

DETERMINATION OF AGENTS AND THEIR STRATEGIES IN RIVER BASIN ACCORDING TO GAME THEORY

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Abstract

The increase in World's population and economical development politics of the countries after the II. World War sped up the consumption of natural sources and caused environmental pollution due to the mass production. "Sustainable development" politics which comes with the economical growth and aims the protection of ecological systems formed the basics of environmental politics after 1980s. Since the usage and management of natural resources became to discuss of basin planning. Basin concept doesn't exist in the current management and planning organization of Turkey. The abundance of the number of independent decision makers and law/regulations which include environmental arguments increases the pollution problem in basins.

This study, the decision makers who decide on environmental issues and the conflict between them are analyzed. This analysis is based on the game theory; which aims to explain the conflicts among player, strategy, interactive decision process. Players are the central authorities and local authorities. Although they work in favor of the public there are some conflicts among them. There are conflicts that occur when the players have different and/or same strategies.

Introduction

The increase in World's population and economical development politics of the countries after the II. World War sped up the consumption of natural sources and caused environmental pollution due to the mass production (Meadows and others, 1972; Johnson, 1974; Wolf, 1983). Environmental problems such as air, water and soil pollution; the loss of fertile agricultural areas and woodlands and the decrease in biological diversities due to the urban population increase and development of industry are experienced in all developed or less developed world countries. As the effect of environmental problems reached beyond the borders it is accepted that a worldwide avert program is mandatory (Bartone, C., and others, 1995; Serageldin and others, 1995; Brown and Mitchell, 1998).

“Sustainable development” politics which comes with the economical growth and aims the protection of ecological systems formed the basics of environmental politics of especially developed countries after 1980s. In 1987 a report titled “Our Common Future“, prepared by the United Nations – The World Commission on Environment and Development, influenced all countries. Sustainable development politics were developed by UNCED Earth Summit in Rio de Janeiro (1992) and Agenda 21 (Brundtland and others, 1991; Leitman, 1994; Karaman, 1999).

Sustainable development is still discussed with several aspects; how to provide justice among the generations and how to overcome the contradiction between developed countries/regions and less developed countries/regions is still a study subject (Keleş and Hamamcı, 1997). Sustainability requires guaranteeing the permanence of reproduction process in two areas. One of them is the “reproduction of development”, and the other is “the self reproduction capacity” of natural resources (Greenhuisen and Nijkamp, 1994).

Ecological approach to the planning which is considered as a significant instrument of economical growth is being discussed for a long time (Isard, 1972; Kozlowski and Hughes, 1972; Rodgers, 1976). Rapid growth of urban areas and their development problems are the most effective factors in understanding the requirement of planning in a region. Since the use and management of natural resources became another criteria of planning concept, a discussion on the border of planning started.

River basin plans and river basin management whose borders are defined by natural resources have gained more importance than regional plans whose borders change with the socio-economical and technological development in regard to the sustainability (Teclaff, 1996; Aydemir ve Aydemir, 1998).

Basin concept doesn't exist in the current management and planning organization of Turkey. Besides, some specific basins in Turkey are defined by the Ministry of Energy and Natural Resources - General Directorate of State Hydraulic Works. But the Regional Directorates of State Hydraulic are not organized according to the borders of the basins. Some basins may be administered by more than one Regional Directorate. Besides, there are several basins which are not within the borders of the province and/or district they belong (Başaran, 1997).

In Turkey a total number of 100 laws and 36 organizations are present concerning the environment issue which create confusion in practice (Daşöz, 1995). Ministry of Environment, which was established in 1991, on the other hand, is not effective enough. The government of Turkey can be categorized into two major divisions. One is the central administration and its field units and the other is the series of local administration units. The Provincial Governor represents the State, the central administration, and all of its ministries within the province. There are the units of local administration, which consist of provincial local administrations, municipalities, and villages. All of these administration can be located in river basin thus the solution of environmental problems becomes more difficult since there is no organization for the management of basins.

This study, a river basin in Turkey, the decision makers who decide on environmental issues and the conflict between them are analyzed. As for the study area, Nilüfer Stream Sub-basin within the borders of Susurluk Basin which is deeply affected and still being affected by the increasing environmental pollution is chosen. Besides having Bursa which is the third biggest industrial city within this area, the fact that General Directorate of State Hydraulic Works has a regular water pollution research for 20 years in this area was another significant factor in the choice of this sub-basin as the study area.

Method

The decision makers who decide on the environmental issues and their strategies are explained according to game theory in river basin. Game theory is a mathematical theory which aims to explain the interactive decision making process in situation with more than one decision maker (Luce and Raiffa, 1957; Myerson, 1991; Aumann and Hart, 1994). When there are many decision makers (players) the rivalry between them increase. Every player tries to maximize pay off him/her. We can see that there are non-cooperative situation in Turkey river basin. Behaviors of players, their strategies and their expected utility are explained by the game theory. Similarly, we can analyze decision makers and their behaviors in river basin, easily.

The main elements of the game are players (two or more) and the strategies (pure strategy or mixed strategy) (Rasmusen, 1994). The uncertain in the game situations, players' information, the number of their strategies and acts of the players are the elements that affect the game (Selten, 1995; Harsanyi, 1967).

Game theory which was first realized by a French Mathematician Emile Borel in 1921. In the following years it was improved especially during the World War II to explain the behavior of the agents and has been improved since then. After the world experienced an economical crisis in 1970s, the game theory rapidly gained importance in economy during the 1980s (Vajda, 1966; Rasmusen, 1994). In the game theory, there are distinction between non-cooperative and cooperative situations. Minimax theorem which was developed by Von Neumann for cooperative games aims to define best strategies for the agents (Neumann and Morgenstern, 1944). Nash who was awarded by Nobel Prize for his contributions to the game theory, created significant approaches the non-cooperative games with n numbered players to how equilibrium could be achieved in the game theory (Nash, 1996; Ritzberger, 2002).

Game theory applications started in 1990s in several areas of social science. Analyzing the environmental problems with the game theory is a new area for the theory. The abundance of the environmental problems requires making a decision interactively. Therefore, the game theory can be applied for the solution of such problems at least theoretically. There

are studies in which air pollution problem is analyzed by the game theory with the cooperation of neighbor countries (Kuismin, 1998; Ray, 2000). Although they are limited the game theory applications in planning have started (Harshadeep and Nagaraja Rao, 1995). The game theory which explains the uncertain situation that has many decision makers, will effect planning discipline in a positive way. This will also ease the analysis of many parameters that affect planning. In addition it will make it easier for the agents to cooperate if the conflict in the planned area are clearly defined. It is possible to achieve cooperative that all agents are winner. Actually, this target is planning's aim. If all agents are winner, sustainability is possible.

Decision makers who decision the environmental issues are players in sub-basin. The strategies of each player and their conflicts have defined. When planning and environment are the subject of discussion it becomes more difficult to define the agents and their profits. In the previous application studies where the game theory was used it was observed that there was no problem of determining the players. For instance, in a war the enemies are defined and the main goal is victory with a minimum loss. Similarly, in a game among countries causing air pollution, the creators of the pollution are those countries, and there is no need for an analysis to determine this (Mensch, 1966; Ray, 2000). However, in this study it will be possible to see agents who we think have the same profits but turn out to make different decisions.

The Condition of the Sub-Basin at Present

Administrative Division

Susurluk basin which is a very large (22399 km²) is within the borders of three different provinces. There are 3 province governors (Bursa, Balıkesir, Kütahya), 15 district centers, 1 metropolitan municipality, and 57 municipalities in the Susurluk basin. Susurluk basin lies within the administration of two different Regional Directorate of State Hydraulic which are 1st Regional Directorate (administration area within the province borders of Bursa, Kocaeli and Yalova), 25th Regional Directorate (administration area within the province borders of Balıkesir and Çanakkale). There are two wetland which are covered by RAMSAR agreement in 1984 and 1998 in the basin (D.S.İ., 1984).

Susurluk basin is polluted by industrial, mining, agricultural and domestic wastewater. But the most polluted area is Nilüfer stream in which Turkey's third biggest industrial metropolitan city Bursa lies. There are 1 Metropolitan Municipality (Bursa), 3 District Centers Municipality of Metropolitan Municipality (Nilüfer, Osmangazi, Yıldırım), 4 District Centers Municipalities (Gürsu, Karacabey, Kestel, Mudanya) and 13 Sub-District Municipalities in the Nilüfer Stream sub-basin. Nilüfer Stream sub-basin in Susurluk basin is seen in Figure 1.

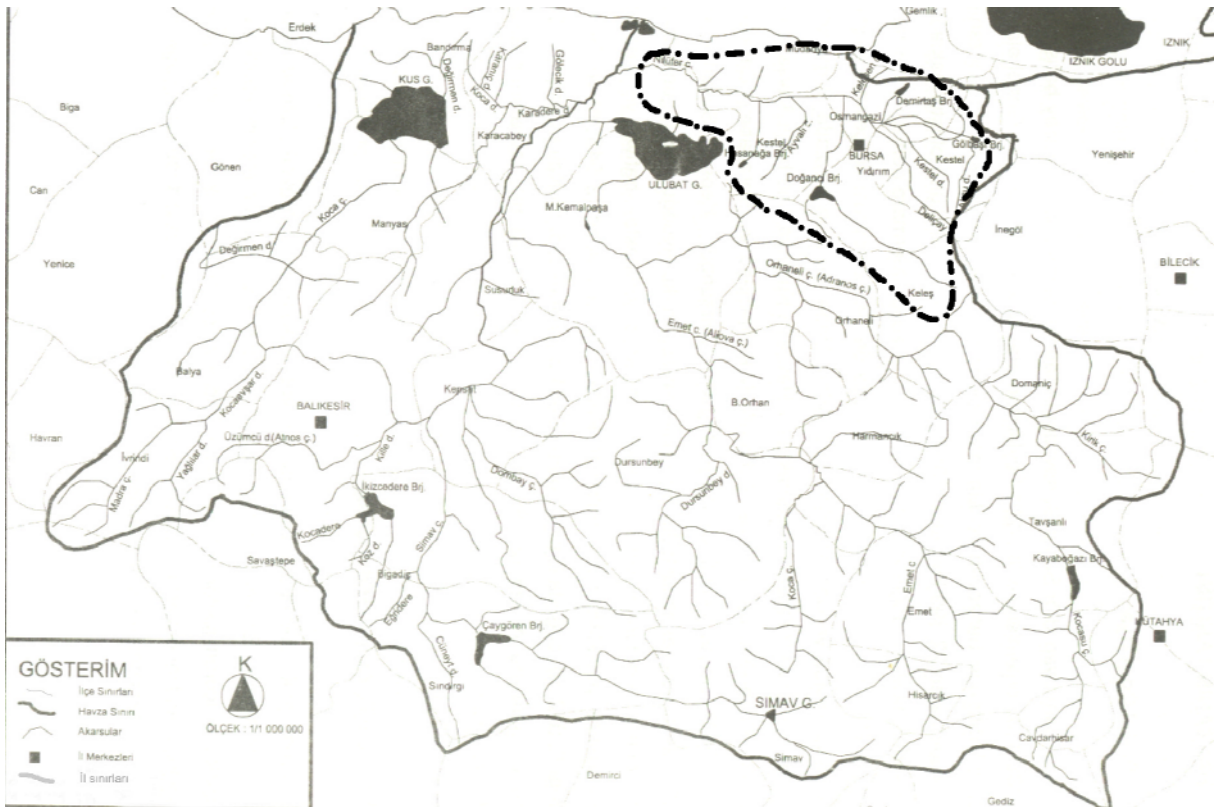


Figure 1 Nilüfer Stream Sub-Basin In Susurluk Basin

Socio-Economical Development in Sub-basin

There has been an increase in population growth due to the industrial development in 1960s and since then. In 2000, the population of Bursa is 2 125 140 and the annual population growth rate is 28,6 ‰ in 1990-2000 period. The annual population growth rate of metropolitan area, which contains 3 district centers, is 35,9 ‰. (D.İ.E, 2002. Bursa is one of the most important cities of Turkey since it has fertile agricultural lands also with its rich historical background.

There are 2 Organized Industry Districts and 5 industrial areas in the sub-basin. There are 8 more industrial areas under construction. Bursa Organized Industry District in which 35000 people work in 176 companies was constructed in 1961. There are 142 industrial investments and 26000 workers in Demirtaş Organized Industry District which was built in 1990 in industrial area which started to develop in 1970s and has still been developing. 70 % of the industry in the sub-basin is textile industry and 20 % of automotive and relevant industries. There are approximately 70 investments which depend on agricultural products (Bosb, 2003; Dosab, 2003).

Another developing sector in Bursa is agriculture. The industrial labor force and service force are increasing in contrast to the agricultural labor force which is decreasing. (D.İ.E., 2002). Despite this fact increase in irrigation possibilities, technological innovation, marketing and agricultural industry has made the increase of agricultural products and the income gained from it possible (D.İ.E, 2002).

Usage of Natural Resource in Sub-basin

Because of the industrial development and growth of population, fresh water consumption is increase in sub-basin. We can say that supplying fresh water and shearing its among domestic, agricultural and industrial usage are two main problems in sub-basin.

Water demand in sub-basin is supplied by surface water (Nilüfer Stream) and ground water. There are dams, ponds and water channels still under construction from 1970s according to the public demand. 6 irrigation projects, 1 pond (Gölbaşı), 1 dam in order to supply drinking water in 1985 (Doğancı 1) and 2 dams for irrigation (Hasanağa, İznik) were built by D.S.İ. in 1979. Demirtaş dam built because of irrigation and ground water of Demirtaş uses industrial investments (D.S.İ. 1984). Flood control of surface water and changing the direction of the stream are two of the projects that are planned to be applied by D.S.İ in sub-basin. Dams and canal projects for irrigation are especially considered for the other branch of Susurluk basin (Emet, Orhaneli) (D.S.İ. 2000).

28 % of the ground water is provided for Bursa Metropolitan Municipality for drinking and domestic potable water, 31% is supplied for the industrial potable waters, 36% is used for

irrigation, and 5% is provided for Demirtaş Sub-District Municipality for drinking and industrial potable water (D.S.İ. 2000). Another problem in sub-basin is usage agricultural lands. Bursa has fertile agricultural lands, but its having been damaged by industrial and urban areas.

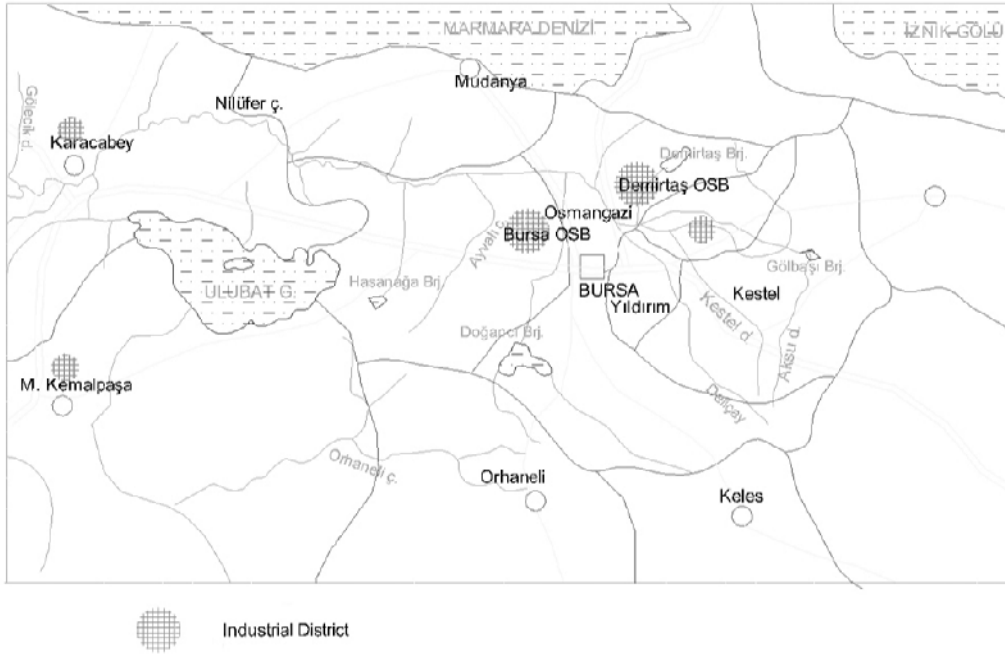


Figure 2 Land Use in the Sub-Basin

Pollutant And Pollution Of Surface Ground Water In Sub-Basin

There are sewer systems in all settlements in sub-basin, but Bursa metropolitan settlement is unique as having a Lagoon Treatment System for domestic wastewater. Bursa Metropolitan Municipality is using the European Bank Credit to develop and rehabilitation two current treatment plant and sewer systems (Metropolitan Municipality, 2003) .

Bursa Organized Industrial District in which 176 investments was constructed in 1961, but wastewater treatment system was built in 1998. There are 142 industrial investments in Demirtaş Organized Industry District which was built in 1990 in industrial area which started to develop in 1970s, but there is no wastewater treatment system (Bosb, 2003; Dosab, 2003). Most of the industries don't have a treatment system. Because of increasing

product cost, existing ones are not working effectively. All industrial wastewater is discharged to surface water in sub-basin.

The most important pollutant besides the settlements and industries in the sub-basin is agricultural pollution. Chemical pollution and pesticides aren't measured in sub-basin solid, but General Directorate of State Hydraulic Works research indicated that irrigation water that rejoins to the water cycle system is already polluted.

General Directorate of State Hydraulic Works carried out water pollution measurement experiments in the sub-basin in 1979-1982 and 2000. Results are classified according to "Water Pollution Control Regulations, The Quality Criteria of Inland Water". We can see in Table 1 that changing the quality of inland water in four different analysis points.

Surface waters are classified in four groups according to the Water Pollution Control Regulations. High qualified 1st class waters; drinking water could be used for recreational, fishing and other purposes. 2nd class less polluted water can be used as drinking water after a treatment, as well as fishing, watering, and in all activities which doesn't require 1st class water. 3rd class polluted water can be used as industrial waters (excluding textile and sustenance industries) after a suitable treatment method. 4th class polluted waters can not be used for any purpose (SKKY, Article 7, 1988). The quality of parameters which was analyses in surface water; A) Physical Parameters, Water warm (oC), Ph, Electrical Conductor (EC, $\mu\text{mhos/cm}$), TDS, SS, Cl, NH₃-N, NO₂-N, NO₃-N, Dissolved Oxygen (DO), Na, B-) Organic Parameters; M-Al, P-Al, pV, BOD₅, TH, o-PO₄, COD, C-) Inorganic Parameters; Fe, Mn, K, Ca, Mg, B (D.İ.E., 1984; D.S.İ., 2000).

As the analysis results of year 1979-1982 are investigated, it is possible to say that surface water used to flow quite clean from the spring to Bursa according to the parameters. The pollution in the surface water started mainly with the domestic wastewaters. After the domestic wastewater discharge in the surface waters, the water quality became 4th class according to the physical parameters, 1st and 2nd class according to the other parameters. Industrial and agricultural wastewater contributes the pollution as they join the flow. Water quality is 4th class according to the physical parameters. If the water is investigated for the organic and inorganic parameters it is possible to consider water at this point as 2nd class.

Finally Bursa Organized Industrial District wastewater is discharged in the stream. Biological life and all fish species are lost in this section of the stream.

In the analysis of years 1998-1999, it seems that there is not a significant difference in the water quality of stream until Doğancı Dam which supply fresh water. After the domestic wastewater discharge to the stream water quality becomes 4th class according to the physical and organic parameters, and 2nd class according to the microbiological parameters. As the industrial wastewater is mixed with the flow water quality becomes even beyond the 4th class according to the physical, organic and microbiological parameters. At this point stream flow seems to be a sewerage channel and the water quality is destroyed gradually.

The result of discussion is that Nilüfer Surface Water System has an increasing pollution rate excluding the Doğancı Dam. It is possible to say that biological balance is destroyed totally in the stream, as well as biological diversity. Nilüfer stream has become an open channel which carries the waste of Bursa through Simav Stream until Marmara Sea and finally become the area which suffers deeply from water pollution.

Table 1 Changing The Quality Of Inland Water 1982 (1st value) – 1999 (2nd value)

	T	pH	TDS	Cl	NH3-N	NO2-N	NO3-N	DO
N1	1-1	2-3	1-1	1-1	2	2-4	1-1	1
N2	1-1	2-1	1-2	1-2	4	4-4	1-1	1
N3	1-1	1-4	2	2-2	4	4-4	1-1	2
N4	1-1	1-1	2	2-3	4	4-4	1-1	2
	BOD5	o-PO4	SO4	Fe	Na	T-coli	CN	COD
N1	1-2	2	1	3-3	1	2	1	4
N2	1-4	4	1	3	3	1	4	2-4
N3	3-4	4	1	3	1	2	4	2-4
N4	3-4	4	1	3	3	1	4	2-4

Source: D.S.İ., 1984; D.S.İ., 2000

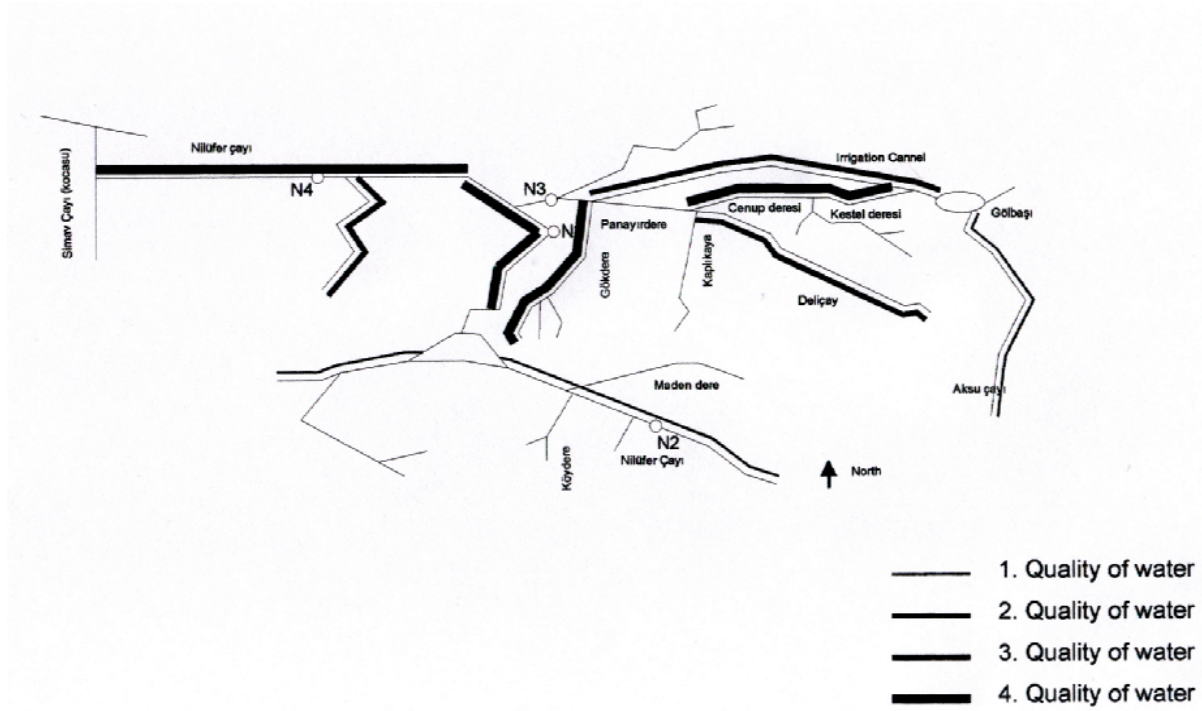


Figure 3 The Quality of Water in the Sub-Basin 1999

The Definition of the Players and Their Strategies in the Sub-Basin

Players who decide on environmental issues in the sub-basin. The habitants and investors of sub-basin who are directly affected by the pollution are not defined as players. Because their personal actions don't effect environment. These kind of players are called "Pseudo Players" in game theory (Rasmusen, 1994). Pseudo players can be affected to strategies of players.

There are 33 Players in the sub-basin. 9 ministries (Ministry of Environment, Ministry of Health, Ministry of Forrest, Ministry of Tourism, Ministry of Reconstruction and Settlement, Ministry of Industry and Commerce, Ministry of Energy and Natural Resources, Ministry of Agriculture) and 1 General Directorate Of Rural Services under the Prime Ministry, 1 Metropolitan Municipality (Bursa), 3 District Center Municipalities of Metropolitan Municipality (Nilüfer, Yıldırım, Osmangazi), 4 District Center Municipalities (Keles, Gürsu, Mudanya, Karacabey) and 13 Sub-District Municipalities. Players of the sub-basin and their relationships are seen in Figure 4.

Players are public institution which are all acting on behalf of the public benefits. They can not behavior, illegally, because they roles are defined by laws. There are each player's strategies related with roles. Players are assumed to act rationally when they choose their strategies. Of course every player has many strategies but we choose that effect the environment. Some players have same strategies or they can choose a dominant strategy among the others strategies.

Player's strategies are defined from the publications in which ministries and local administration explain their plans, programs and goals. It is possible to have hidden goals as well as the obvious ones in the determination of strategies. For instance increasing municipality incomes is a necessity for better service, and increasing the income is a dominant strategy, and there is another strategy which is more dominant but not pronounced loudly, such as collecting more votes in the next election. Such hidden goals are considered in the determination of the strategy if they have the possibility to affect the important environmental decisions.

Players conflicts occurs three different types. First, conflicts are between central administration (ministries) and local administration (municipalities). Secondly, conflicts are among central administration units, and thirdly conflicts are among local administrations. We can see that players, roles, strategies and among players conflicts in Table 2.

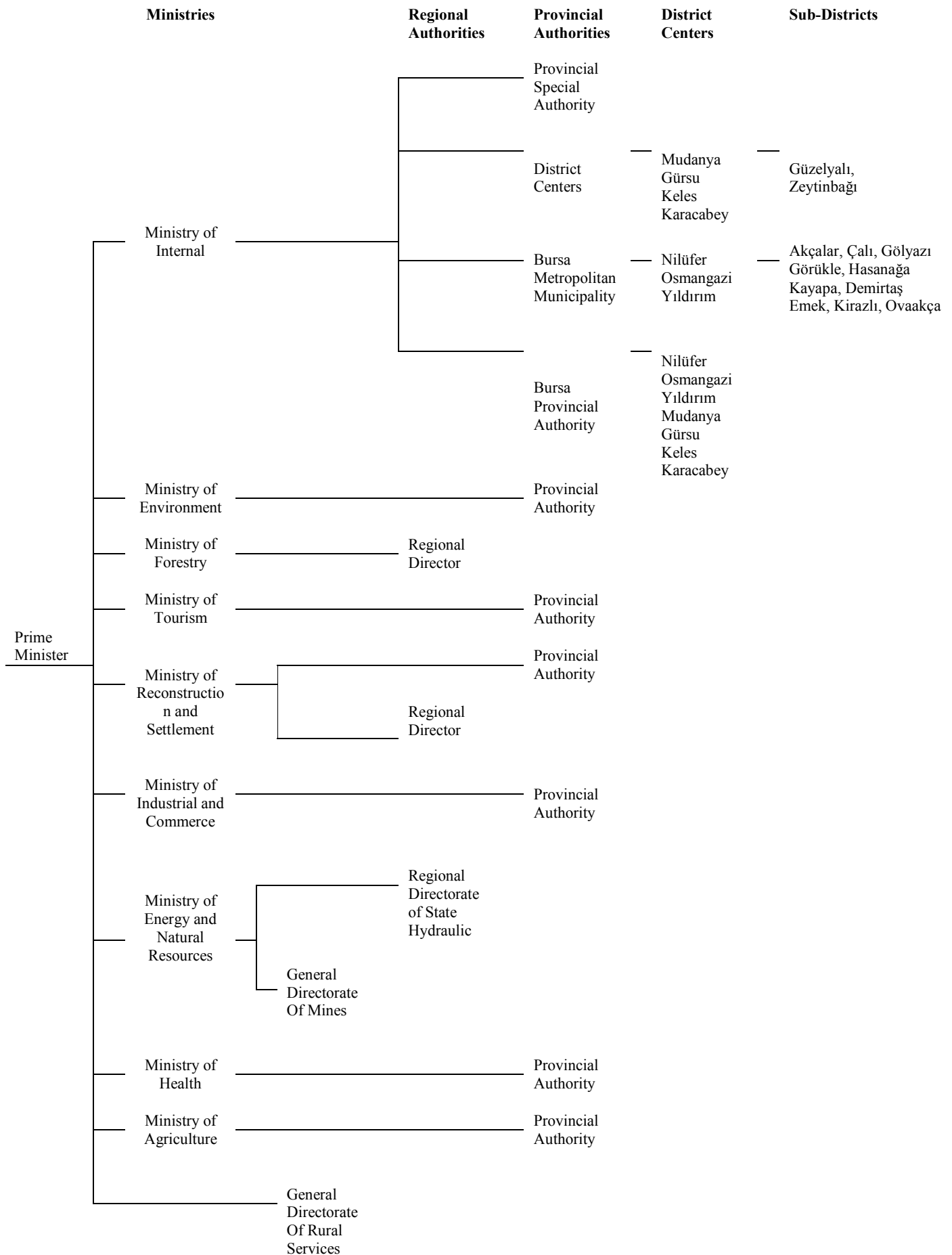


Figure 4 Players of the sub-basin and their relationships

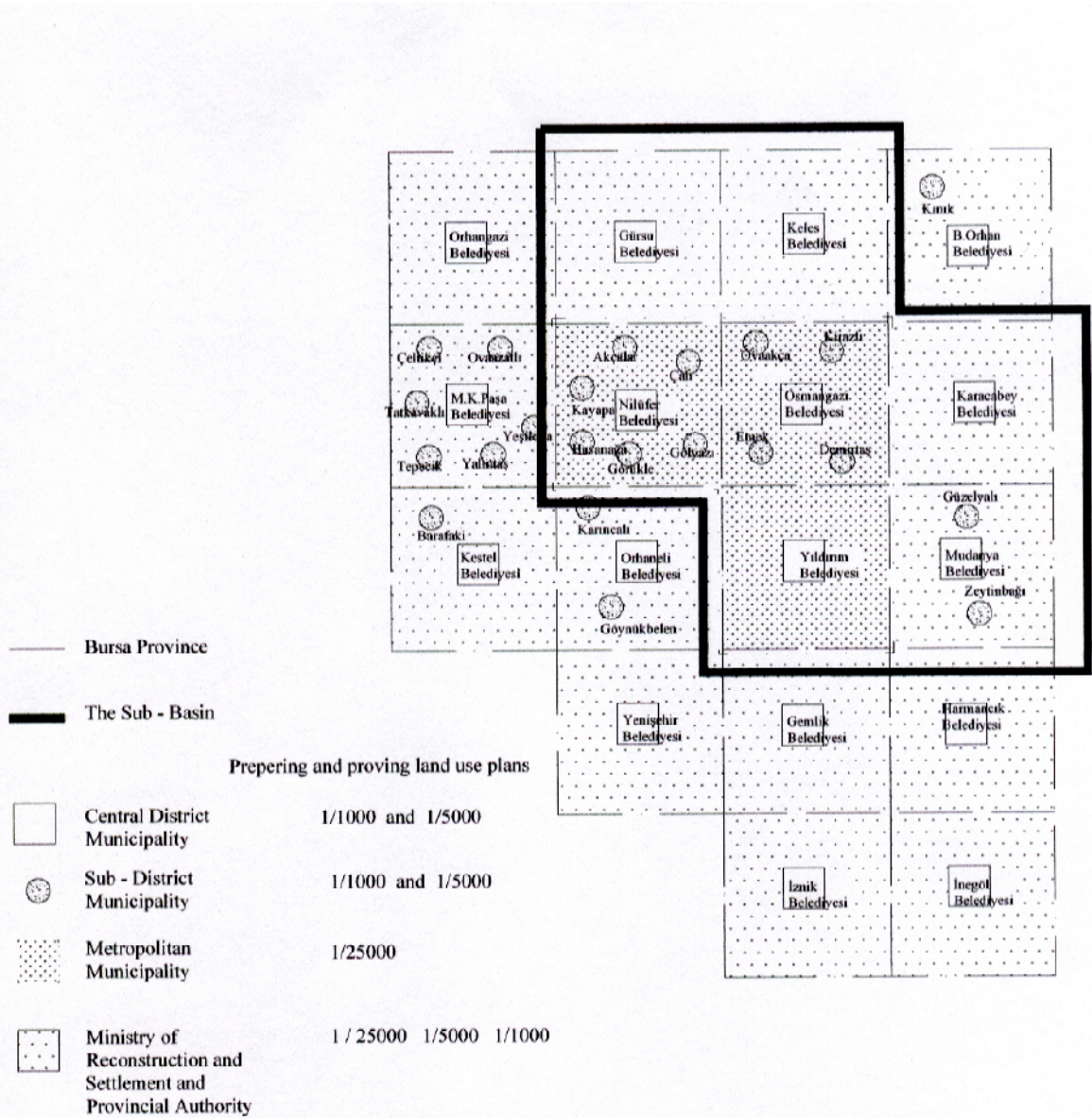


Figure 5 Local Administrative Division in the Sub - Basin

CONCLUSION

The abundance of the number of independent decision makers and law/regulations which include environmental arguments increases the pollution problem in basins. Turkish central authorities system is organized according to the province. There is no basin management and planning, as a result pollution and consumption of the natural resources in the basins increases.

The organization of the decision makers and cooperation among decision makers will provide the sustainability of the basin. This analysis is based on the game theory; which aims to explain the conflicts among player, strategy, interactive decision process. The game theory is useful to explain decision maker's behaviors in the sub-basin, because there are many authorities who make the decision on environmental issues and their strategies are defined in this study.

Players are the central authorities and local authorities. Although they work in favor of the public there are some conflicts among them. These conflicts may take place between the central authorities and local authorities or among the different units of central authorities and local authorities. Sometimes it is possible to experience these three sorts of conflicts at the same time. There are other conflicts that occur when the players have different strategies. Such as the contradiction between the municipalities that are willing to increase industrial activities and the Environmental Ministry that supports industrial areas in order to control environmental pollution. Besides, there are some other conflicts in which players have contradiction because of their same strategies. Such as; Ministry of Environmental, Metropolitan Municipality and Ministry of Agricultural that have the strategy for preventing environmental pollution using different regulations of the water pollution standards.

Metropolitan Municipality, other municipalities and Environmental Ministry experience such conflicts the most. Municipalities prefer to act independent from the central authorities. Most of the conflicts occur between the ministries and Metropolitan Authorities which has the most environmental problems.

There is a progress in industrial development as well as the increase in agriculture and the population in the sub-basin. The results of the water analysis of 1979-1982 showed that the stream was polluted because of these activities. According to the analysis of 2000 the pollution is still increasing.

The result of the economical effects of existing water pollution in sub-basin is very interesting. The first problem is supplying clean water and how to provide it to all sectors. This problem is solved in a short time and particular way. There is a point that all players agree; protection of the dam that provides potable water for Bursa city. Ground water is reserved for industrial use, and ponds are formed for the agricultural usage. The treatment expense of industrial and domestic wastewater is saved.

Other resources are development in order to agricultural lands. When economical change in Bursa is investigated it seems that industrial and agricultural incomes are increasing. Which means agricultural income is not affected by not using polluted water in this area. Thus environmental costs didn't increase the expenses of industrial and urban investments. The most important result of the water pollution is the reduction in biological diversity and the lost of esthetic view. Bursa Metropolitan Municipality has projects for the treatment of stream and takes regular steps for the application of them lately. Although all the strategies that prevent the environmental pollution, economical development is more valued and preferred in the sub-basin. Environmental problems are postponed by players.

This study in which players and their strategies are defined, and later it would be studied the possibility of decreasing environmental pollution using the game theory. Players should realize that they can win but environment will lose. It shows that the game is non-zero sum game. It is possible to classify the players as player groups according to their roles and strategies. Dominant and similar strategies must be defined among all strategies. The answer of "which strategy is optimum strategy for the player groups in agreement?" question must be investigated. The difficulty in this new study will be forming the pay off matrix of the players. Since it is about the environment the outcomes requires another analysis.

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Table 2 Players, Roles, Strategies and Among Players Conflicts in the Sub-Basin

PLAYERS	ROLES	STRATEGIES	CONFLICTS
Bursa Metropolitan Municipality	Urban services and Metropolitan area planning (Law no, 3030)	(1) Development of life quality (2) Increasing of municipality income (3) Solving environmental problems	With Environmental Ministry and Agricultural Ministry about the “discharge permission” Concerning the protection of water resources and surface water basins, Environmental Ministry who has the authority to prepare specific plan, Ministry of Reconstruction and Settlement, Ministry of Tourism and municipalities have the contradict,
District Center Municipalities of Metropolitan Municipality (Nilüfer, Osmangazi, Yıldırım)	Urban services and Land use planning (Law no, 3030)	(1) Development of life quality (2) Increasing of municipality income (3) Solving environmental problems	The conflicts are increasing when Metropolitan Municipality and their district center municipality belong to different political parties. They generally have the contradiction of not following the decisions of planning.
District Center Municipalities (Kestel, Gürsu, Mudanya, Karacabey)	Urban services and land use planning (Law no, 1580)	(1) Development of life quality (2) Increasing of municipality income (3) Solving environmental problems	Between municipalities that are willing to develop their industrial activities and special offices that prepare plans for special purposes. (such as Environment, Housing, Industry), With the Ministry of Health concerning 2nd class "working licenses" permission for industrial plants, Municipalities have conflict concerning the responsibility of the pollution treatment cost.
Sub-District Municipalities	Urban services and land use planning (Law no, 1580 and Law no, 3030)	(1) Development of life quality (2) Increasing of municipality income (3) Solving environmental problems	There are authorization problems between sub-district municipalities and Metropolitan Municipality especially when sub-district municipalities are within the metropolitan borders. Sub-district Municipalities act independently since they consider themselves according to the 1580 numbered municipal regulations. They don't follow the high scale planning decisions of metropolitan municipality.
General Directorate Of Rural Services	Developing infrastructure in rural area	Economic development in rural area	With the municipalities and the Ministry of Agriculture concerning the usage of agricultural lands,

Ministry of Energy and Natural Resources and 1 st Regional Directorate of State Hydraulic	Planning of surface and ground water resources, management and development	(1) Supply to Bursa fresh water (2) Developing dams and pond	With all the players who cause pollution, concerning the protection of water sources.
Ministry of Environment and Provincial Environment Authority	Protection of environment and natural resource, improving of environment, Environmental planning	(1) Protection of environment and natural resource (2) Developing of environmental quality standards (3) Monitoring (4) Waste management	With municipalities that avoid environmental infrastructure expenses, With the Ministry of Reconstruction and Settlement Ministry concerning environmental plan, With municipalities concerning the operation permissions for new investments with the investigation of environmental effects, With the Ministry of Agriculture concerning the soil pollution, With Metropolitan Municipality and the Ministry of Agriculture concerning discharge standards, With Industrial Ministry who doesn't oblige industries for developing infrastructure in the legal Organized Industrial Districts.
Ministry of Reconstruction and Settlement and Provincial Reconstruction and Settlement Authority	Defining construction standards and planning in outlying municipalities areas (Law no, 3194)	(1) Defining and development construction, (2) Monitoring (3) Developing of settlements	With the Ministry of Environment concerning environmental plan, With the municipalities which don't follow environmental structure plans.
Ministry of Agriculture and Provincial Agriculture Authority	Development agricultural lands	(1) Increasing of agricultural income (2) Developing harvest health standards	With General Directorate Of Rural Services concerning the authorization to give the permission for the usage of agricultural lands out of agricultural purposes, With the municipalities those give housing permission for the agricultural lands, With Metropolitan Municipality and Ministry of Environmental concerning Discharge Criteria.
Ministry of Industry and Commerce and Provincial Authority	Development industry and commercial	(1) Increasing industrial income (2) Developing product standards and encourage exportation	Ministry of Industry which supports and builds the Organized Industrial Districts, is pushed by the municipalities concerning the choosing location for the Organized Industrial Districts.

