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INTEGRATING POVERTY IN UTILITIES GOVERNANCE

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EXECUTIVE SUMMARY

In the last decades, Turkey has witnessed significant number of reforms on utilities where private sector is envisaged to be the provider of electricity, natural gas and water through privatization. The progress of reforms has been slow so far, with very limited examples of privatization implementation. However, the Government is keen on transferring these services into private ownership, which may bring with it noticeable increases in prices and thus reduction in consumption. This study is conducted to understand the potential impact of price changes on expenditure of poor households when the privatization reforms are introduced into electricity, natural gas and water sectors. The water study is the first one conducted in Turkey where water tariffs of different provinces are compared systematically to understand consumption and expenditure patterns of poor and non-poor households.

The study demonstrates that information available to public on utilities policies and prices are limited. There is no participation of civil society/citizens in pricing of these services. Moreover, there is no social assistance targeting electricity, natural gas and water consumption of the poor. The only sector where there is some sort of a measure to secure minimum consumption of households is electricity. Consumption patterns of poor households are not taken into consideration while pricing electricity, natural gas and water. Particularly, the pricing of water has been done without any apparent rationale or transparency.

Based on these findings, this study recommends Energy Market Regulatory Authority to integrate measures into licenses guaranteeing consumption of a certain amount of electricity and natural gas by poor households; and establishment of Water Market Regulatory Authority to ensure transparency, competitiveness and pro-poor policies in water sector. Our detailed policy proposals are at the subsection “Social policy options and recommendations” on page 7.

**** Further information about the study …***

The study is composed of four main parts: Assessment of statistical capacity of household expenditure surveys (by Alparslan Basaran); Potential impacts of reform on expenditure of poor household (by Necmiddin Bağdadioğlu); Qualitative analysis of informal use, access, and consumption patterns (by Sibel Kalaycıoglu) and Compilation of “State Aids” policy recommendations for protection of poor households (by Abuzer Pınar). The study is expected to generate policy options for more accountable and pro-poor utilities governance, to bring governance of utilities into social policy realms, and thus, to develop capacities for incorporating poverty and Millennium Development Goals concerning the utilities sector reform in Turkey. The following subsections briefly set the scene and explain the findings of the study.

**** Success criteria of reform …***

One of the success criteria of reform is achieving an appropriate balance between various impacts of cost reflective tariff (Kessides, 2004). The cost reflective tariff is good for utilities since

enables to cover costs and sends correct signals to both producers and consumers. Nevertheless, this tariff structure is bad for poor since it discourages consumption.

The cost reflective tariff is expected to ensure producers sufficient revenue to cover both running and investment expenditure. Foster and Yepes (2005) suggest that an electricity firm cannot cover its main operational and maintenance costs when the tariff is below 0, 04 $/kWh, while a tariff of 0, 08 $/kWh provides sufficient revenue to meet operational and maintenance as well as most of investment costs. Komives et al. (2005) suggest that a water firm applying a tariff below 0, 20 $/$m^3$ cannot meet its main operational and maintenance costs, while a tariff between 0, 40 $/$m^3$ and 1, 00 $/$m^3$ creates enough revenue to match operational and maintenance costs as well as most of investment needs. The water firms applying a tariff above 1, 00 $/$m^3$ can easily meet further investments requirements. In the related literature, there are no such thresholds for the firms operating in natural gas sector.

**** The methodology, limitations and study plan …***

There are many ways to examine the impacts of cost reflective tariff on poor. One way is reflecting network losses into tariff[1], and then, analyzing the change in expenditures. For this, we employed the widely applied methodology developed by Waddams Price and Hancock (1998). The methodology is based on a comparison of household expenditure after and before reform, assuming that there is no change in demand.

Applicability of the methodology requires household expenditures and network losses for each sector per province. Only the 2003 Household Budget Survey of the Turkish Statistical Institute provides sufficient household expenditure data for such an analysis in 26 provinces of Turkey. The network losses for electricity are available, thus the methodology is applicable in the electricity sector. However, the methodology is not applicable in either natural gas sector or water sector. It is not applicable in the natural gas sector for two reasons. Firstly, there are no recorded network losses for this sector. And secondly, in 2003 the access to services is very limited since only 10 % of households are connected to the network. As an alternative, the characteristics of natural gas expenditures of poor households are examined. We could obtain water tariffs only for 22 out of 26 provinces. Although the network losses for water are available for 12 out of 22 provinces, the methodology is not applicable either; since increasing block tariff was applied in 17 of 22 provinces of the sample. Thus, instead of applying the methodology, the social aspects of tariffs are examined in the water sector.

**** Who is poor? …***

The identification of poor is another important concern of this study. There are two main ways to identify the poor for the purpose of this study. The first is using the national poverty line (defined as food poverty line or as food and non-food poverty line). The second is employing sector based poverty thresholds. In the related literature, the households spending more than 10 % (3-5 %) of their disposable income or total expenditure on electricity (water) are regarded as electricity (water) poor (Silva et al.,

[1] *This was on the Government agenda until recently, but its implementation has been postponed.*

2008, Reynaud, 2007, Lee, 2007). The households consuming electricity (water) below 1200 kWh (120 m^3) annually are also regarded as electricity (water) poor. Although natural gas poverty thresholds do not exist in the related literature, they can be derived. Since households whose total share of electricity, water and natural gas expenditure exceeds 25 % of their disposable income are regarded as energy poor (Tepic and Frankhauser, 2005), the 10 % threshold can be applied for natural gas sector, as well.

Nevertheless, to avoid mistakenly focusing on those who are not poor by income but poor in terms of sector poverty thresholds, our analysis is restricted on electricity, natural gas and water consumption of the food and non-food poor households.

**** Electricity, natural gas, water expenditure and missing data …***

Almost all 25.746 households participated in the 2003 Budget Survey have connection to the electricity and water networks, while only 10 % has access to the natural gas system (Table 1). 97 % of natural gas consumers are living in big urban cities in Turkey, namely, İstanbul, Bursa and Ankara.

However, a significant piece of information on consumption (27 % of electricity, 34 % of natural gas and 36 % of water expenditure) is missing in the survey (Table 2). The missing data largely belongs to the poor income groups (Table 3). 50 % of missing electricity expenditure of 7.003 households and 54 % of missing water expenditure of 8.535 households are from the first four poorest income deciles. The missing natural gas expenditure of 851 households is evenly distributed in deciles (10 %), while in the first two poorest deciles % 37 and % 31 of data are missing, respectively. Thus, the adverse impact of a potential price reform will be wider than what we identify in the 2003 Budget Survey, and this ought to be taken into account while designing pro-poor policies.

As expected, the electricity, natural gas and water expenditure increases with income, while their share in household disposable income and total expenditure diminishes (Table 4). The differences and inequalities are more obvious when the income distribution and the share of electricity, natural gas and water expenditure in disposable income and total expenditure are analyzed within the province/region.

In terms of electricity poverty thresholds, Western Marmara and South-Eastern Anatolia have the worst records. The poorest households living in these regions spend on average more than 10 % of their annual disposable income on electricity (Table 5). Thus, they are electricity poor.

The households of first two poorest income deciles living in Bursa are natural gas poor according to both income and expenditure thresholds, while only the poorest households of Ankara spend slightly more than 10 % of their annual disposable income on natural gas. In Kocaeli we observe a rather unusual pattern of expenditure, where households within the fourth income decile appears to be spending more than 10 % of their income on natural gas (Table 6).

Water poverty is by far widespread when poverty threshold is taken as 3 % of disposable income/total expenditure. At this threshold, apart from those in the first two richest deciles, almost all households living in Central Anatolia and South-Eastern Anatolia are water poor (Table 7). Lastly,

although the 2003 Budget Survey has the richest data available, the data does not let one observe seasonal variations in households expenditure on utilities services.

**** Potential impacts of reform on electricity expenditure of poor households …***

In 2003, as today, a national electricity tariff is applied in Turkey. Average tariff is around $ 0, 10 which is higher than the threshold of $ 0, 08, allowing publicly owned electricity firms to easily cover their running and investment costs. Likewise, all cost reflective new tariffs are also above this threshold, suggesting that the financial viability of electricity firms is not a problem. Households living in Şanlıurfa, Van and Mardin are badly hit by the tariff reform. The high rate of missing data from these provinces raises the number of people who might be suffering from the new tariffs (Table 8). Of 4.584 food and non-food poor households consuming electricity, 450 live in the aforementioned provinces, and have to pay under the new tariff approximately more than twice as much as they used to pay for electricity (Table 9). The households who are also adversely affected by the tariff reform are the ones living in South-Eastern Anatolia (represented by Mardin and Şanlıurfa) and Middle-Eastern Anatolia (represented by Van) (Table 10), the households of first two poorest income deciles (Table 11), the crowded families (Table 12) and those who have a head of family with low education level (Table 13).

**** Characteristics of natural gas consumption of poor household …***

As stated above, only 10 % of 25.746 households are consuming natural gas in 2003, therefore the sample is unrepresentative of natural gas consumption. Despite this, as expected, the household natural gas expenditure increases, and their share in disposable income and total expenditure diminishes with income. The poorest households spend four times more than what the richest households spend as percentage of disposable income on natural gas. Their difference between rich and poor households' shares of income in total expenditure is rather low, slightly more than double. Students and workers sharing the same dwelling are spending the highest portion of income on natural gas as a share of both disposable income and total expenditure. Education level seems to be a major influence on consumption of natural gas. Expenditure on natural gas is increasing, while the share of expenditure in disposable income and total expenditure decreasing with education. Of those who are food and non-food poor, 194 households spend 15 % of their disposable income, and 253 households spend 15 % their total expenditure on natural gas. Only 7 % of the households of the latter group are from the first income deciles, suggesting that the natural gas consumption is low among poor households (Table 14).

**** Social aspect of water tariffs …***

As of today, in 2003 the majority of municipalities are applying increasing block tariff for water consumption in Turkey. The number of blocks, the limits of block intervals and the average tariff applied to the blocks vary between provinces, and these have enormous influence on water consumption behavior of households (Table 15). In 2003, we observe widespread water poverty in Turkey. Officially there is 55 % network loss in the water sector (ÇOB, 2007). We are confident that a reform reflecting this network loss into tariff will discourage water consumption of many, particularly poor, households. How and if these network losses are reflected to the tariff is a matter to be decided by Municipal Council

of each province. However, the tariffs implemented in 2003 are demonstrating that the municipalities are not concerned with poor household water consumption.

Only five out of 22 municipalities are applying a flat tariff in 2003, while the rest are charging for water according to consumption level. The tariff structure suggests that the municipalities are not taking into account the water requirements of poor households. Except in Van and Aydın, all municipalities are covering their running and investment costs at various degrees from the water consumption within the first block. The range of the first block and its tariff policy bring the consumption levels of poor and non-poor closer to one another, and give a bad example of demand management in water sector. Furthermore, probably because the consumers are not informed about the blocks and their corresponding tariffs, they are not properly managing their water consumption, and thus wasting water (Table 16).

**** Field study …***

As it was stated above, the 2003 Budget Survey does not cover some important issues which will make household electricity, natural gas and water consumption profiles clearer. Thus, it could not be possible to determine the methods pursued to maintain the consumption, to understand the problems concerning access to services, to determine how the electricity, natural gas and water consumptions are affected by climate change and by regional conditions, to learn about the evaluations of households about consumption of these services and the extent of illegal usage. Furthermore, the 2003 Budget Survey data could not provide the possibility to sufficiently observe electricity, natural gas and water consumption profiles of the poor due to missing data particularly when majority of missing data belonged to the poorest income groups.

Therefore, a field study is conducted in order to analyze the effects of tariff changes on poor households and to determine to what extent the 2003 Budget Survey data accurately reflected the real condition of profiles of expenditures of the poor. The field study is conducted to cover four provinces (Istanbul in both sides of the Bosporus, Çankırı, Kars and Urfa) involving 132 interviews conducted by using an in-depth questionnaire form.

The study inquired the quality and continuity of these services, expenditure of poor households as a percentage of their disposable income; to what extent such expenditure created a financial burden on the household budgets; how the households can cope with this burden and what type of strategies they have developed; what are the opinions and suggestions of those households for raising the quality of such services, who (citizens, governments, themselves, and poor households) can and should do what; how the burden created by this expenditure on the budgets of poor households can be lowered; whether they would suggest a change in government policies for selling the utilities to the poor with more reduced prices and if they support a change in government policies in these lines; and whether they would be willing to be legally connected to the system.

**** Findings derived from field study …***

The findings confirm that utilities consumption is a major burden for the poor households. The burden changes dramatically depending on demographic structure (crowded households with many dependants); employment opportunities (mainly of the men in the household); climatic conditions of the province/region; the size of the town/city (food and rents are cheaper in small towns); increasing prices of utilities (latest electricity, water and gas prices doubled the burden for the very poor). In relation to illegal usage of the supply, metropolitan cities exert better control and monitoring mechanism on the illegal usage therefore the poor households have to pay their bills. Strategies to cope vary between regions. Main strategy is to reduce electricity and water consumption and not to use natural gas even if it is available but rather using cow dung, coal or wood (mainly given by municipalities). Watching TV for less hours, sitting in the dark, not using electrical goods are some widespread strategies to reduce the bills. Also to pay the bills with a 2-3 months delay with an increased price is also very common. The demand for legal use is high if there is a state subsidy (reduced rates for the poor or different rates for different regions). The awareness of illegal use is increasing the cost for the poor and everybody is well established. However, while illegal use of the poor is justified the illegal use by the rich is accused of being too much profit oriented. If the reduced rates can be introduced, the poor will be more willing to cooperate on legal grounds as long as they believe that the consumption of the rich can be strictly controlled/regulated.

**** Social policy options and recommendations …***

There are two main social policy options available to policy makers for keeping services of utilities affordable by poor households. The first option is through tariff adjustment (increasing block tariff, cross-subsidies, special tariff for low-income households) whereas the other is income supports (tariff rebates, flexible payment methods, connection subsidies). We recommend implementation of increasing block tariffs in electricity, natural gas and water sectors, provided that the first block of consumption is provided free or at very low rate to poor households. Then, the running and investment costs of utilities can be met by cross-subsidies from other households and/or business customers. Another option is formulating a special tariff for low-income households. These options can be supported by connection subsidies, tariff rebates and flexible payment methods to integrate illegal users into the system. Income support is a very attractive policy option, though it may fail if poor households choose to spend this additional income on other necessities. Finally, no matter which option(s) is (are) employed, the success of implementation will be depending upon accurate identification of poor households, transparent delivery and careful monitoring of the process.

Table: 1

Connection to Utilities Network

Electricity	**Number of Households**	**%**
Yes	25.755	99,97
No	9	0,03
Total	25.764	100,00
Natural Gas	**Number of Households**	**%**
Yes	2.440	9,47
No	23.324	90,53
Total	25.764	100,00
Water	**Number of Households**	**%**
Yes	23.857	92,6
No	1.907	7,4
Total	25.764	100,00

Table: 2

Missing Data in the 2003 Budget Survey

Utilities	**Number of Households (%)**	**Missing (%)**	**Total (%)**

Electricity	18.754 (%73)	7.003 (%27)	25.757 (%100)
Natural Gas	1.630 (%66)	851 (%34)	2.481 (%100)
Water	15.361 (%64)	8.535 (%36)	23.896 (%100)

Table: 3
Distribution of Missing Data in Income Deciles

Income Deciles	**Electricity**				**Natural Gas**				**Water**			
	Number of missing data	*Distribution of missing data between income deciles (%)*	*Number of households under normal income distribution*	*Proportion of households for whom consumption data missing (%)*	*Number of missing data*	*Distribution of missing data between income deciles (%)*	*Number of households under normal income distribution*	*Proportion of households for whom consumption data missing (%)*	*Number of missing data*	*Distribution of missing data between income deciles (%)*	*Number of households under normal income distribution*	*Proportion of households for whom consumption data missing (%)*

1	1.157	16,52	2.576	44,91	94	11,05	251	37,45	1.246	14,60	2.390	52,13
2	903	12,89	2.583	34,96	77	9,05	246	31,30	955	11,19	2.390	39,96
3	772	11,01	2.569	30,01	81	9,52	248	32,66	911	10,67	2.389	38,13
4	722	10,31	2.575	28,04	95	11,16	248	38,31	837	9,81	2.391	35,01
5	671	9,58	2.576	26,05	86	10,11	248	34,68	853	9,99	2.389	35,71
6	637	9,10	2.577	24,72	74	8,70	248	29,84	785	9,20	2.389	32,86
7	573	8,20	2.574	22,30	87	10,22	248	35,08	733	8,59	2.390	30,67
8	552	7,88	2.577	21,42	81	9,52	248	32,66	759	8,89	2.389	31,77
9	513	7,33	2.575	19,92	86	10,11	248	34,68	748	8,76	2.390	31,30
10	503	7,18	2.575	19,53	90	10,58	248	36,29	708	8,30	2.389	29,64
Total	7.003	100,00	25.757		851	100,00	2.481		8.535	100,00	23.896	

Table: 4

Distribution of Electricity, Natural Gas and Water Consuming Households in Income Deciles

	Electricity					Natural Gas					Water				
Income Deciles	A	B	C	D	E	A	B	C	D	E	A	B	C	D	E
1	2,52	6,25	4,19	8,18	5,90	2,94	6,49	4,23	8,00	6,90	2,66	6,43	4,29	5,13	3,78
2	3,96	7,37	5,30	6,14	5,51	4,05	8,01	4,99	7,17	7,22	4,06	7,41	5,36	3,87	3,49
3	4,89	8,00	6,29	5,40	5,04	4,91	8,05	6,17	5,94	5,87	4,99	8,56	6,30	3,64	3,43
4	5,79	8,60	7,06	4,91	4,82	5,86	7,39	6,81	4,57	4,88	5,91	9,21	7,16	3,31	3,25
5	6,83	9,20	7,89	4,45	4,62	6,85	9,59	8,11	5,07	5,32	6,91	9,09	8,01	2,79	2,87
6	8,01	9,77	9,02	4,02	4,29	8,00	10,21	9,02	4,62	5,09	8,16	10,19	9,14	2,65	2,81
7	9,55	10,35	10,38	3,58	3,95	9,46	11,35	10,29	4,34	4,96	9,64	10,67	10,20	2,35	2,64
8	11,62	11,63	11,74	3,30	3,92	11,63	11,35	11,79	3,53	4,33	11,73	11,20	11,98	2,03	2,36
9	15,08	12,65	14,18	2,77	3,53	15,51	12,06	14,84	2,81	3,65	15,18	12,43	14,24	1,74	2,20
10	31,75	16,18	23,96	1,68	2,67	30,80	15,49	23,74	1,82	2,93	30,78	14,82	23,31	1,02	1,60
Total	100,00	100,00	100,00	3,30*	3,96*	100,00	100,00	100,00	3,62*	4,50*	100,00	100,00	100,00	2,12*	2,52*
Number of Households	18754	18754	18754	18754	18754	1630	1630	1630	1630	1630	15361	15361	15361	15361	15361

Note: A (Percentage of households annual disposable income), B (Percentage of households electricity, natural gas and water expenditure), C (Percentage of households total expenditure), D (Households electricity, natural gas and water expenditure as a percentage of disposable income), E (Households electricity, natural gas and water expenditure as percentage of total expenditure).

** Average*

Table: 5

Distribution of Electricity Consuming Households (Regional and within Region)

Income Deciles	İstanbul		Western Marmara		Aegean		Eastern Marmara		Western Anatolia		Mediterranean	
	D	E	D	E	D	E	D	E	D	E	D	E
1	5,85	4,98	10,56	7,73	7,84	5,50	8,09	6,04	8,09	6,04	7,95	5,55
2	4,46	4,38	7,78	6,72	5,66	5,13	5,72	5,60	5,72	5,60	6,26	5,48
3	4,21	4,43	6,92	6,31	5,10	4,73	5,85	5,57	5,85	5,57	5,85	4,84
4	3,52	3,86	6,21	6,08	4,56	4,46	5,22	5,08	5,22	5,08	5,20	5,03
5	3,34	3,47	5,34	5,46	4,26	4,47	4,75	4,89	4,75	4,89	4,86	5,04
6	3,01	3,52	5,49	5,80	3,77	4,08	4,16	4,42	4,16	4,42	4,46	4,78
7	2,79	3,15	4,63	5,04	3,59	4,04	3,62	3,93	3,62	3,93	3,92	4,23
8	2,37	2,71	4,30	4,64	3,11	3,74	3,28	3,79	3,28	3,79	3,42	3,78
9	1,95	2,53	4,00	4,67	2,89	3,76	3,07	3,95	3,07	3,95	3,07	3,82
10	1,15	1,71	2,49	4,10	1,87	3,14	1,47	2,49	1,47	2,49	2,06	3,13
Average	2,37	2,91	4,60	5,26	3,30	4,01	3,35	4,08	3,35	4,08	3,60	4,17

Income Deciles	Central Anatolia		Western Black Sea		Eastern Black Sea		North-Eastern Anatolia		Middle-Eastern Anatolia		South-Eastern Anatolia	
	D	E	D	E	D	E	D	E	D	E	D	E
1	8,40	6,65	9,72	7,47	7,56	5,74	8,95	6,75	7,87	5,03	11,87	6,70
2	7,08	6,39	6,79	6,35	6,06	4,91	6,43	4,92	5,51	4,70	6,96	5,09
3	6,60	5,91	5,94	6,11	5,01	4,78	5,23	4,19	4,68	4,32	7,14	6,56
4	5,45	5,33	5,35	5,66	4,12	4,36	4,66	4,43	4,22	4,32	5,18	4,80
5	5,74	5,94	5,15	5,35	3,56	3,91	4,01	4,29	3,93	3,60	5,81	5,36
6	4,94	4,83	4,97	5,48	3,39	3,68	4,36	4,35	3,64	3,70	4,62	4,42
7	4,77	4,99	4,30	5,11	2,63	2,90	3,33	3,70	2,85	3,25	4,06	4,04
8	4,33	4,74	3,52	4,22	2,91	3,54	2,68	3,72	2,69	3,39	3,81	3,77
9	3,90	4,27	3,20	4,09	2,39	3,38	2,12	3,41	2,40	3,33	3,99	4,28
10	2,04	4,01	2,06	3,92	1,51	2,15	1,78	2,41	1,90	2,61	2,31	3,24
Average	4,23	4,99	3,92	4,95	2,99	3,52	3,18	3,73	3,12	3,55	4,23	4,40

Not: D (Households electricity, natural gas and water expenditure as a percentage of disposable income), E (Households electricity, natural gas and water expenditure as percentage of total expenditure).

Table: 6

Distribution of Natural Gas Consuming Households (Provincial and within Province)

Income Deciles	İstanbul		Bursa		Kocaeli		Ankara	
	D	E	D	E	D	E	D	E
1	6,59	5,75	13,56	12,02	3,51	3,27	10,30	8,82
2	5,88	5,77	10,24	9,13	6,03	5,66	8,72	8,81
3	4,96	5,09	5,83	5,60	3,59	3,53	6,03	5,74
4	3,90	4,18	6,20	7,26	11,94	9,20	6,34	6,48
5	4,98	5,67	4,75	5,43	5,83	6,86	6,25	6,29
6	3,73	4,13	5,67	5,26	2,30	2,81	4,49	5,18
7	4,28	4,89	4,89	5,11	2,34	2,66	4,04	4,84
8	3,40	4,10	4,45	4,86	8,18	8,52	4,03	5,02
9	2,42	2,89	2,67	3,64	0,89	1,66	3,26	4,83
10	1,35	2,24	2,37	3,12	2,18	3,59	2,90	5,06
Average	3,07	3,85	4,32	4,98	4,21	4,96	4,53	5,69

Not: D (Households electricity, natural gas and water expenditure as a percentage of disposable income), E (Households electricity, natural gas and water expenditure as percentage of total expenditure).

Table: 7

Distribution of Water Consuming Households in Income Deciles (Regional and within Region)

Income Deciles	İstanbul		Western Marmara		Aegean		Eastern Marmara		Western Anatolia		Mediterranean	
	D	E	D	E	D	E	D	E	D	E	D	E
1	5,02	4,10	5,16	3,86	4,97	3,58	4,49	3,48	5,05	3,73	5,31	3,82
2	3,89	3,81	3,90	3,45	3,77	3,49	3,36	3,38	4,50	3,96	3,73	3,40
3	3,53	3,65	3,40	3,31	3,30	2,99	3,18	2,90	4,07	3,67	3,76	3,47
4	3,12	3,38	3,11	3,06	3,20	3,12	3,06	2,93	3,20	3,20	3,26	3,05
5	3,05	3,20	2,73	2,75	2,63	2,72	2,37	2,50	2,81	2,91	3,21	3,26
6	2,64	3,09	2,53	2,74	2,45	2,65	2,33	2,33	2,60	2,85	2,82	2,89
7	2,48	2,78	2,54	2,66	1,97	2,27	2,18	2,71	2,29	2,49	2,45	2,65
8	2,15	2,48	2,92	3,10	1,71	2,01	1,93	2,11	2,14	2,47	2,15	2,55
9	1,72	2,19	1,82	2,13	1,39	1,80	1,51	1,95	2,12	2,63	1,57	2,10
10	0,87	1,28	1,45	2,41	0,92	1,55	1,01	1,46	1,10	1,72	0,92	1,63
Average	2,10	2,54	2,43	2,79	1,91	2,32	1,97	2,29	2,22	2,63	2,09	2,57
Income Deciles	Central Anatolia		Western Black Sea		Eastern Black Sea		North-Eastern Anatolia		Middle-Eastern Anatolia		South-Eastern Anatolia	
	D	E	D	E	D	E	D	E	D	E	D	E
1	6,18	4,60	4,68	3,88	4,34	3,27	5,63	3,64	3,96	2,73	7,12	3,90
2	5,60	4,95	3,82	3,67	3,18	2,90	3,31	2,45	3,04	2,59	4,56	3,62

3	4,77	4,33	3,85	4,06	2,79	2,81	3,25	3,11	2,86	2,71	3,05	2,84
4	4,30	4,12	3,12	3,17	2,24	2,45	2,43	2,63	2,81	2,83	3,52	3,20
5	3,83	3,90	2,94	3,25	2,06	2,21	1,90	1,94	2,17	2,17	3,39	3,25
6	3,91	3,91	2,52	2,81	1,76	2,00	1,85	2,01	2,04	1,96	3,41	3,29
7	3,44	3,40	2,28	2,66	1,72	1,87	1,62	1,77	1,71	1,90	3,75	3,80
8	3,03	3,35	2,05	2,54	1,68	2,15	1,50	2,15	1,48	1,75	2,62	2,63
9	2,31	2,59	1,78	2,18	1,37	1,81	1,20	2,05	1,33	1,82	2,04	2,18
10	1,30	2,54	0,93	1,91	0,84	1,18	0,93	1,10	1,08	1,40	1,11	1,57
Average	2,96	3,48	2,12	2,75	1,71	2,02	1,72	1,98	1,78	1,99	2,60	2,73

Not: D (Households electricity, natural gas and water expenditure as a percentage of disposable income), E (Households electricity, natural gas and water expenditure as percentage of total expenditure).

Table: 8

Network Losses and the New Electricity Tariffs

Provinces	Gross Domestic Income per head in 2001 (1987, 1.000.000TL)*	Network Losses (%)	Cost reflective new tariff (TL/kWh)	$/kWh	Missing data (%)
Mardin	0,70	69,50	386.124	0,25	58
Van	0,42	68,50	386.124	0,25	40
Şanlıurfa	0,86	59,26	298.435	0,20	57
Ağrı	0,45	39,83	202.068	0,13	11

Erzurum	0,64	29,13	171.567	0,11	17
Adana	1,72	22,44	156.843	0,10	20
Hatay	1,40	18.50	149.217	0,10	22
İstanbul	2,30	18,20	148.691	0,10	7
Gaziantep	1,28	17.99	148.297	0,10	41
Samsun	1,16	15,84	144.484	0,09	22
Ankara	2,09	14,08	141.592	0,09	37
Malatya	0,94	13,80	141.066	0,09	15
Aydın	1,97	13,51	140.540	0,09	38
Trabzon	1,01	13,40	140.409	0,09	16
Antalya	1,53	13,27	140.277	0,09	19
Kocaeli	2,85	13,16	140.014	0,09	41
Tekirdağ	2,16	12,67	139.226	0,09	39
Manisa	1,62	10,91	136.465	0,09	37
Konya	1,01	10.11	135.282	0,09	25
Kırıkkale	1,19	9,86	134.887	0,09	31
Zonguldak	1,65	9,59	134.493	0,09	35
Kastamonu	1,05	9,54	134.493	0,09	23
Bursa	2,18	9,51	134.361	0,09	27

Balıkesir	1,57	9,49	134.361	0,09	39
Kayseri	1,25	8.44	132.784	0,09	34
İzmir	2,44	7,50	131.469	0,09	8
Average	1,60	19,29	168.598	0,11	29

* Source: State Planning Organization, http://www.dpt.gov.tr/bgyu/bgr/eg/kbgsyih87.htm (29 August 2006 and 29 November 2008).

Table: 9

Impact of the New Cost Reflective Electricity Tariff on the Food and Non-Food Poor Households Depending Upon Provinces

Provinces	Average Expenditure (1.000.000TL) -Base-	Average Expenditure (1.000.000TL) -Scenario-	Average Consumption (kWh) -Base-	Average Consumption (kWh) -Scenario-	Gain/Loss (1.000.000TL)	Gain/Loss as percentage of income (%)	Gain/Loss as percentage of expenditure (%)	Number of Food and Non-Food Poor Households
Van	241,12	607,48	1.574	624	-366,36	-5,64	-8,58	107
Mardin	228,46	576,15	1.493	592	-347,69	-8,19	-8,31	130
Şanlıurfa	292,49	572,77	1.912	980	-280,28	-5,98	-6,28	213
Ağrı	214,29	283,33	1.401	1.061	-69,04	-1,15	-1,63	84
Erzurum	268,64	300,85	1.753	1.563	-32,21	-0,61	-0,84	118
Adana	209,33	214,67	1.368	1.335	-5,34	-0,11	-0,14	450
Hatay	218,90	213,41	1.432	1.468	5,49	0,11	0,14	164
İstanbul	263,20	255,76	1.721	1.771	7,44	0,12	0,16	269
Gaziantep	255,67	247,42	1.671	1.724	8,25	0,18	0,20	97
Samsun	253,23	239,03	1.655	1.752	14,20	0,31	0,37	310
Malatya	221,62	204,50	1.450	1.572	17,12	0,31	0,39	111
Trabzon	256,68	235,48	1.678	1.829	21,20	0,37	0,52	217
Aydın	270,07	248,30	1.766	1.923	21,77	0,39	0,60	147
Antalya	284,78	260,87	1.861	2.030	23,91	0,33	0,59	138
Manisa	233,44	208,04	1.525	1.710	25,40	0,46	0,69	311
Ankara	338,39	312,50	2.209	2.387	25,89	0,45	0,60	112

Tekirdağ	304,17	276,39	1.984	2.181	27,78	0,49	0,71	72
Kocaeli	341,03	312,82	2.236	2.443	28,21	0,51	0,72	39
Kastamonu	233,53	205,20	1.525	1.735	28,33	0,61	0,80	173
Konya	252,03	222,76	1.646	1.862	29,27	0,56	0,77	246
İzmir	220,19	189,20	1.439	1.675	30,99	0,63	0,81	213
Kırıkkale	265,89	234,11	1.737	1.970	31,78	0,60	0,78	129
Bursa	259,83	228,03	1.699	1.934	31,80	0,57	0,84	239
Balıkesir	304,30	267,74	1.992	2.268	36,56	0,71	1,02	93
Kayseri	297,37	257,89	1.943	2.239	39,48	0,68	0,99	228
Zonguldak	332,18	291,95	2.169	2.468	40,23	0,72	1,01	174
Average	256,61	272,16	1.677	1.706	-15,55	-0,29	-0,39	4.584

Table: 10

Impact of the New Cost Reflective Electricity Tariff on the Food and Non-Food Poor Households Depending Upon Regions

Regions	Average Expenditure (1.000.000TL)		Average Consumption (kWh)		Gain/Loss (1.000.000TL)	Gain/Loss as percentage of income (%)	Gain/Loss as percentage of expenditure (%)	Number of Food and Non-Food Poor Households
	-Base-	-Scenario-	-Base-	-Scenario-				
South-Eastern Anatolia	265,91	500,00	1.735	1.029	-234,09	-5,18	-5,42	440
Middle-Eastern Anatolia	231,19	402,29	1.511	1.107	-171,10	-2,85	-3,97	218
North-Eastern Anatolia	246,04	293,56	1.607	1.354	-47,52	-0,85	-1,19	202

Mediterranean	224,73	223,40	1.473	1.491	1,33	0,02	0,03	752
İstanbul	263,20	255,76	1.721	1.771	7,44	0,12	0,16	269
Eastern Black Sea	256,68	235,48	1.678	1.829	21,20	0,37	0,52	217
Aegean	236,96	210,13	1.550	1.745	26,83	0,50	0,72	671
Western Black Sea	269,41	243,53	1.757	1.937	25,88	0,53	0,69	657
Western Anatolia	278,77	250,84	1.822	2.026	27,93	0,52	0,70	358
Eastern Marmara	271,58	240,29	1.774	2.006	31,29	0,56	0,82	278
Western Marmara	304,24	271,52	1.989	2.230	32,72	0,61	0,88	165
Central Anatolia	285,71	249,58	1.869	2.142	36,13	0,64	0,90	357
Average	256,61	272,16	1.677	1.706	-15,55	-0,29	-0,39	4.584

Table: 11

Impact of the New Cost Reflective Electricity Tariff Depending Upon Household Income

Income Deciles	Average Expenditure (1.000.000TL)		Gain/Loss			Number of Food and Non-Food Poor Households
	-Base-	-Scenario-	Gain/Loss (1.000.000TL)	as percentage of income (%)	as percentage of expenditure (%)	
1	222,28	239,34	-17,06	-0,63	-0,45	1.344
2	262,40	269,87	-7,47	-0,17	-0,16	1.031
3	284,65	281,45	3,20	0,06	0,06	710
4	305,81	303,14	2,67	0,04	0,04	487
5	327,82	324,61	3,21	0,04	0,05	396
6	347,55	344,35	3,20	0,04	0,04	248
7	368,14	366,01	2,13	0,02	0,02	161
8	414,09	414,62	-0,53	0,00	-0,01	118
9	450,13	445,87	4,26	0,03	0,03	68
10	576,00	570,67	5,33	0,02	0,02	21
Average	355,87	355,98	-0,11	0,00	0,00	4.584

Table: 12

Impact of the New Cost Reflective Electricity Tariff Depending Upon Household Type

Household Type	Average Expenditure (1.000.000TL)		Average Consumption (kWh)		Gain/Loss			
	-Base-	-Scenario-	-Base-	-Scenario-	Gain/Loss (1.000.000TL)	as percentage of income (%)	as percentage of expenditure (%)	Number of Food and Non-Food Poor Households
Relatives living in the same house	226,67	298,89	1.483	1.316	-72,22	-2,23	-2,52	9
Parents with three children or more (at least one child 18+)	298,44	347,44	1.944	1.867	-49,00	-0,77	-1,02	449
Parents with three children or more (18-)	262,06	304,82	1.715	1.655	-42,76	-0,82	-0,98	912
Single parent with children (at least one child 18+)	233,33	262,79	1.525	1.496	-29,46	-0,64	-0,88	129
Larger family with children (at least one child 18+)	300,27	327,08	1.969	1.980	-26,81	-0,36	-0,56	373
Individuals living in the same house*	284,00	305,00	1.856	1.794	-21,00	-0,42	-0,70	3
Larger family with children (at least one child 18-)	301,47	312,50	1.968	2.017	-11,03	-0,17	-0,24	544
Single parent with children (18-)	227,87	236,89	1.490	1.516	-9,02	-0,26	-0,29	122
Single parent with one child (18+)	253,42	255,90	1.655	1.729	-2,48	-0,05	-0,07	161
Parents with one child (18-)	223,50	221,86	1.460	1.547	1,64	0,04	0,05	366

Parents with two children (at least one child 18+)	266,67	260,92	1.744	1.851	5,75	0,10	0,15	174
Parents with two children (18-)	241,29	234,58	1.579	1.679	6,71	0,13	0,18	746
Childless couple	191,79	182,82	1.253	1.347	8,97	0,22	0,34	390
Single adult**	144,44	132,41	947	1.042	12,03	0,50	0,68	108
Larger family***	271,43	259,18	1.777	1.900	12,25	0,21	0,33	98
Average	256,61	272,16	1.677	1.706	-15,55	-0,29	-0,39	4.584

***** Students, workers etc.

****** Other parent away from house due to various reasons such as working in another city, or divorce, or death, etc.;

******* Larger family consists of relatives of at least two generation living in the same house (grandparents, parents, aunt, uncle etc.);

Table: 13

Impact of the New Cost Reflective Electricity Tariff Depending Upon Household Head Education

Household Head Education	Average Expenditure (1.000.000TL)		Average Consumption (kWh)		Gain/Loss			
	-Base-	-Scenario-	-Base-	-Scenario-	Gain/Loss (1.000.000TL)	as percentage of income (%)	as percentage of expenditure (%)	Number of Food and Non-Food Poor Households
Primary	204,00	418,50	1.333	800	-214,50	-12,62	-7,92	2
Illiterate	230,93	296,61	1.503	1.352	-65,68	-1,53	-1,87	472
High	267,92	300,63	1.751	1.736	-32,71	-0,55	-0,78	318
Literate (no formal education)	233,06	262,53	1.523	1.507	-29,47	-0,63	-0,82	363
University (two year)	240,71	258,57	1.573	1.568	-17,86	-0,25	-0,41	14
Secondary (vocational)	271,11	288,89	1.775	1.809	-17,78	-0,29	-0,42	9
Secondary	267,94	275,12	1.744	1.793	-7,18	-0,13	-0,17	418
Primary (5 year)	260,61	265,10	1.704	1.771	-4,49	-0,08	-0,11	2.897
High (vocational)	283,02	283,02	1.844	1.934	0	0,00	0,00	53
University (4 year)	256,58	294,74	1.676	1.651	-38,16	-0,40	-0,83	38
Average	256,61	272,16	1.677	1.706	-15,55	-0,29	-0,39	4.584

Table: 14

Social Transfers, Poverty and Natural Gas Expenditure

Poverty and Social Transfers Criteria	Average Expenditure (TL)	Average Consumption (m^3)	Average Expenditure as percentage of Disposable Income (%)	Average Expenditure as percentage of Total Expenditure (%)	Number of Households
Not poor	707.576.706,3	1.904,91	3,63	4,50	1597
Food and non-food poor	321.212.121,2	869,39	4,19	7,07	33
Average	697.055.214,7	1.883,95	3,64	4,52	1630
Not poor	57.033.4261,8	1.541,03	2,80	3,56	1436
Poor (spending % 10 or more of disposable income on natural gas)	1.634.020.619,0	4.422,22	15,02	14,09	194
Average	696.932.515,3	1.883,95	3,62	4,50	1630
Not poor	530.137.981,1	1.433,49	2,63	3,24	1377
Poor (spending % 10 or more of total expenditure on natural gas)	1.604.743.083,0	4.335,64	11,37	14,76	253
Average	696932515,3	1.883,95	3,62	4,50	1630
Registered with a social security institution	708.571.428,6	1.916,10	3,73	4,57	1225
Not registered with a social security institution	661.728.395,1	1.786,69	3,30	4,28	405
Average	696.932.515,3	1.883,95	3,62	4,50	1630

Has not green card	698.393.077,9	1.892,14	3,61	4,48	1618
Has green card	288.333.333,3	779,46	3,43	3,77	12
Average	695.374.233,1	1.883,95	3,61	4,48	1630
Not receiving state old age pension	697530864,2	1.880,31	3,62	4,50	1620
Receiving state old age pension	915.000.000,0	2.473,76	5,23	5,58	10
Average	698.865.030,7	1.883,95	3,63	4,51	1630

Table: 15
Water Tariffs (2003)

Municipalities	Tariff Blocks (m^3/year)	Tariff Blocks (m^3/year)					Average Annual Tariff VAT included (TL/m^3)				
		1	2	3	4	5	1	2	3	4	5
Şanlıurfa	1						594.915				
Mardin	1						675.000				
Adana	1						1.166.694				
Tekirdağ	1						1.298.700				
Zonguldak	1						1.649.912				
Van	3	0–2400	2401–4800	>4801			270.000	1.512.000	2.160.000		
Ağrı	2	0–1200	>1201				432.000	540.000			
Kırıkkale	4	0–600	601–1200	1201–2400	>2401		648.484	1.378.031	2.067.045	3.031.665	
Kastamonu	3	0–600	601–1200	>1201			864.000	3.780.000	4.320.000		
Trabzon	2	0–600	>601				1.114.074	4.478.150			
Antalya	2	0–600	>601				2.061.365	4.433.964			
Malatya	3	0–360	361–600	>601			307.800	972.000	1.728.000		
Gaziantep	3	0–240	241–2160	>2161			1.922.400	2.516.400	3.877.200		
İzmit	2	0–180	>181				724.442	1.424.896			

İstanbul	3	0–180	181–1200	>1201			1.231.200	2.068.200	4.320.000		
Manisa	3	0–120	121–360	>361			393.120	842.400	2.106.000		
Samsun	4	0–120	121–240	241–360	>361		589.500	875.700	1.156.500	1.442.700	
Ankara	3	0–120	121–360	>361			850.033	2.178.181	3.289.299		
Bursa	2	0–120	>121				1.167.259	2.334.517			
İzmir	4	0–120	121–240	241–1200	>1201		1.700.390	3.176.008	4.666.271	5.554.983	
Aydın	5	0–60	61–360	361–600	601–1200	>1201	270.000	1.134.000	2.322.000	3.564.000	5.508.000
Balıkesir	4	0–60	61–120	121–240	>241		783.000	1.096.200	2.427.300	3.640.950	

Table: 16
Water Tariff, Affordability and Food-Non Food Poor

Municipalities	Tariff Blocks	Tariff Blocks (m^3/yıl)		Average Annual Tariff VAT included (TL/m^3)		Network Loss	Average Tariff Paid by Poor (TL/m^3)	Non Poor			Food and Non-Food Poor			
	Tariff Blocks (m^3/yıl)	1	2	1	2			Average Annual Consumption (m^3)	Average Annual Consumption Per Head (m^3)	Number of Households	Average Annual Consumption (m^3)	Average Annual Consumption Per Head (m^3)	Water Poverty as (%) of Total Expenditure (%)	Number of Household
Şanlıurfa	1			594.915		75%	594.915	301,19	71,13	268	206,31	36,73	2,81	205
Mardin	1			675.000			675.000	271,53	57,64	126	154,93	25,41	2,40	126
Adana	1			1.166.694		75%	1.166.694	174,20	50,18	851	132,67	33,19	4,06	341
Tekirdağ	1			1.298.700			1.298.700	216,72	70,82	355	136,28	43,19	4,77	55
Zonguldak	1			1.649.912			1.649.912	161,26	51,63	306	135,07	35,35	5,51	90
İzmir	4	0–120	121–240	1.700.390	3.176.008	51%	1.700.390	115,46	38,95	1.236	97,76	25,96	4,56	209
Gaziantep	3	0–240	241–2160	1.922.400	2516400	72%	1.922.400	224,52	51,27	174	126,12	25,95	5,76	76
Kırıkkale	4	0–600	601–1200	648.484	1.378.031		648.484	344,22	106,11	268	289,61	70,53	4,70	98
Kastamonu	3	0–600	601–1200	864.000	3.780.000		864.000	204,69	64,90	261	139,46	41,26	3,33	97
Trabzon	2	0–600	>601	1.114.074	4.478.150	83%	1.114.074	173,09	49,95	623	145,61	37,95	3,87	123
Antalya	2	0–600	>601	2.061.365	4.433.964	61%	2.061.365	159,12	50,48	517	110,07	26,39	5,68	112

Ağrı	2	0–1200	>1201	432.000	540.000		432.000	415,31	103,69	119	386,67	78,85	3,77	49
Van	3	0–2400	2401–4800	270.000	1.512.000		270.000	455,49	95,49	109	377,97	62,48	2,24	57
İstanbul	3	0–180	181–1200	1.231.200	2.068.200	35%	1.231.200	219,68	68,93	1.923	169,15	37,73	4,99	195
Bursa	2	0–120	>121	1.167.259	2.334.517	31%	1.167.259	142,77	43,46	654	119,15	32,48	4,08	202
Malatya	3	0–360	361–600	307.800	972.000		*315.079*	443,89	134,55	317	365,16	84,42	3,69	88
İzmit	2	0–180	>181	724.442	1.424.896	45%	*876.055*	260,83	77,15	321	230,84	65,83	5,13	35
Aydın	5	0–60	61–360	270.000	1.134.000	47%	*839.564*	222,12	81,84	406	178,88	49,38	3,98	135
Balıkesir	4	0–60	61–120	783.000	1.096.200		*957.757*	165,59	60,28	411	137,88	44,60	4,56	73
Manisa	3	0–120	121–360	393.120	842.400	66%	*611.069*	287,20	94,64	449	235,30	67,21	3,93	212
Samsun	4	0–120	121–240	589.500	875.700	52%	*705.108*	250,99	75,81	239	203,08	49,17	3,67	124
Ankara	3	0–120	121–360	850.033	2.178.181		*1.192.255*	221,78	67,88	932	163,31	38,23	4,59	120
Average								211,71	64,67	10.865*	175,59	42,34	4,11	2822*

** Total*

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