



Water-Related Services of Local Governments and Rural Development: Trakya Villages

Günay Keleş¹, Serpil Yılmaz²

¹Faculty of Agriculture, University of Namık Kemal, Tekirdağ, Turkey

²Faculty of Fisheries, University of Akdeniz, Antalya, Turkey

Abstract Rural development is the process of improving the quality of life and economic well-being of people living in relatively isolated and sparsely populated areas. Local development in rural areas is a kind of mechanism of sustainable development. Education, entrepreneurship, physical infrastructure (especially for water resources) and social infrastructure all play an important role in developing rural regions. The aim of this research was to show, as an example, the relationship between rural development and water-related services of local governments in the Villages of Thrace Region.

Thrace region has 24.378 km² surfaces (2.99% of Turkey) and includes all of the area of Edirne, Tekirdağ, Kırklareli, a part of Istanbul and Canakkale provinces. A total of 683 villages' data were converted into tables by combining firstly districts' values and finally provinces'. Official website of local governments were used to obtain data.

As it is known; while Turkey's general population increased, population in rural areas declined steadily and there had been a massive migration to the cities. According to UN reports; rate of rural population in the World was about 70% in 1950, while 46% in 2014. Similar expansion occurred in Turkey. In 1927, 24.2% of population lived in provinces/districts and 75.8% in villages/towns. But population rate of cities became 22.7% in 2012. On one hand low agricultural income, the driving factors in rural areas such as lack of infrastructure, scarcity of water resources, uniformity of the social life, on the other hand, pull factors in the cities such as better living conditions, education, health services and housing quality etc. forced the migration of the rural population to cities.

The existence of a relationship could easily be seen between the water problems and migration in the research reason. When development indicators were examined in the research area, there was a health service only 15.5%, piped water 60.2%, 36.0% drainage or sewerage system and only 10.2% of water control for bacteria and quality in the villages. Thus, poor quality of life in the villages occurred and immigration to cities gained speed. This created a vicious cycle of migration from villages to cities with providing service slowly to the village at the same time.

Keywords Life quality, water-related services, local government, immigration

1. Introduction

According to the Hierarchy Needs Theory of Abraham Maslow, needs are categorized as follows:

- Physiological requirements (breathing, food, water, sleeping etc.)
- Safety requirements (safety of body, business, resource, ethics, family, health, property)
- Need for belonging and love (friendship, family etc.)
- Need for esteem (self-esteem, achievement, respect of others, respect for others)
- The need for self-realization (Virtue, creativity, naturalness, problem solving, lack of prejudice, acceptance of facts)



In theory; People satisfies their needs at certain categories. While satisfying needs, first of all, people must satisfy physiological requirements. Breathing and water are the vital needs to live at first category. Then, People could think about the second category. The desire for a better life pushes individuals into new quests, between endless needs and scarce resources. In rural areas, this quest is emerging as migration to city centers.

Briefly, the main reasons for migrations to urban areas from rural areas are closely related to socio-economic development indicators such as better quality of infrastructure and water resources, better living conditions, better education, better quality of health services, and better quality of housing. The factors that push the people to the migration can be expressed as poor factors in rural areas and attractive factors in cities. Rapid urbanization with population growth and the instability of the precipitation regime by climate change led to increase importance of the subjects such as: access to reliable water resources, protection of arable land, food security and family farming.

On the one hand increases in total demand, on the other hand deforestation and degradation of forests created an increasing threat to the world and affected the drinking water resources negatively. Such negative changes accelerated the phenomenon of migration and led the local governments to change the direction of their activities, especially services related to water resources. There are a large number of central and local public institutions and organizations that provide services to the rural population within the framework. As is known, water and sewage services are carried out by municipalities in Turkey. In order to reach healthy and uninterrupted drinking water in the countryside, it is necessary to renew drinking water networks and to search for resources against possible future water problems.

Local development in rural areas is a kind of mechanism of sustainable development. Quality water resources, education, entrepreneurship, physical infrastructure and social infrastructure play important roles in developing rural regions. The existence of a relationship could easily be seen between the water problems and migration in the research reason.

As a result of the research, it was determined that there was a vicious circle in terms of quality of life of city-village. The intense impact of migration increased the difficulties experienced in cities, especially the problems in water and sewerage services, as well as inadequacies in the villages. Thus, local governments reduced the variety and quality of services in the region due to the considerable emptiness of the villages. On the other hand, it has been understood that the lack of services in the rural areas led the villagers to migrate to cities again. Inferior quality of life transformed into a vicious circle that given rise to migration.

2. Material and Method

The settlement units in the study area are shown in table 1. Three provinces, 26 districts, 83 municipalities and 735 villages are located in research area. The data was obtained from the official web sites of local governments. Data of totally 683 villages was combined in the basis districts, province and finally Trakya region.

Table 1: The Settlement Units in the Research Area (2011) [1]

Settlement Units	Edirne	Tekirdağ	Kırklareli	TR21	Turkey
Number of Provinces	-	-	-	3	81
Number of Districts	9	12	8	26	892
Number of Municipalities	26	35	26	83	1977
Villages	248	258	177	735	34425

Factors are discussed such as water quality, sewerage, education, health and communication to determine the quality of living conditions of all the villagers in the research area. In this context, information such as health house, health center, PTT branch, PTT agency, school, carriage education, water network, sewerage, water control was reached.

3. Results

Rural development is the process of improving the quality of life and economic well-being of people living in relatively isolated and sparsely populated areas. Local development in rural areas is a kind of mechanism of sustainable development. Education, entrepreneurship, water quality, physical infrastructure and social



infrastructure are all play an important role in development of rural regions. There are a large number of central and local public institutions and organizations that provide these services to the rural population within the framework.

Central and local organizations serving to the rural area with in the framework of the legislation in force are given below:

A. Central Government Organizations: Republic of Turkey Ministry of Food Agriculture and Livestock, Republic of Turkey **Ministry of Environment and Urbanization**, Republic of Turkey **Ministry of Interior**, Republic of Turkey **Ministry of Health**, Republic of Turkey **Ministry of Science, Industry and Technology**, Republic of Turkey **Ministry of Culture and Tourism**, Republic of Turkey **Ministry of Labour and Social Security**, General Directorate of State Hydraulic Works, General Directorate of Land Registry and Cadastre South East Anatolia Project Regional Development Administration etc.

B. Local Government Organizations; Governorships, District Governorships, Special Provincial Administrations, Municipalities.

The main services provided by the municipalities can be collected under the main headings:

1. *Drinking Water Services:* Resource creation and conservation to find additional new water sources (underground and above ground) to existing water resources in parallel with population growth.

2. *Wastewater and Sewerage Services:* Wastewater treatment is carried out in wastewater treatment plants throughout the provinces 24 hours a day without any interruption, to follow the new techniques related to wastewater treatment and to discharge the water to the sea, repairing the grounds and keeping them in working condition, phosptic shooting services etc.

3. *Call Center Service:* Water Breakdown system gives service to the citizens 24 hours a day without interruption; Provides complaints and requests to the relevant departments in the fastest and easiest way.

4. *Abone Services:* First of all, efforts are being made to increase the number of subscribers and to increase the awareness of the citizens about water use in order to accelerate collection of water to prevent illegal use of water. In order to enable citizens to easily pay their bills, the number of collection counters is increased according to the needs. Protocols are signed with banks, payment possibility is provided through PTT branches and internet.

5. *Environmental Protection Inspection Services:* It is of great importance to determine pollutants causing pollution of water resources due to the limited water resources and pollutant elements and to control the pollution. Industrial factories in the province boundaries with sewer connection are inspected, and samples are taken under control at certain time intervals. Ensure control of the industrial wastewater of enterprises that outside of the organized industrial zone, issuance of discharge permits, sewer connection requests and wastewater treatment requests demanded from enterprises etc. are the other services.

Table 2 shows the developments and targets in total fixed capital investments of government in the Development Plans (With 2013 Annual Prices).As it can be seen from the table 2, investment plans of Turkish Government about drinking water and sewage were about 6.6% and 5.6% between 2007-2013. But they both were increased during 2014-2018 Development Plan.

Table 2: The Developments and Targets in Total Fixed Capital Investments of Government in the Development Plans (With 2013 Annual Prices) [2]

Sectors	Development Plans (Realization) (2007-2013)		Development Plans (2014-2018)	
	Million TL	%	Million TL	%
	Agriculture	39947	10.2	50087
Mining	8483	2.2	12522	3.0
Manufacturing	3809	1.0	3757	0.9
Energy	28655	7.3	15026	3.6
Transportation	146123	37.4	141914	34.0
Tourism	2087	0.5	2504	0.6
Housing	6409	1.6	4174	1.0



Education	47886	12.3	66783	16.0
Health	21887	5.6	21287	5.1
Justice	5072	1.3	6261	1.5
Security	3894	1.0	4591	1.1
Drinking water	25847	6.6	29218	7.0
Sewage	21746	5.6	24209	5.8
Technological Research	6889	1.8	10435	2.5
Other	21951	5.6	24626	5.9
TOTAL	390684	100.0	417393	100.0

Number of Municipalities in Turkey were shown in table 3. According to table; there are 30 Metropolitan Municipality and 51 Provincial Municipality in Turkey. Drinking water and sewage investments are being by municipalities in Turkey.

Table 3: Number of Municipalities in Turkey [3]

Municipalities	Number	%
Metropolitan Municipality	30	0.2
Provincial Municipality	51	4.0
Districts of Metropolitan Municipality	519	37.0
Districts of Municipality	400	29.0
Town Municipality	397	28.0
Total	1397	100.0

Population of Turkey was shown in table 4. According to table, 93% of population have been living in a kind of municipality and 7% of it in villages. Changes in composition of population, employment and production are important part of process of development. Shift of employment and production from agriculture to manufacturing, and then from manufacturing to services.

Table 4: Population of Turkey [4]

Population	Number	%
Total Population of Turkey	77.695.904	100.0
Village Population	51.90.797	7.0
Municipality Population	72.505.107	93.0

According to UN reports; rate of rural population in 1950 was about 70% while 46% in 2014. Similar expansion occurred in Turkey. In 1927, 24.2% of population lived in provinces/districted and 75.8% in villages/towns. But in 2012, 22.7% of population became living in cities.

Table 5: Population Data of Metropolitan Municipalities in Turkey [4]

Population	Number	%
Metropolitan Municipalities	59968496	83.0
Other Municipalities	12536611	17.0
Total	72505107	100.0

After 2013, “The Metropolitan Municipality Law” have come across and the number of metropolitan is raised to 30 in Turkey. So, this situation caused to appear the population living in cities 91.8%. The significant difference is due to these changes. However, when the employment statistics are analysed; unemployment rate 10.3%, non-agricultural unemployment rate 12.4%, in 2015, labor force is about 20.6% in agriculture, 20.0% in industry, 7.2% in construction and 52.2% in other service sectors.

Population by Municipalities and villages in Turkey was shown in table 6. Rate of population living in te cities was 24.1% in 1927. But the population of villages was 75.9%. On the contrast, rate of population living in te cities was 93.3% but the population of villages was 6.6% in 2014. This situation was an intensive migration problem and caused a lot of problems in the rural and urban areas. Especially, the municipalities were changed variety and quality of services in their region due to the considerable emptiness of the villages.



Table 6: Population of Municipalities and Villages in Turkey [4-6]

Years	General	Population of	Population	B/A	C/A
	Population	Municipalities	of Village	%	%
	A	B	C		
1927	13648270	3282940	10365330	24.1	75,9
1935	16158018	4174542	11983476	25.8	74,2
1940	17820950	4753304	13067646	26.7	73,3
1945	18790188	5145020	13645168	27.4	72,6
1950	20947188	5768665	15178523	27.5	72,5
1955	24064763	7804354	16260409	32.4	67,6
1960	27754820	9994644	17760176	36.0	64,0
1965	31391421	12787663	18603758	40.7	59,3
1970	35605176	16753979	18851197	47.1	52,9
1975	40347719	20500442	19847277	50.8	49,2
1980	44736957	25523604	19213353	57.1	42,9
1985	50664458	31223447	19441011	61.6	38,4
1990	56473035	37884455	18588580	67.1	32,9
2000	67803927	53403386	14425490	78.8	21,3
2008	71517100	59146941	12433951	82.7	17,4
2009	72561312	60282199	12279113	83.1	16,9
2010	73722988	61567758	12155230	83.5	16,5
2011	74724269	62678751	12045518	83.9	16,1
2014	77695904	72505107	5190797	93.3	6,7

The total number of agricultural holdings in the study area was shown in table 7. Compared to the data in Turkey, both the average number of parcels and the size of the holdings are larger than Turkey's overall size. More than 95% of the land in Trakya is used for field crops production. In a significant part of the enterprises, livestock activity is carried out together with field crops production. It could be seen that 41% of agricultural lands of TR21 Region is in Tekirdağ province, 36% in Edirne and 24% in Kırklareli.

Table 7: Number of Agricultural Farms in the Research Area, Total Agricultural Field and Average Farmer Size (2012) [7-9]

Province	Number of Farmer	Area (da)	Area (%)	Aggregate Farm Land (da)	Number of Parcels
Edirne	31962	2755224	35.6	86.2	296469
Tekirdağ	27711	3154599	40.7	113.8	259518
Kırklareli	18642	1837387	23.7	98.6	201868
Toplam (TR21)	78315	4747171	100.0	100.0	757855
Türkiye	2292380	156287667	-	68.2	15856663

The population in research area, rural areas and cities in 1990-2011 are given below (table 8). As it is understood from the table, population of Turkey was gradually increased while population in rural area gradually decreased. So intensive migration experienced in cities. In 1990 share of rural population was 41%. This rate decreased by almost half in 2012 to 22.7%. In the field of research, a similar development was observed in Turkey as a whole, and the share of rural population decreased to 31.6% from 47.7%.

Table 8: Rural and Urban Population in Research Area and Turkey [4]

Residential Area	1990			2011		
	Total	Rural	Urban	Total	Rural	Urban
Edirne	404 599	194 178	210 421	399316	127022	272294
Kırklareli	309 512	159 980	149 532	340199	111199	229000



Tekirdağ	468 842	209 902	258 940	829873	257514	572359
Total	1 182 953	564 060	618 893	1569388	495735	1073653
Turkey	56473035	23 146 684	33 326 351	74 724 269	17178953	58448431
Turkey %		41.0	59.0		22.7	77.2
Research Area %		47.7	52.3		31.6	68.4

Some of the basic development indicators in the study area were listed in Table 9. The indicators gives the impression that the research area has better living conditions compared to the general population in Turkey.

Table 9: Some Development Indicators about Water in the Research Area [10]

Development Indicators	Provinces			Turkey
	Tekirdağ	Edirne	Kırklareli	
Daily consumption of water per person (2010) (liter)	176.0	172.0	177.7	217.0
Houses with a piped water system (%)	98.4	95.6	97.6	97.4
Houses with a toilet (%)	94.4	83.9	87.5	92.5
Houses with a bathroom (%)	98.7	97.1	97.1	97.2

When some water related quality of life development indicators examined, there were very significant differences between the provinces in the study area. For example; rate of houses with a piped water system was 97.4%, in Turkey, while 98.4% in Tekirdağ Province. Daily consumption of water per person was 217 liter in Turkey, but 176 liter in Tekirdağ Province. This result was very interesting.

Table 10: Value of Water Expenditures by Farm Size per Housholds (for 4 person) Monthly

Expenditures/Groups	50-150 (da)	151-250 (da)	251-350 (da)	351+ (da)
Cost of Water Consumption (€)	24.9	31.0	32.3	45.5
Total consumption expenditures	900.0	1205.0	1926.0	3190.0
%	2.8	2.6	1.7	1.4

Cost of water by farm size per households (for 4 person) monthly was shown in Table 10. The water consumption of households in rural part of research area was different by the farm sizes. For example, cost of water consumption of the farms in first group (between 50-150 decar) was €24.9 per month. But the consumption value of water in the last group was about €45.5. Rate of water use value in total consumption expenditures was 2.8% in the first group and 1.4% in the last group.

Table 11: Distribution of the Structural Factors of the Villages in Thrace Region

Indicator	Tekirdağ		Edirne		Kırklareli		Toplam	
	Sayı	%	Sayı	%	Sayı	%	Sayı	%
Health house	45	17.4	25	10.1	2	1.1	72	10.5
Cottage hospital	15	5.8	15	6.0	4	2.3	34	5.0
Post Branch	14	5.4	3	1.2	2	1.1	19	2.8
Post Office Agent	53	20.5	12	4.8	33	18.6	98	14.3
School	55	21.3	62	25.0	13	7.3	130	19.0
Education with transportation	178	69.0	148	59.7	36	20.3	362	53.0
Water Network	215	83.3	175	70.6	21	11.9	411	60.2
Drainage and Sewage	132	51.2	98	39.5	16	9.0	246	36.0
Water Control	32	12.4	37	14.9	1	0.6	70	10.2
Number of Villages	258	100.0	248	100.0	177	100.0	-	-

Distribution of the structural factors of the villages in Thrace Region was in table 11. According to table, only 60.2% of houses in villages had water network and 36% had drainage and sewage in Thrace region of Turkey.



Much more important, vital water quality control was made only in 10.2% of the villages. These values are very low for Thrace Region. Because Thrace Region is known as one of the most important and developed part of Turkey. So migration to cities was inevitable at this frame.

4. Suggestions

Rapid population growth changed the consumer habits and industrial developments led to significant water problems at global, regional and local scale in the twentieth century. The global climate change was considered to be one of the major problems causing the water crisis. Imbalance between water demand and usable amount of water, water pollution caused by urban and industrial wastewater discharges, degradation of ecosystems and improper land use are all the results of the climate change. All the indicators about the global water crisis indicate that the situation is getting worse and if the regulatory measures are not taken, so the water stress will increase even more.

Long-term conservation programs and measures should be established in order to protect water resources for all uses, to prevent pollution and to improve the quality of contaminated water resources. Because the first victims of climate change is always water.

The general causes of migration can be physical, economic, social and political. The inadequacy of water, education, health services, the difficulty of transportation, the natural disasters, the regional civil wars, unemployment, family problems etc could be the main reasons for migration from rural to urban. Especially in the big cities, the job opportunities, the quality of living and accessibility to services provided by the government and municipalities is higher than in rural areas. Urbanization has become more important in the eyes of people due to social reasons such as parents' increasingly better education and living standards for their children and their preference for living in urban areas.

When the distribution of the structural factors affecting the quality of life of the villagers in Thrace region was analyzed, it was understood that the proportional distribution of development indicators was not at the expected level. As a result of the research; only 15.5% of villages had health care, 17.1% had PTT facilities and 19% had schools. Additionally, 60.2% of houses in villages had water network and 36% had drainage or sewage in Thrace region of Turkey. Much more important, vital water quality control was made only in 10.2% of the villages. Governments and municipalities are obliged to provide reliable water to their citizens. So they have to take some precautions. These precautions can be arranged as follows:

- Global thinking and local action must be,
- It is necessary to reduce the loss-to-lean ratio to the minimum for efficient water management
- More rational water targets should be determined in Sustainable Development Goals
- Urban water management should be established, taking into account rural conditions
- Problems and solutions should be assessed according to different regional and cultural conditions
- Ecology component should be included in water-food-energy connection
- Models should take climate change into account
- Wastewater is a valuable source of water, energy and nutrients. So the scarcity of water can be removed by recovery of the wastewater.
- Ecosystem services should be integrated with water and land management for the sustainability of healthy communities
 - Priority in national water law should be to prevent water wastage and encourage water saving
 - Wastewater from local governments and organized industrial zones should be treated and reused in the short term in industry and agriculture.
 - Completion of sewerage systems requires maintenance, repair and rehabilitation of sewerage networks
 - Construction of wastewater treatment plants must be operated effectively and efficiently
 - Drinking water and sewerage projects should be prepared for the settlement areas that will be formed due to the fact that the Thracian cities receive more migration



• Due to the transformation of Tekirdag Province into Metropolitan Municipality, drinking water and wastewater networks must be completed and renovated in the neighborhoods and newly formed settlement areas that are included in the responsibility area of TESKI.

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