

ANNEX 4.5
Sampling Methodology
Mail Survey of
Absentee Owners

1 THE SURVEY POPULATION

The survey population is the absentee owners and users that pipeline passes through their parcels. The referred population left their villages-towns and cities, and settled to different (big) cities . It covers 9 provinces of the country which are Ardahan, Erzincan, Erzurum, Gümüşhane, Kahramanmaraş, Kars, Kayseri, Osmaniye and Sivas. In the survey population (target population) 1133 (949 addresses available + 184 only telephone numbers available) units (addresses and phone numbers of parcel owners) are included.

Due to the importance of the certification of the accuracy of the absentee owners addresses the survey instrument together with the extensive information on the project and its land acquisition aspects the survey has been mailed to the absentee owners. This procedure has allowed a judgment on the future steps required both for absentee owner address identification and for consultation/RAP disclosure.

1.1 SAMPLE UNIT

Absentee landowners and users whose land will be expropriated for the construction and operation of the pipeline.

1.2 STRATIFICATION OF POPULATION

Only one stratification variable is used on the target population. This stratification is the geographic regions (provinces-districts-villages) of the parcels.

1.3 SAMPLING METHOD

The survey population is very heterogeneous, to get a sufficiently precise estimate by taking a simple random same from the entire population is very difficult. So, to divide this population into parts (or strata) on the basis of geographic regions and a random sample of landowner (user) taken from each stratum, will give us a better estimate of the strata averages, which in turn should help in producing a better estimate of the population averages (to achieve higher precision).

1.4 SAMPLE DESIGN

Determination of Sample Size: It is well known that too large a sample implies a waste of resources and too small a sample diminishes the utility of the results. So the statement of precision desired may be made by giving the amount of error that we are willing to tolerated in the sample estimates.

The following procedures will be used to determine the sample size:

S.E(p): Standard error

N: Total population

n: Final sample size (adjusted or corrected)

n*: Temporary sample size (approximated)

f:n/N: Sampling fraction

α : Level of statistical significance (2(S.E(p)), two-way)

t: Students t-statistic (for $\alpha=0.05$, $t_{\alpha} \cong 2.00$)

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d:Tolerance level (0.05)

Q= P=0.5: Probability of selection.

$V = \frac{d^2}{t^2}$: desired variance of the sample proportion

$$V=(S.E(p))^2 \Rightarrow (S.E(p))^2 = \frac{d^2}{t^2} = \left(\frac{0.05}{2} \right)^2 = 0.000625$$

S.E.(p)=0.025

$$S.E(p) = \sqrt{\frac{PQ}{n^*}} \Rightarrow n^* = \frac{PQ}{(S.E(p))^2} = \frac{(0.5)(0.5)}{(0.025)^2} = 400$$

$$n = \frac{n^*}{1 + (n^* / N)} = \frac{400}{1 + (400 / 1133)} \cong 296$$

As usual, the most important disadvantage of this mail survey is the low ratio of the return responses so in this survey the return responses ratio will be taken into account as 50% and 2*n (five times of sample volume) will be sent.

Expected maximum f=592/ 1133 = 0.52 and Expected minimum f=296/1133 = 0.26

Sample Selection and Allocation: The sample design is based on probability selection. For the sample design selection and allocation into strata, a probability proportional to size selection (PPS) is used. For each strata (region: province-district), sample allocation is based on the corresponding total population proportions which are given in Table 1.

Table 1. Population distribution of absentee landowners according to provinces and districts

District	Ardahan	Erzincan	Erzurum	Gümüşhane	K.Maraş	Kars	Kayseri	Osmaniye	Sivas
Altınyayla									33
Andırın					112				
Aşkale			34						
Çayırlı		10							
Ceyhan									
Damal	35								
Göksun					106				
Hafik									32
Hanak	33								
Horasan			53						
İlica			26						
İmranlı									17
Kadirli									
Kelkit				1					
Köprüköy			34						
Merkez	35		34					29	14
Pasinler			28						
Pınarbaşı							108		
Posof	63								
Refahiye		32							

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Sarıkamış						9				
Sarız							34			
Selim						49				
Şenkaya			21							
Susuz						2				
Tercan		61								
Ulaş										23
Zara										65
Total	166	103	230	1	218	60	142	29		184
%	14.7	9.1	20.3	0.0	19.3	5.3	12.5	2.6		16.2

Total :N= 1133

Table 2 Sample distribution of absentee landowners according to provinces and districts

District	Ardahan	Erzincan	Erzurum	Gümüşhane	K.Maraş	Kars	Kayseri	Osmaniye	Sivas
Altınyayla									18
Andırın					59				
Aşkale			18						
Çayırlı		5							
Ceyhan									
Damal	19								
Göksun					56				
Hafik									17
Hanak	12								
Horasan			28						
Ilıca			14						
İmranlı									9
Kadirli									
Kelkit				1					
Köprükoy			18						
Merkez	19		18					15	7
Pasinler			15						
Pınarbaşı							57		
Posof	33								
Refahiye		17							
Sarıkamış						3			
Sarız							18		
Selim						26			
Şenkaya			11						
Susuz						---			
Tercan		32							
Ulaş									12
Zara									34
Total	83	54	122	1	115	29	75	15	97
%	14.0	9.1	20.6	0.0	19.5	4.9	12.7	2.5	16.7

Total n = 591

1.5 LANDOWNER SELECTION

For selection of the villages, the sample of absentee landowners were determined according to the weights the villages were assigned as per above. For each district and village, list of the sample units were determined from the sorted address (telephone number)list and given in Table

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3. And shown sample units were selected from each strata (province-district-village) by using a simple random sampling (systematic sampling) method.

Table 3 Sample Distribution of Absentee Landowners According to Provinces, Districts and Villages

Province	Order Num.	District	Order Num.	Village	Freq.	Sample Units(Order Num.)	
Ardahan	2-166	Damal(19)		Burmadere	8(4)	2,4,6,8	
				Dereköy	21(12)	9,11,13,15,17,19,21,23,25,27,28,29	
				Otağlı	6(3)	30,32,34	
			Hanak(17)		Alaçam	19(12)	36,38,40,42,44,46,48,50,52,54,55,56
					Koyunpınarı	9(5)	60,62,64,66,68
			Merkez(19)		Dağcı	5(2)	70,72
					Hasköy	2(1)	75
					Ortageçit	6(3)	76,78,80
					Tepesuyu	22(13)	82,84,86,88,90,92,94,96,98,100,101,102,103,
			Posof(33)		Çakırkoç	8(3)	105,107,109
					Kayınlı	11(7)	114,116,118,120,122,123,124
					S.Kaya	11(7)	132,134,136,138,140,141,142
				Taşkıran	18(13)	145,147,149,151,153,155,156,157,158,159,160	
				Türkgözü	6(3)	162,164,166	
Erzincan	167-269	Çayırılı(5)		Verimli	5(3)	172,174,176	
				Refahiye(17)		Alacaatlı	18(10)
			Tercan(32)		Teknecik	6(4)	196,198,199,200
					Yurtbaşı	7(5)	202,204,206,208
					Beğendik	24(15)	211,213,215,217,219,221,223,225,227,229,230,231,232,233,234,236
					Çadirkaya Merkez	8(5) 20(12)	237,239,241,242,243 246,248,250,252,254,256,258,260,262,263,264,265
Erzurum	270-499	Aşkale(18)		Güllüdere	5(3)	274,276,277,	
				Karabıyık	4(2)	278,280	
				M.Köy	9(6)	282,283,284,286,288,290	
			Horasan(28)		Tazegül	10(7)	294,295,297,298,300,301
					Değirmenler	10(7)	309,311,312,313,314,315,316
					Kalender	7(4)	321,323,325,327
					Kırıkdikme	16(10)	328,329,331,332,333,335,337,339,341,343
			İlica(14)		Y.B.Özü	13(7)	344,346,348,350,352,354,356,
					Alanbeyi	9(5)	357,358,359,361,363,365
					Beypınarı	3(1)	367
			Köprüköy (18)		Gelinkaya	4(2)	368,371,
					Paşayurdu	10(6)	373,375,377,379,381,
				A.Çakmak Merkez	13(7) 21(11)	383,385,387,389,391,393,395 396,398,400,402,404,406,408,410,412,414,416	
		Merkez(18)		Altunbulak	14(8)	418,420,422,423,424,426,428,430	
				Mülk	8(4)	432,434,436,438	
				Ortadüzü	7(4)	440,442,444,445	
				Sıh	4(2)	447,449	
		Pasinler(15)		Büyüktüy	10(7)	452,453,455,456,457,458,460	
				Çakırtaş	5(4)	462,463,465	
				Coğender	5(4)	466,467,469,470	
		Şenkaya(11)		G.Yayla	4(2)	481,482	
				Kaynak	14(9)	485,488,490,492,494,495,496,497,499	

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Gümüşhane	500	Kelkit(1)		Güllüce	1(1)	500
K.Maraş	501-718	Andırın(59)		Akifiye	16(8)	501,503,505,507,509,511,513,515
				Altunboğa	23(13)	519,520,521,523,525,527,529,531,533,535,537,539,541
				Çokak Kesim	10(5) 31(22)	542,544,546,548,550,552,554,555,556,558,559,560,562,563,564,566,567,568,570,571,572,574,575,576,578,579,580,582
				Yeşilyurt	21(11)	592,594,596,598,600,602,604,606,608,610,612
		Göksun(56)		D.Dere	12(8)	613,615,617,619,621,622,623,624
				F.Koyak Mehmetbey	10(5) 27(15)	626, 628, 630, 632, 634 642,644,646,648,650,652,654,656,658,659,660,662,664,666,668,
				Tahirbey Taşoluk	11(6) 38(22)	671,673,675,677,679,681 682,684,686,688,690,692,694,696,698,699,700,702,704,705,706,708,710,711,712,714,716,718
Kars	719-778	Sarıkamış(3)		Balabantaşı Karaorgan	3(1) 5(2)	720 722,724
		Selim(26)		Akçakale Başköy	4(2) 6(4)	728,730 732,734,736,738
				Beyköy Bozkuş	9(7) 13(10)	741,742,743,744,746,747,748 750,752,753,754,756,757,758,759,760,761
				Karakale	5(3)	768,770,772
Kayseri	779-920	Pınarbaşı (57)		A.Borandere A.Kızılcavik Altınkesek	6(3) 5(2) 29(18)	779,781,783 786,788 791,792,793,795,797,798,799,801,803,804,805,807,809,811,813,815,817,819
				Hilmiye	14(8)	820,822,824,826,828,830,832,833
				Kırkgeçit	13(8)	834,836,838,839,840,842,844,846
				Öreñşehir	25(14)	849,851,853,855,857,859,860,861,863,865,867,869,871,873
				Y.Borandere	9(4)	878,880,882,884,
		Sarız(18)		Altısöğüt Karakoyunlu	6(4) 8(5)	887,888,890,891 895,896,898,899,901
				Yaylacı	6(3)	906,908,910,
				Y.Kent.Kas.	9(6)	912,914,915,916,918,920
Osmaniye	921-949	Merkez(15)		Hemite	9(5)	922,924,926,928,929
				Kırmacılı	8(4)	930,932,934,936
				Orhaniye	7(3)	938,940,942
				Sakarçalık	5(3)	947,948,949
Sivas	950-1133	Altınyayla (18)		Başören Harmandalı Taşlıhöyük	6(3) 9(5) 15(10)	950,952,954 957,959,961,963,965 968,970,971,972,974,976,977,978,980,982
		Hafik(17)		Alçıören	23(14)	983,985,987,988,989,991,993,995,997,998,999,1001,1003,1005
				Gölcük	4(1)	1009
				T.Yeniköy	5(2)	1011,1013
		İmranlı(9)		Kemreli	4(2)	1017,1019
				Piredede	5(4)	1022,1024,1025,1026
				Yaylacık	5(3)	1027,1029,1031
		Merkez(7)		Sivritepe	4(2)	1033,1035
				Tahtikement	4(2)	1037,1039

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				Uçtepe	5(3)	1040,1042,1044
		Ulaş(12)		Boğazdere	10(7)	1046,1047,1048,1050,1052, 1054,1055
				Karasar	8(5)	1057,1058,1060,1061,1063
		Zara(34)		Demiryurt	18(10)	1071,1073,1075,1077,1079, 1081,1083,1085,1087,1088,
				Ekinli	33(20)	1089,1091,1093,1095,1097, 1099,1100,1101,1103,1105, 1107,1108,1109,1111,1113, 1114, 1115,1117,1119,1121,
				Sucak	8(4)	1126,1128,1130,1132
	2-1133				(591)	