426	M. Mbailassem, Levy	ID047422	18	0					2009-08-28	VilSur	ES006034	0	0	4	0
Béro II	HH002436	M. Loubaramadji, Aron	ID039996	23	0					2009-08-18	VilSur	ES006045	0	0	3	0
Bero IV	HH002443	M. Nodjitoloum, Francolin	ID021376	38	2	1.499				2009-08-21	VilSur	ES006052	0	0	2	0

Béro III	HH002444	M. Allademnodji, Constant	ID045748	25	0					2009-09-01	VilSur	ES006053	0	0	5	0
Béro II	HH002457	M. Mbaïnguedoum, Osee	ID047603	27	0					2009-08-16	VilSur	ES006066	0	0	4	0
Béro II	HH002458	Mme. Riyambaye, Lundi	ID047607	33	0					2009-09-01	VilSur	ES006067	0	0	3	0
Béro II	HH002470	M. Bessané, Remy	ID039993	25	4	0.973				2009-09-08	VilSur	ES006079	0	0	8	0
Bero IV	HH002476	Mme. Grabeye, Clementine	ID047695	41	0					2009-09-09	VilSur	ES006085	0	0	1	0
Béro II	HH002487	Mme. Zara, Jacqueline	ID047778	50	0					2010-01-08	VilSur	ES006096	0	0	5	0
Bero IV	HH002498	M. Bekodjim, Celestin	ID047882	19	1	0.041				2009-09-12	VilSur	ES006108	0	0	2	0
Bero IV	HH002500	M. Nanghoutoum, Edouard	ID047887	47	0					2009-09-12	VilSur	ES006110	0	0	5	0
Béro I	HH002501	Mme. Borlar, Ngigngar	ID047894	21	0					2009-09-17	VilSur	ES006111	0	0	1	0
Bero IV	HH002504	Mme. Lardiguim, Suzanne	ID047902	45	0					2009-09-17	VilSur	ES006114	0	0	1	0
Bero IV	HH002507	M. Ngarndigatoloum, Jonathan	ID047908	26	0					2009-09-10	VilSur	ES006117	0	0	4	0
Béro I	HH002528	Mme. Denemadji, Grace	ID048046	22	0					2009-09-19	VilSur	ES006140	0	0	2	0
Moudadongne	HH002563	M. Keinbigue, Victor	ID048303	35	0					2009-10-10	Impct	ES006180	0	0	5	0
Bero IV	HH002687	M. Sangnodji, Sylvain	ID021672	26	3	0.716				2009-06-05	Impct	ES006324	0	0	6	0
Bero IV	HH002750	M. Nanghobnan, Philemon	ID029921	23	1	0.039				2009-06-13	VilSur	ES006401	0	0	2	0
Béro II	HH002752	M. Taro, Amos	ID022033	27	16	6.5	1	2008		2009-08-16	VilSur	ES006403	0	0	7	0
Béro II	HH002760	M. Ngarmbatlao, Francois	ID048646	57	4	1.183				2009-12-12	VilSur	ES006413	0	0	1	0
Béro III	HH002770	M. Nadjitessem, Valery	ID046394	24	0					2009-09-09	VilSur	ES006427	0	0	2	0
Béro II	HH002792	M. Ngarndigal, Charles	ID049863	45	0					2010-01-06	VilSur	ES006452	0	0	12	0
Béro II	HH002795	M. Ngaradjinan, Manassé	ID049904	43	0					2010-01-07	VilSur	ES006458	0	0	13	0
Béro III	HH002796	M. Ndanguilao, Todjimda	ID020654	52	2	0.463				2010-01-09	VilSur	ES006459	0	0	9	0
Béro II	HH002797	M. Morbe, Jacques	ID048861	31	2	1.622				2010-01-10	VilSur	ES006460	0	0	7	0
Béro II	HH002488	Mme. Rapi, Lucie	ID029318	31	1	0.115				2009-07-04	VilSur	ES006097	1	0.127	8	0.016
Béro II	HH002040	M. Keiro, Ramadidé	ID034233	60	4	1.222				2009-04-26	VilSur	ES005205	1	0.818	14	0.058

Béro II	HH002429	M. Nodjiressem, Benjamin	ID029317	27	1	0.092				2009-08-20	VilSur	ES006038	1	0.295	3	0.098
Béro II	HH002265	M. Mbairessem, Timothee	ID022015	35	3	0.619				2009-06-24	VilSur	ES005869	1	0.803	7	0.115
Béro I	HH002117	M. Mougabe, Robert	ID041862	32	6	1.538				2009-05-07	VilSur	ES005695	1	1.499	12	0.125
Béro I	HH002125	Mme. Nodjiboui, Germaine	ID042017	1	1	0.174				2009-02-05	VilSur	ES005703	1	0.145	1	0.145
Bero IV	HH002338	M. Ngardebal, Valery	ID046837	38	0					2009-07-16	VilSur	ES005943	1	0.867	6	0.145
Béro II	HH000555	M. Wadengar, André	ID021844	52	11	16.574	2		2004	2009-10-07	VilSur	ES006376	2	2.519	16	0.157
Bero IV	HH002499	M. Ngardoh, Sandjiman	ID047884	20	0					2009-09-11	VilSur	ES006109	1	0.48	3	0.16
Bero IV	HH002479	M. Dinguemrabe, Abel	ID027298	26	1	0.12				2009-09-09	VilSur	ES006088	2	1.373	8	0.172
Béro II	HH001421	Mme. Larmadji, Rachel	ID022492	28	1	0.403				2008-09-17	VilSur	ES004489	1	1.051	6	0.175
Béro II	HH002418	M. Belemnou, Jean	ID047367	51	0					2009-07-16	VilSur	ES006024	1	1.784	10	0.178
Béro II	HH002310	M. Mbaïhornom, Faustin	ID046649	42	0					2009-07-04	VilSur	ES005915	2	1.98	11	0.18
Béro I	HH002631	M. Bendoloum, Elie	ID048618	57	0					2009-10-17	VilSur	ES006251	2	2.613	14	0.187
Bero IV	HH002527	M. Ngarassem, Roger	ID027773	29	5	0.696	1	2005		2010-01-08	VilSur	ES006139	1	1.337	7	0.191
Béro II	HH001169	Mme. Dénéassem, Augustine	ID022947	43	10	2.149	1	2002		2008-07-26	VilSur	ES004201	4	1.041	5	0.208
Béro II	HH002337	M. Mbatilo, Joachim	ID046830	45	1	0.954	1			2009-07-20	VilSur	ES005942	1	1.695	8	0.212
Bero IV	HH001660	M. Ngarasdjim, Ngarndouba	ID038477	57	8	1.285				2009-01-15	VilSur	ES004783	4	2.169	10	0.217
Béro I	HH002166	Mme. Baneassem, Élizabeth	ID021965	37	1	0.36				2009-05-08	VilSur	ES005749	1	0.434	2	0.217
Béro II	HH001167	M. Koularambaye, Donatien	ID022946	26	18	3.648	1	2007		2008-07-26	VilSur	ES004199	1	1.368	6	0.228
Béro I	HH002394	M. Belongar, Marcel	ID047212	51	0					2009-07-20	VilSur	ES005999	2	1.654	7	0.236
Béro II	HH002075	M. Mbaïramadjim, Blaise	ID036090	31	1	0.368				2009-04-22	VilSur	ES005648	2	1.669	7	0.238
Bero IV	HH002475	M. Nadjibeye, Firmin	ID047686	34	0					2009-09-09	VilSur	ES006084	2	2.176	9	0.242
Béro II	HH002204	Mme. Ndoubabe, Pauline	ID024903	44	6	0.698	1	2005		2009-05-20	VilSur	ES005800	1	1.234	5	0.247
Béro II	HH002693	Mme. Denehodjilar, Martine	ID025075	34	2	0.211				2010-01-08	VilSur	ES006330	1	1.007	4	0.252
Béro II	HH000489	M. Nadjihonbe, Mbaïssig	ID021902	32	4	4.082	1		2006	2008-11-28	VilSur	ES004644	2	3.136	12	0.261

Béro III	HH000846	Mme. Lalembaye, Brigitte	ID022590	35	2	0.246	1		2006	2008-02-01	Suivit	ES004497	1	1.575	6	0.263
Béro II	HH002134	M. Djedouboum, Eugène	ID021879	41	5	2.142				2009-04-17	VilSur	ES005713	4	1.627	6	0.271
Bero IV	HH002358	M. Alladoum, Florent	ID046977	31	0					2008-07-20	VilSur	ES005963	1	1.904	7	0.272
Béro II	HH000592	M. Ndigngar, Julien	ID020635	35	3	1.323	1		2007	2010-01-04	VilSur	ES006436	1	1.98	7	0.283
Béro II	HH001643	M. Madjadoum, Sylvain	ID020631	39	10	6.06	1	2005		2008-12-05	VilSur	ES004766	7	3.753	13	0.289
Béro I	HH000856	M. Djikolngar, Georges	ID020645	28	3	2.093	1		2007	2008-03-29	FT	ES003879	3	3.19	11	0.29
Béro II	HH002106	M. Soulengar, Bertin	ID021634	45	16	2.918	1	2005		2009-04-21	VilSur	ES005683	4	3.294	11	0.299
Bero IV	HH002506	M. Djimamnodji, Isidore	ID047905	23	0					2009-09-16	VilSur	ES006116	2	0.901	3	0.3
Bero IV	HH002514	M. Djikoloum, Anicet	ID047936	30	0					2009-09-17	VilSur	ES006125	1	1.52	5	0.304
Béro II	HH000406	M. Mbaïndignodji, Maxime	ID020774	26	5	1.646				2008-02-17	Impct	ES003391	1	2.523	8	0.315
Béro I	HH000710	M. Ngarmbete, Francolin	ID022509	30	2	0.634				2009-05-08	VilSur	ES005861	5	5.535	16	0.346
Béro III	HH000702	M. Maringar, Édouard	ID022658	56	10	3.12				2008-04-12	FT	ES003716	3	4.864	14	0.347
Béro I	HH002361	M. Betoudji, Leon	ID026785	29	2	0.466				2009-07-07	VilSur	ES005966	2	2.096	6	0.349
Béro III	HH002420	Mme. Oussouromti, Martine	ID047377	66	2	2.898				2009-08-21	VilSur	ES006027	4	1.424	4	0.356
Bero IV	HH002711	M. Ngarndigal, Prospere	ID043285	44	33	15.91				2009-05-17	VilSur	ES006350	8	3.771	10	0.377
Bero IV	HH000322	M. Ngakoutou, Moussa	ID020467	23	5	2.783				2008-08-25	VilSur	ES005131	4	2.302	6	0.384
Bero IV	HH002162	M. Mbaïnaissem Natingar, Clement	ID036445	37	1	0.139				2009-05-16	VilSur	ES005745	2	1.937	5	0.387
Béro I	HH002412	M. Djedouboum, Sylvestre	ID035190	29	2	0.531				2009-07-11	VilSur	ES006018	1	1.549	4	0.387
Bero IV	HH002104	M. Djimtoingar, Romeo	ID036800	23	8	3.536				2009-04-17	VilSur	ES005681	4	1.551	4	0.388
Béro III	HH002521	M. Nahoundangar, Elie	ID047985	39	2	2.616				2009-09-09	VilSur	ES006133	6	6.672	17	0.392
Béro II	HH002386	M. Roasngar, Edmond	ID047137	27	0					2009-07-05	VilSur	ES005991	1	1.993	5	0.399
Bero IV	HH001827	M. Allandiguim, Jonas	ID021635	29	6	1.988				2009-01-20	VilSur	ES004973	2	2.101	5	0.42
Béro II	HH002459	M. Ngarmbatibe, Gédéon	ID047609	26	0					2009-09-05	VilSur	ES006068	1	1.33	3	0.443

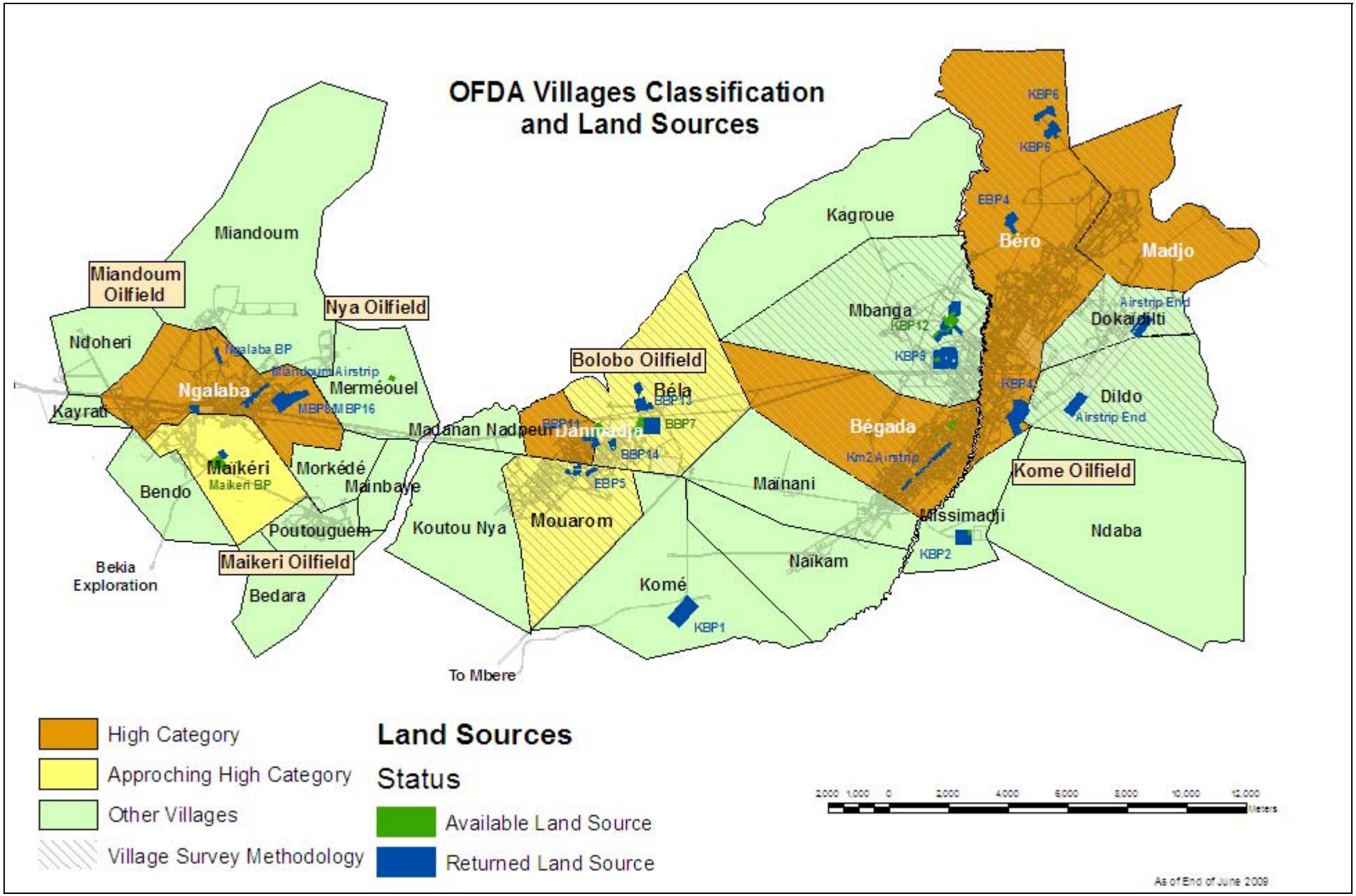
Béro II	HH001538	M. Mbaiare, Nodjihoroum	ID000034	36	1	3.131				2008-11-22	VilSur	ES004645	1	2.699	6	0.45
Bero IV	HH002354	M. Mbairamadji, Yves	ID045694	25	3	0.7				2009-06-26	VilSur	ES005959	2	2.253	5	0.451
Béro II	HH001414	M. Mbaïrabe, Zobel	ID020466	32	7	1.473				2008-10-11	VilSur	ES004482	3	2.751	6	0.459
Béro II	HH002383	M. Jean, Assingar	ID047124	41	0					2009-07-04	VilSur	ES005988	3	3.292	7	0.47
Béro II	HH002200	M. Mbaïhornom, Firmin	ID020511	27	5	0.752	1	2005		2009-06-26	VilSur	ES005794	2	3.345	7	0.478
Béro II	HH002471	Mme. Nodjilar, Odette	ID047669	24	1	0.548				2009-08-30	VilSur	ES006080	1	1.959	4	0.49
Bero IV	HH001619	M. Mingadingam, Francis	ID022973	33	19	4.817				2008-12-18	VilSur	ES004738	9	4.516	9	0.502
Béro II	HH002243	M. Dinguemrabé, Fidèle	ID021357	40	1	0.105				2009-06-10	VilSur	ES005844	3	3.083	6	0.514
Béro I	HH002452	Mme. Mango, Suzanne	ID047561	64	0					2009-09-02	VilSur	ES006061	1	1.034	2	0.517
Bero IV	HH002217	M. Dingamtombaye, Zacharie	ID022503	30	5	1.311				2009-05-21	VilSur	ES005814	1	2.096	4	0.524
Béro I	HH002485	M. Nadjiamroh Tokara, Job	ID047773	48	0					2009-09-03	VilSur	ES006094	1	1.577	3	0.526
Béro I	HH002438	Mme. Ndounambaye, Monique	ID047500	52	0					2009-09-01	VilSur	ES006047	1	1.074	2	0.537
Béro III	HH002493	M. Masdigam, Joel	ID047829	22	0					2009-09-14	VilSur	ES006103	1	1.618	3	0.539
Béro II	HH002320	M. Houndamadji, Valentin	ID023108	37	4	0.914				2009-06-12	VilSur	ES005925	4	2.727	5	0.545
Bero IV	HH002159	Mme. Ramdolarti, Agnès	ID022896	36	1	0.24	1	2005		2009-05-14	VilSur	ES005742	3	2.186	4	0.547
Béro II	HH001532	M. Djimarabeye, Christian	ID022568	23	3	0.368				2008-11-26	VilSur	ES004638	4	2.76	5	0.552
Béro II	HH002372	M. Djimadji, Jackson	ID047067	27	0					2009-08-12	VilSur	ES005977	2	4.428	8	0.554
Béro II	HH001534	Mme. Laradem, Charlotte	ID026032	19	3	0.156				2008-11-27	VilSur	ES004640	2	2.782	5	0.556
Béro I	HH002395	M. Ngari, Justin	ID047219	44	0					2009-07-15	VilSur	ES006000	1	4.466	8	0.558
Béro I	HH002517	M. Ndjengomde, Ernest	ID047959	26	0					2009-09-26	VilSur	ES006128	2	3.388	6	0.565
Bero IV	HH002508	Mme. Ndjanrebe, Rosalie	ID047912	68	0					2009-09-11	VilSur	ES006118	1	1.725	3	0.575
Bero IV	HH002336	M. Nedinguemram, Sylvain	ID046828	23	0					2009-07-18	VilSur	ES005941	1	1.159	2	0.58
Béro I	HH002494	M. Ndoumadingar, Ngarta	ID047831	58	0					2009-07-28	VilSur	ES006104	2	2.934	5	0.587
Béro II	HH001417	M. Mbaïndiguim,	ID022647	30	12	3.811	1	2005		2008-07-07	VilSur	ES004485	6	4.724	8	0.591

		Israel														
Bero IV	HH002421	M. Djimassal, Thomas	ID047381	38	0					2009-08-19	VilSur	ES006028	1	2.962	5	0.592
Bero IV	HH001611	M. Djimasbeye, Ernest	ID025800	26	2	0.37				2008-12-24	VilSur	ES004730	2	2.993	5	0.599
Béro II	HH002207	M. Rongar, Jacques	ID026777	54	2	0.464				2009-06-05	VilSur	ES005803	2	3.035	5	0.607
Bero IV	HH001662	Mme. Tobeingar, Pauline	ID022453	51	6	1.486				2009-01-14	VilSur	ES004785	5	3.647	6	0.608
Béro II	HH000407	M. Hossenan, Jules	ID033434	49	7	2.523	1	2006		2008-02-17	Impct	ES003392	2	4.894	8	0.612
Béro I	HH002445	M. Mbaihondelem, Mbangro	ID047517	50	0					2009-09-03	VilSur	ES006054	1	6.762	11	0.615
Bero IV	HH001146	Mme. Oussouromte, Nouvelle	ID020510	43	9	2.159	1	2004		2008-08-28	VilSur	ES004178	6	6.8	11	0.618
Béro II	HH001797	M. Rissengar, Esaïe	ID020636	49	4	1.89				2009-01-28	VilSur	ES004940	4	4.389	7	0.627
Bero IV	HH001704	M. Ngargoloum, Ferdinand	ID022382	46	8	11.219				2008-12-19	VilSur	ES004833	5	8.187	13	0.63
Béro II	HH002505	M. Ngartessem, Hubert	ID047903	29	0					2009-09-17	VilSur	ES006115	1	1.274	2	0.637
Bero IV	HH002512	M. Keidinguem, Fidel	ID047925	31	0					2009-09-15	VilSur	ES006123	5	3.824	6	0.637
Béro I	HH002221	M. Djimtoné, Anicet	ID021925	26	5	0.612	1	2005		2009-05-08	VilSur	ES005819	2	4.469	7	0.638
Béro II	HH001524	M. Sandjitorem, Patrice	ID022383	38	5	2.526	1	2005		2008-09-16	VilSur	ES004629	3	3.227	5	0.645
Bero IV	HH002480	M. Mbaïasnan, Guy	ID021724	32	5	3.118				2009-09-11	VilSur	ES006089	2	3.893	6	0.649
Béro III	HH002633	M. Rahadoumadji, Justin	ID048649	26	0					2009-09-09	VilSur	ES006253	1	1.321	2	0.661
Béro II	HH002063	Mme. Madjibeye, Dorkas	ID022013	44	4	1.361				2009-04-17	VilSur	ES005628	2	1.989	3	0.663
Béro II	HH000444	M. Djamadjibeye, Mbaindoh	ID026025	32	10	2.623	1		2006	2009-05-30	VilSur	ES005734	6	5.316	8	0.665

Bero has:

- 611 HH in Bero
- 193/611 at risk HH (i.e. from zero land to just under 1 corde/HHM)
    - 131/193 at risk HH have surrendered land to the Project
    - 133/193 of the at risk HH are Non-Viable, or under 2/3 corde / HHM, whether or not they have surrendered land to the Project; the remainder are Marginal
    - 87/133 Non-Viable HH surrendered land to the Project

4.4. OFDA Village Map



4.5. Fault Block Concept

Definition of a Fault Block

The infill drilling program is to be implemented in sections called “Fault Blocks”. A Fault Block is a geologic feature of an oilfield. A discrete section of the field, called a Fault Block, shares the same oil-bearing formation and characteristics. The formation and characteristics are first defined through seismic exploration but more thoroughly defined and understood through the behavior of oil wells as they continue to produce. Thus the comprehension of the extent and nature of fault blocks increases with experience in the oilfield.

With this developing understanding Reservoir Engineers attempt to optimize production of increasingly clearly defined portions of the oil field. They develop strategies for dealing with the characteristics of each particular Fault Block. Working on these small, defined geological areas they are able to exploit the good producing areas while making decisions not to disturb other, less productive areas.

How working with Fault Blocks reduces impact

The Reservoir Engineers have also grown sensitive to minimizing land take. Fault block by fault block, Reservoir is giving the EMP team the location of all the wells which need to be drilled within the footprint of the Fault Block while in the past, locations of wells were known only one request at a time. The fault block process allows the minimization of land required for access roads, flowlines and electrical lines. Because land in a fault block has already been used for well pads, roads and facilities, these can be reused or reconfigured to minimize land take. Reservoir is working with the Environmental Management Plan group and with Construction to use over again or to modify existing construction – access roads to well pads, electric and flow lines. Much of the land to be used in a fault block is land already in use as pads, roads, electrical lines etc. From the construction standpoint it also becomes possible to recycle the laterite construction material already laid down from less productive areas of the fault block. This reuse means new areas of land do not need to be disturbed by mining. This is a bonus as finding nearby sources of laterite is difficult and moving it long distances is expensive.

Working by fault block allows most construction, drilling and initial reclamation work to be done within a shorter and limited period of time.

- Reuse takes less time than new construction.
- Moving laterite from abandoned area to new construction; moving topsoil from new construction to reclaim abandoned area, recycles already acquired land, reduces EEPCI costs and speeds up reclamation.
- Reduces BP surface area.
- Allows efficient and effective one time reclamation and return rather than continuous reopening of same trenches where land has been restored, returned and then reacquired and reused.
- Reduces loss of topsoil from reclaimed land that is then reopened
- Less disruption to community and to farming as work occurs within limited time
- More efficient use of construction equipment/labour is good for EEPCI
- Reduces number of quitus whose signature process has begun but not finished before the land is requested again. I.e. fault blocks costs the farmer nothing & reduces EMP paperwork/legwork.

By working block-by-block, the project will be able to optimize the pattern of access roads, flowlines and electrical lines, regulate the amount of land required, and reduce the period of construction needed to continue development of Chad's oil

How to assess social impact using fault blocks

A fault block defines the maximum degree, or "worst case scenario" of impact on land and people. Only land within the fault block will be used and only those using this land will be affected. Fault blocks define where to look for people who will be impacted. With satellite photography and the EMP-IS database and maps the EMP team can identify who is farming in the fault block area, their houses, shelters, etc. Any area within a fault block for which such EMP-IS information has not yet been collected can be (and has been) immediately targeted for inclusion in the EMP-IS.

Working by fault blocks reduces the need for additional land, as discussed above. It also facilitates the identification of social impacts. On the surface the subsurface layout of productively producing areas circumscribes the area of land that will be targeted for more intensive exploitation. From the social standpoint this means that fewer people will be impacted because construction has already removed some land from agricultural use. It means, in fact, that the same people already impacted are most likely those who will be impacted again. The number of HH impacted will not increase by much, but the same HHs will be impacted again.

Fault Blocks outline who may be impacted but not the degree of impact

Initial understanding of who could be impacted in a fault block can be rapid but approximate even without full village mapping. If EMP-IS identifies people already compensated for land in the fault block and already knows their resettlement status (based on earlier compensation data and resettlement choices), then it is likely these people could lose additional land, so EMP knows it must ensure that non-viable HH are still able to pursue effectively their chosen resettlement option, or else offer other options.

But determining the degree of impact on a household using land in a fault block depends on mapping all a household's fields. Individuals classically pursue a strategy of cultivating land in several areas in order to minimize crop risks; if pests get one field, or the river floods another, there will still be other fields elsewhere that escape. Taking land within the fault block does not, therefore, necessarily deprive a farmer of all his land (though it can).

The reason for which EMP Impact Teams were created is to measure all the fields of a person/household just identified for compensation and enter the up-to-date information into the EMP-IS. The new land acquisition is subtracted from the holdings and viability calculated. If non-viable the social team advises on resettlement options.

The Impact Team's information is a step in defining the impacted household's status. But for a clear picture of each household's land holdings LUMAP experience with mapping for the Village Site Specific Plans shows that mapping all the fields within a village area is needed for an accurate picture. As the mapping covers more and more of the area, the landholders of those fields that have not been claimed are identified and their total land holdings are known with accuracy. Hidden fields are uncovered that belong to seemingly "non-viable" households.

Predicting who will be impacted and by what degree

Given the agricultural system used in the OFDA, the use of a piece of land shifts frequently between field and fallow, the contours change depending on the crop being planted and the energy of the planter. The planters change as well between different members of the family, neighbors, and relatives from other villages, etc. Who is cultivating what exactly where cannot be known until the compensation identification team hits the ground and makes an identification.

What complete village mapping does do is offer a tool for predicting impact. When a village is surveyed everyone's approximate status is known:

1. Already non-viable
2. Near threshold (between just over 2/3 corde/HHM to 2.5 c./HHM)
3. Land rich (2.5 cordes/ HHM)
4. Non-agricultural income sources

The maps reveal the land holdings of everyone within the fault block at the time of the mapping. Most of the people identified will be the people that will be affected by the new land requests. The impact of the request on their situation can also be evaluated. The EMP-IS can list:

1. The number of, and identity of, non-viable HH within the fault block
2. Same for HH near the threshold of becoming non-viable
3. The number of land-rich HH who are most unlikely to be greatly affected
4. HH with additional non-agricultural income sources to offset land take

The EMP-IS indicates the households that need to be monitored – categories 1 and 2. The EMP-IS can also indicate the large landholders with land OUTSIDE any fault block, to whom non-viable individuals can be oriented for 3rd party land.

Once the compensation team has brought up to date the people farming in the impacted area, then for recently mapped areas the EMP-IS can define the actual impact, subtracting the new compensated area from the amount available to the household. For areas not yet mapped, the Impact Team sets to work, but unless all the fields in the village have been identified it is less able to accurately define impact and more likely to overestimate a household's non-viability. But in either case any resettlement actions can be undertaken immediately.

For example, Fault Block 3-4, involving the village of Begada, shows how the possible impact can be predicted.

Potential Impact of Begada Infill		
HH status	# HH in Fault Block	%
# HH already < 2/3	6	5
# viable HH	22	20
# land-rich HH	34	31
# potentially at risk	22	20
# houses/structures in FB	0	0

Definitions:

- HH already < 2/3 c. Any additional land take will worsen their already non-viable status. Are the resettlement measures already taken still sufficient?
- Viable HH: HH with between 2/3c and 2.5 c of land per HHM. Depending on their current holdings and the amount of land to be surrendered they may become non-viable
- Land-rich HH: HH with more than 2.5 c per HHM. Only a massive land take would make a HH non-viable.

In fact all the construction requests for Fault-Block 3-4 have been received and the actual impact has been defined. Because the land take is occurring within the confined area of a fault block and where a number of people have already been compensated, then:

Actual Impact of Begada Infill		
HH status	# HH in Fault Block	%
# HH already < 2/3	6	5
# viable HH	22	20
# land-rich HH	34	31
# new non-viable HH	0	0
# houses/structures touched	0	0

Land take in the Begada Fault Block for Infill Drilling did not put any marginal HH below the viability threshold. Therefore the only resettlement action needed is to check with the HH already involved in resettlement about the continued tenability of their choice of option.

Conclusion:

- Working by fault block is the natural outcome of a learning process aimed at maximizing production and minimizing investment in drilling and construction.
- Construction is, additionally, minimized through the reuse and modification of existing project infrastructure above the fault block areas being maximized.
- Intensifying the use of an area means that the people already compensated for land in that area are most likely the people who will be affected again.
- The EMP-IS allows EMP to predict in advance the people who will probably be impacted and the probably outcome of that impact.
    - For HH already non-viable their situation can be monitored and resettlement options readjusted. In any case this happens automatically with resettlement monitoring.
    - For HH near the threshold, once compensation identification has been done then their resettlement status can be calculated and resettlement initiatives started.
    - For large land holders their situation will be recalculated to check that they remain viable.