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**Water Policy in Israel:  
Policy Paradigms, Policy Networks  
and Public Policy**

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### **Abstract\***

The article deals with the questions of the emergence, persistence and change of policy paradigms. It focuses on the role that policy networks play in this process and draws on the literature of problem definition to explain this role. The paper investigates water policy in Israel in the years 1948-1997. The paper distinguishes among two water policy paradigms that have prevailed: the earlier paradigm was one of expanding water resources and agriculture production, followed by a paradigm of priority of agriculture expansion over water conservation. The paper also distinguishes among periods of anticipatory and reactive water policy and highlights the role of policy networks in formulating public policies.

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## Water Policy in Israel: policy paradigms, policy networks and public policy

### **Introduction**

Recent years have witnessed deep public policy changes in many countries. The changes have often been so far-reaching that scholars find it useful to refer to them in terms of shifts in policy paradigms (Hall 1993). The retrenchment of the welfare state, the decrease of government intervention in economic markets and the rise of the New Public Management in public administration, are much-discussed paradigm changes (Pierson 1996; Coleman et al. 1997; Coleman and Perl 1997). Policy paradigms refer to the system of ideas and standards that specify the goals of policy, the kind of instruments that can be used to attain them, and the very nature of problems they are meant to address (Hall 1993: 279). The widening use of the concept of policy paradigm for understanding policy processes has significant implications for research agendas. It focuses attention on the ideas, arguments and belief systems in the context of which policy is developed (Sabatier 1993; Fischer 1993). Within the framework of policy paradigm study, the examination of the factors that explain the rise, persistence and decline of policy paradigms is of major importance (Hall 1993).

This article investigates the relationship between policy paradigms and policy networks and policy communities, two other concepts which have come to be seen as central for understanding policy making (Rhodes and Marsh 1992; Dowding 1995). The question then arises: what role do policy networks play in the emergence, persistence and change of policy paradigms?

To address this question, this paper draws on two major analytical approaches. First it uses the policy networks and policy communities approach, and draws on previous research that examined the usefulness of these concepts (Atkinson and Coleman 1989, 1992; Baumgartner 1989a; Coleman and Skogstad 1990; Marsh and Rhodes 1992; van Waarden 1992). Second, it draws on the literature on problem definition (Dery 1984, 1987; Linder and Peters 1989, Menahem 1991; Stone 1989, Weiss 1989). This paper attempts to show that policy networks, that by their very definition consist of integrated,

stable and long lasting relationships among governmental and non-governmental actors provide an environment within which the state interests are defined and a policy paradigm can take hold.

The paper also demonstrates that when this paradigm becomes institutionalized and managed by a corporatist policy network, it can provide a remarkable buffer against policy change. These points are developed through a study of the preservation and change of policy paradigms in Israel's water policy during the period 1948-1997. Water policy in Israel is characterized by a highly centralized planning and management structure designed to cope with the basic shortage of water resources in the country. Water policy making takes place in an institutional setting where all water resources are nationalized. Nevertheless, experts claim that in the last two decades Israel's water resources have been overexploited due to excessive allocation to agriculture, resulting in irreversible damage to its main reservoirs (State Comptroller 1990).

### **Theoretical considerations**

The concept of policy networks refers to a horizontal coordinating process in which a stable and lasting relationship is formed between government actors and private actors, who together share a common policy focus. Networks comprising of members of parliament and public officials on the one hand, and representatives of interest groups and other corporate actors on the other, have often been depicted in studies of the formation of public policy (Baumgartner 1989b; Marsh and Rhodes 1992; Coleman and Skogstad 1990).

Marsh and Rhodes (1992) suggest that we view the term 'policy networks' as a generic term, covering several different types of relationship between state and civil society. 'Policy communities' and 'issue networks' represent the end point in a continuum that is outlined by Marsh and Rhodes. The continuum can vary with regard to the number of participants, stability of interaction among members, ability of members to exclude potential claimants from the policy process, and degree of consensus among members concerning policy goals.

Coleman and Skogstad (1990) adopted the definition where a policy network refers to “the properties that characterize the relationship among the particular set of actors that forms around an issue of importance to the policy community” (Coleman and Skogstad 1990, 26). They see the community as referring to actors, while the network refers to the relationship among actors.

Van Waarden (1992) refines the dimensions and variables related to the organization of the policy sector, as well as the strategies of the actors, and the function of the network. Of special interest in the present context are what he calls sectoral or meso-corporatist and clientelistic networks. In the sectoral or meso level corporatism, interest groups become involved in policy implementation. Coordination of these groups with the party system is likely to result in informal arrangements. In a parliamentary system, legislators from the government party often become the intermediaries in the relationship between interest groups and state (Atkinson and Coleman 1989). The present research follows the formulation suggested by Coleman and Skogstad for the investigation of policy networks.

The importance that has recently been attributed to policy paradigms in the policy making process, and the extensive literature documenting the role of policy networks in this process, require the examination of the relationship between these two concepts that deal with policy making.

Hall (1993) claims that two questions have to be answered in order to gain a better understanding of the policy process: first, what causes the need for new and radical policy changes, or, in other words, paradigm shifts and secondly, how are such paradigm changes brought about? Building on Kuhn’s formulation for change of scientific paradigms Hall places at the center of his theoretical approach the concept of policy paradigms. He argues that in response to policy outcomes that prove to be anomalous within the terms of the prevailing paradigm, public debates and disputes become more widespread. On such occasions, the policy community crumbles and new actors representing other societal interests join in. Deep policy changes of the third order, that is, paradigm shifts, will thus follow this broad public debate and the involvement of politicians and new social actors.

The two approaches thus center on different aspects of the explanation of policy changes or policy preservation. The policy network approach offers an explanation for how pressures for policy change or policy persistence are managed by the network's participants and deals less with the question of how ideas about necessary changes originate. The policy paradigm approach focuses on the issue of the formation of ideas about change but does not address directly the question of how those having vested interests in prevailing policy paradigms react and how the opposition of vested interests is overcome. Combining these two approaches therefore would seem fruitful for the explanation of policy changes. However there is a gap that emerges in the attempt to combine the two approaches into an explanation of policy change or policy persistence. In order to bridge this gap, propositions that deal with the process by which events become defined as having policy relevance, on the one hand, and how policy networks preserve ideas about the adequate policies in the wake of challenging evidence, on the other hand, are needed.

Following the literature of policy problem definition (Dery 1984; Schneider and Ingram 1993; Weiss 1989), one can conclude that events and conditions do not turn into policy problems unless they are defined as policy-relevant. Through a case study on US government information collection, Weiss (1989) highlights the importance of problem definition in the policy making process. Her study shows how changes in problem definition, link data collection by the government to different sets of cultural values and symbols, and alter the language surrounding the problem, finally leading to a change in the policy of government data collection. (Weiss, 1989). As previous research showed problem definition plays a significant factor in explaining policy processes. Rocherfort and Cobb (1994:4) claim that "Problem definition helps to push an issue onto the front burners of policy-making. Institutional structure and partisan balance of course play an important role in directing policy-making. But according to the problem definition perspective, public policy-making must also be understood as a function of the perceived nature of the problem being dealt with... The defining process occurs in a variety of ways, but always it has major import for an issue's political standing and for the design of public solutions."

Within this social constructionist theoretical framework, Stone (1989) characterizes policy problem definition as a process whereby conditions are transformed into problems through the use of causal stories. Political actors use narrative story lines and symbolic devices to manipulate so-called issue characteristics. Political actors, struggling to control interpretations of conditions or difficulties, engage in the process of image making. (Stone, 1989, p.282) This approach claims that policy ideas do not become anomalous in the wake of events, rather they are defined as suitable or unsuitable through social and political processes.

Baumgartner and Jones (1993) also attribute much importance to the definitions that policy actors try to impose on policy problems. They refer to these definitions as images of policy issues and they examine the factors that lead to changes of such images. The term 'policy venues' is used in reference to the institutions or groups in society that have the authority to make decision concerning the issue. Their empirical study shows that over the long term, policymaking is characterized by changes in public understandings of policy problems and the institutions that vie for policy control.

This paper argues that policy networks, which constitute forums for interaction between governmental and nongovernmental actors, provide a framework for the formation of definitions of state interests. It is within these social contexts that both the definitions of what the state's interests are, and the definitions of the suitability of policy paradigms for pursuing them, are formed. This analysis calls our attention to the social properties of policy networks and communities. As Atkinson and Coleman (1992) note, the concepts of policy community and policy network return individual actors to the center stage. But the analysis of the transactions and exchanges between individuals does not provide the link as Scharpf (1989) claims between the networks on the one hand and process and outcome variables on the other hand.

Atkinson and Coleman (1992:161) claim that in order to bridge that gap it is needed to integrate into the analysis of networks institutional variables and ideological variables such as the intellectual foundations of dominant world views in particular policy domains. The present analysis, using the framework of problem definition offers a such a needed

bridge between the focus on individuals that is embedded in network analysis, and the need to integrate institutional variables and ideological variables in the effort to better link the network analysis with policy outcome variables. The paper focuses on highly integrated and institutionalized policy networks, which are characterized by the emergence of their own 'rules of the game', 'culture', conventions, common understandings and mutual trust (Wright 1988; van Waarden 1992 : 35-6). Defined as social structures consisting of stable, long-lasting relationships between actors of the state and social actors who have common interests in a specific policy area, these policy networks may function as forums for negotiating and defining state interests. In these forums, causal stories are fought for, defended and sustained by the actors of the policy community. Discussing the factors that contribute to the success of certain causal stories over others, Stone (1989) suggests that the political success of causal stories is constrained by social institutions such as law and science. The visibility of the proponents and their access to media, as well as the accordance of the story with widespread and deeply held cultural theories are also important factors in upholding causal stories. In the present study it is claimed that policy networks constitute social structures where causal stories are maintained and changed.

Furthermore, drawing on the policy networks approach, it is suggested here that the importance of these policy networks in providing the setting for negotiation over state interests may increase under certain conditions. The examination of both the degree of state autonomy and the factors that induce state bureaucracy and public officials to act autonomously offers a useful starting point. The autonomy of the state is strongly related to the ability of state actors to define state interests. Skocpol (1985:11) attributes to public officials a central role in enabling the state to act autonomously. In this view, the ability of public officials to diagnose problems and formulate alternative policy solutions, plays a critical part in substantiating state autonomy. Baumgartner (1989b) and Atkinson and Coleman (1989) attribute much importance to the traits of public bureaucracy as components of the state's autonomy. Several prerequisite conditions for autonomous definition of state interests by public officials are outlined: professional ethos, their own perception of their roles, and independent, in-house capability and resources to generate and analyze both information and data. It may then be suggested that when state



autonomy is low, nongovernmental actors become more influential in defining state interests within the policy networks and in preserving these interests. It should be stressed, however, that while the discussion of state autonomy brings the state back in, bringing it in within the framework of policy network analysis reduces the temptation of reifying the state. In this framework state and state autonomy are discussed in terms of the perceptions and behavior of network participants.

Finally, it has been argued that policy network research has not yet sufficiently addresses the question of the impact of networks on the formation or implementation of policy or both (Bressers and O'Toole 1995: 210). As the authors state, the discussion of networks as independent or intervening variables is relatively limited in the lion policy networks. This raises the question of the possible limitations regarding the usefulness of the network concept as a potential explanatory tool. The present study attempts to treat networks as an explanatory tool, and attempts to related types of policy networks to policy outcomes.

### **The Israeli political context for the study of policy networks and policy paradigms**

The study of policy networks in Israel is particularly interesting in light of the historic process of the founding of the state and the properties of its major political and economic frameworks. Three main characteristics may be specially noted: the highly centralized and interventionist character of the state on the one hand, the declining autonomy of the state on the other hand, and the corporatist pattern of national policy making.

Israel is characterized by a significant degree of governmental centralization and active state involvement in all areas of life. The state controls a very high proportion of both natural and national resources, including widespread land ownership, numerous government-owned enterprises, and a massive public sector which provides a wide array of public services (Sharkansky 1987). Another important facet of the Israeli system is that the major frameworks of the political system and interest group structure, as well the concentration of economic resources in the public sector, are all developments which

preceded the founding of the state in 1948. Of major importance in this context was the General Federation of Labor (Histadrut). Since its foundation in the early decades of the century, it has functioned as an umbrella organization for the labor unions with which most of the workers in Israel are affiliated. The Histadrut also owned and controlled economic enterprises which were and still are among the largest in the country (Aharoni, 1991). The Histadrut was identified with the dominant Labor Party and many of its leaders became the state's elected leaders. The organization's centralized control over major economic power centers, as well as its political affiliation with the dominant party, significantly contributed to the state's control of resources. Yet, at the same time, the state's autonomy was weakened during the first decades because of the lack of a clearly defined boundary between state interests and the interests of two other major players, the Histadrut and the dominant Labor Party (Shapiro 1996; Grinberg 1991). Shalev (1992: 319) contends that the declining autonomy of the state could also be identified as the source of the state's inability to induce economic stability and growth.

One of the results of the blurred boundaries between state actors and societal actors was that the structural characteristics and 'rules of the game' of the newly founded state's institutions did not encourage the establishment of arenas in which an autonomous definition of state interests would be formed. As aforementioned public bureaucracy of highly skilled experts can play an important role in the process of defining state interests (Skocpol, 1985; Atkinson and Coleman, 1989; Baumgartner 1989b). In Israel, however, the civil service became the vehicle for fulfillment of the interests of the political parties. The basis for recruitment of personnel was political and the establishment of adequate professional standards was thus impaired (Nachmias, 1991; Sharkansky, 1987). Other scholars have emphasized that this close affinity between the Histadrut, the dominant political party, and the state, drove off other civil society actors, such as professionals, from the policy making process (Shapiro 1996; Keren 1996 and see also Keren 1994).

Policy making in Israel has been characterized as representing a variant of "social democratic corporatism" (Shalev 1992). The essence of the social democratic corporatist model is that national trade union elites undertake to co-ordinate and limit worker demands on the basis on understandings or agreements with the state and organized employers. Broad socio-economic issues were negotiated among the government, the

employers, and the representative of organized labor, the Histadrut (Wilensky 1983; Grinberg 1991; Yishai 1991). This arrangement is congruent with macropolitical corporatism (see Atkinson and Coleman 1992). Furthermore, the Israeli model of social democratic corporatism is especially noted for the major role that is attributed to the political parties (Shalev 1992: 5-6,190). This involvement of political parties in the “societal bargaining” may create more favorable conditions for the operation of sectoral corporatism, in which legislators from the government party often become the intermediaries in the relationship between interest groups and state (Atkinson and Coleman 1989),.

As aforementioned, ideological worldviews are an important component of policy paradigms approach and should also be integrated into network analysis. Water policy in Israel, as will be explained below, is deeply intertwined with agricultural policy, that has historically played a major role in the process of nation building within the Zionist ideology. The founding and establishment of the state of Israel in 1948 are considered to be linked to the accomplishments of the Zionist movement (Eisenstadt 1967). Within the Zionist ideological framework and practice, agriculture held symbolic importance in the movement to rebuild the social structure of a people gathering from the Diaspora and to inhabit the territory and ultimately to achieve statehood (Shafir,1989). For a long period in the history of resettlement of Jews, agricultural settlements in Palestine were considered to be of primary national importance and the urban sector, though inhabited by the majority of residents, was considered secondary to the effort of nation building (Eisenstadt 1967).

Recent decades have witnessed the decline of the dominant ideology in Israel, and the reduced role of agriculture in face the of industrialization and post industrialization processes. Yet, as will be demonstrated below, water policy in Israel continued to be seen as part of agricultural policy. The study will investigate to the factors and processes that created this dynamic in the water policymaking process.

## **Water policy in Israel : structures and processes.**

Since the foundation of the state in 1948 water policy in Israel may be separated into three main periods as presented in Chart 1

### **Chart 1 about here**

#### **1948-1967: Anticipatory policy-making and the institutionalization of a corporatist policy network.**

The first period of water policy has three main hallmarks: the establishment of the institutional framework and the water policy network, the emergence of a policy paradigm of expansion of both water resources and agriculture production, and the development of an anticipatory approach to water policy. The following discussion details and analyzes each of these properties of the first period.

The years following the establishment of the state of Israel in 1948 witnessed extensive governmental activity in the domain of water policy. A water law regulating production and allocation of water was enacted in 1959. National large-scale projects designed to enlarge water resources were financed and implemented. These government policies were formulated in the context of an expansionist policy paradigm, which reflected the major characteristics of the Israeli state, the political power distribution and the perceptions of major societal goals. This paradigm consisted of several dominant principles and ideas: A. State supported expansion of agriculture was a major cornerstone of both nation building and state building. B. In order to enable the expansion of agriculture, both the regulating of water consumption by the state and the subsidizing of water for agriculture was considered to be essential. C. The discovery and creation of new water resources was also deemed necessary in order to enable the expansion of agriculture.

These principles were expressed in the legislation regarding water resources, the policynetwork created by the legislation, and the nature of water policies during that period. The institutional framework for water policy formulation and implementation, as formalized in the water law, also reflected the centralistic and interventionist character of the Israeli State. At the same time, the close affinity between state elites and the left wing

parties, on the one hand, and the strong relationship between the left wing parties and the organized and collective agricultural sector on the other hand, found expression in the composition of the water policy network.

The Water Law of 1959 vested ownership of all water resources in the state and formalized a centralized water system of production and allocation. A landholder's right to the land, therefore, does not include water sources originating on that land or passing through it. In addition to the establishment of state ownership, the legislation determined a system of water allocation. For agricultural purposes, allocation is based on the type of farming, crops, soil and climate region. The Water Law also outlined the structure and function of the water policy making authorities. Water policy making in Israel involves the Minister of Agriculture, Water Commissioner, Water Council and a parliamentary sub-committee for water. Together they comprise the water policy network. The range of authority and the mandate of each one are presented below (see also Harris 1986 and Galin and Forman 1994)..

The supreme authority for the formulation and implementation of water policy in Israel is the Minister of Agriculture, who is responsible for setting norms and standards relating to water quotas, quality, price, supply and use. The Water Commissioner, who heads the Water Commission, is appointed by the government upon the recommendation of the Minister of Agriculture. The Commissioner is authorized to coordinate and manage all water affairs, develop of new water resources, regulate water allocation and production, and take measures in order to preserve water quality. Each of the appointed Commissioners stayed in his office for at least several years thus since 1959, seven persons have occupied this position.

The recently privatized 'Water Planning for Israel' (Tahal) was originally a governmental corporation that was in charge of comprehensive planning and served as an advisory body to the Minister.

The Water Committee is a parliamentary sub-committee comprising members from both the Economy and the Finance Committees. Any proposal initiated by the Minister of Agriculture that pertains to water pricing adjustments requires the authorization of the Water Committee. Not incidentally, most of this committee's members have always been

affiliated with the agricultural sector.

The Water Council is a government-appointed advisory board. The Minister of Agriculture is obliged to consult with the Council on water management issues. The 39 member Council is headed by the Minister of Agriculture, and the Water Commissioner serves as the deputy to the Minister. The Council members include: 9 representatives of government ministries, 9 representatives of water suppliers and 21 representatives of water consumers, of whom the majority are affiliated with the agricultural sector. The "Agricultural Center", a body which represents the large majority of Israeli farmers and organizations, is always guaranteed a representation of 13 members on the council. Water policy making is therefore carried out within a policy network which has several institutionalized layers, constituting a meso-corporatist network. Thus it may be concluded that the agricultural interests in the policy network have representation in the parliament, the Ministry of Agriculture, and the administration through the political appointment of a Water Commissioner.

It is important to note in the analysis of this policy making structure the highly complex, well-organized nature of those bodies representing the interests of the agricultural sector. A large majority of the farmers in Israel live in cooperative settlements (Kibbutzim) and are organized in hierarchical agricultural organizations. Farmers living in other types of agricultural settlements (Moshavim) are also organized in such organizations. These organizations represent the farmers in the functional domains of purchasing and the marketing of products, while also serving as representatives of agricultural interests in the policy process (Schwartz 1995). This property no doubt contributes to the strength of the Water Council (Maman 1997). While Israel's agricultural sector is affiliated with political parties of various political shades, the dominant parties that have served as the patron of agricultural settlement organizations are those affiliated with the Labor party. Yishai (1991) characterizes the relationship between the collective kibbutzim agricultural settlements and the Labor party, which was well established throughout the 1950's and 1960's, as parentela relations. During the 1960s, those affiliated with the agricultural sector had regularly constituted a third of the government cabinet members.

Therefore, it is clearly not a surprise that the water policy network has primarily

advanced agricultural interests, though as previous research has shown, within the agricultural sector it is the more established and powerful segments that were preferred in water allocation (Yunger et al. 1993). An expansionist, state supported, agriculture sector was endorsed by the policy network members. Water resources management was seen as essential for ensuring the expansion of agriculture and thus water policy and agricultural policy became intertwined. In fact, many policy network members concurrently represented agricultural and water interests, including the Minister of Agriculture and the Water Commissioner who, traditionally, were both personally affiliated with the agricultural sector.

In order to fully understand the water policies that emerged at the time, however, it is also important to take into account prevailing interpretations of reality, referred to by Stone (1989) as "causal stories". Water shortage in Israel in the first period, as Galnoor suggests (1978), was not perceived in terms of an absence of water resources, but rather as a problem of accessibility to presumed water resources that had not yet been discovered. The prevailing causal story was congruent with policies that sought to expand both water resources and agricultural production.

Two major policy outputs stand out in the period 1948-1967 and illustrate how the state pursued an anticipatory approach to policy-making. The first was the very high amount of effort and expenditure designated to the creation of additional water resources. The jewel in the crown was the National Water Carrier, completed in 1964, that carries water from the north of the country to the center and south. The investments in the National Carrier amounted to 3-5 percent of the total gross capital formation of that period (Galnoor 1978). Another large scale project planned at that time was the desalination of seawater, proposed by Tahal in the early 1960s and adopted by the government for implementation (Tahal 1965, see Galnoor 1980). The desalination project, which was to be carried out in cooperation with the US government, became the official policy, and was canceled only after the US refrained from participation (Galnoor 1980). During this period, long term comprehensive planning was considered essential, and the government corporation in charge of water planning, the Israel Water Planning Authority (Tahal), employed several hundred water experts. The Water Commissioner himself attributed much importance to long term planning and consulted both local and international experts, appointing several

international consulting commissions (Cantor 1997). The large scale government-sponsored projects that were designed to enlarge water resources and provision, combined with the important role attributed to long range compplanning, are indicative of anticipatory policy-making.

The establishment of a highly regulated system of water allocation for agriculture on the basis of land, crop type, and irrigation systems, as aforementioned, may also be interpreted as anticipatory policy-making. This allocation system was designed to enable the expansion of food provision, as well as to assist farmers in maximizing their water allocations. To further this goal, government- sponsored training and instructional services were provided to farmers. In addition, extensive scientific research was supported by the government in order to develop more efficient irrigation systems that would help to boost agricultural productivity. The combination of these efforts led Israeli farmers to become among the most efficient in the world.

**The second period : 1967-1990s: the institutionalized policy network at work: establishing the policy paradigm of priority of agriculture expansion over scarcity of water.**

Two major events mark the transition at mid 1960s into the second period: the completion of the National Carrier and the 1967 war that led to the occupation of the territories in the West Bank and Gaza. It was after these two events that the problem of water shortage began to be perceived as one of scarcity rather than as a problem of accessibility. By the 1970's it became evident that, even with the National Carrier functioning, there was a considerable discrepancy between the demand for water and the available supply. The former Water Commissioner who was in office during the 1970s' acknowledged that the earlier estimates of Israel's water potential had been discovered in the 1970's to be grossly overrated. The gap between demand and sustainable yields became even more evident in view of the establishment of new settlements on lands occupied in the 1967 war (Cantor 1995;1997).



It is the argument of this paper that in the period from 1967-1990 the major premise of the prevailing policy paradigm was the priority of agriculture expansion over the conservation of water. While both components of this paradigm were present in the period of 1948-1967, it is argued that the relationship between these two elements, and the "causal stories" surrounding them, had changed, thus enabling us to draw a line of distinction between the two periods. Prior to this time, water and agricultural policies were formulated and implemented under the assumption that there was a high likelihood for the discovery of additional water resources, or that further water resources would be created through the development of large scale desalination projects. Since the second half of the 1960s, the situation changed after the excess in demand over supply became evident. However, over the next decade, the policy paradigm of priority of agriculture expansion over water conservation, and the water policies that derived from the paradigm, prevailed in spite of recurrent acute water crises.

It is suggested that the preservation of this policy paradigm, even in view of severe and recurrent water crises, throughout the 1970's, 1980's and 1990's, was made possible as a result of an institutionalized water policy network that defined the policy paradigm as congruent with the national myths and the state interest.

In order to deal with the theoretical arguments, I will proceed in the following manner: first the principles and norms of the priority-scarcity paradigm will be presented. This will be followed by a discussion of the water policy outputs which will help to establish the nature of the water policy at the period. Lastly, the policy network and changes in power of its partners will be discussed.

### **The principles and norms of the water policy paradigm 1967-1990s.**

The major principle of the paradigm may be defined as the priority of expansion of agriculture over preserving scarce water resources. Guidelines on managing water resources were derived from this major principle of the paradigm and institutionalized as policy. First, the prescription of a specified amount of water for agricultural use per year was an inflexible constraint on policy, even in the face of diminishing water resources.

(Dery and Solomon, 1995). Second, as a result of a strong consensus among the members of the water policy network, pricing was not to be used as a tool for the regulation of water demand in agriculture. Therefore, the cost of water for agriculture was heavily subsidized (Mossenson, 1991).

Although the dominance of agricultural interests in water policy in Israel has been recognized in former research (Yishai 1991, Dery and Solomon 1995), two key questions have received only marginal attention. First, how this dominance of agriculture interests shaped the emerging pattern and nature of water policy? Second, how has this corporatist water policy network survives despite the far reaching political changes that have eroded the role of agriculture in Israel?

#### **Water policy in 1967-1990s, incremental decision-making and a reactive approach**

In 1972, an international team of renowned water experts submitted to the Minister of Agriculture a report on the water situation. The team's expert opinion stated that "...Israel very clearly appears to be on the collision course which will result in a very serious water crisis..." (Woleman et al 1972 in Mossenson, 1991:479). Many more such reports were to come in the following years (State Comptroller, 1988, Report #39, 1986, Report #37, 1979 Report #30). A drought in 1979 did indeed result in a very serious water crisis and was followed by additional somber reports presented by the former Water Commissioner (Cantor 1984a, Cantor 1984b). Nevertheless, no new water policy was formulated during this era. Instead, the hallmark of the policy was incremental decision-making, followed by a reactive approach to policy toward the end of the period.

Three main components characterize the transformation from anticipatory into incremental and later reactive policy making: the pattern of water allocations to farmers, the decline in the role of planning and the reduction in budget allocations to large scale projects intended to expand water resources.

The consistency in the practices of water allocation which showed remarkable resiliency in the face of the declining water resources represents the first component in the decline of anticipatory policy. Three major water crises occurred between 1979-1990 (Shilony

1991: Amiran 1994). The resulting acute need for a radical change in water policy found expression in publications of the Water Commission (Grinwald and Bibes 1987).

However, rather than being established in a new framework of a long term planning policy which would consider the severe water shortage, the general pattern of water allocations was only temporarily adjusted each time in response to the drought years.

Both water experts and economists claim that demands to address the serious water shortage and re-institute long term planning were ignored and that the changes in water allocation that did occur during this period were derived primarily from the need to adjust to uncertain conditions: fluctuating quantities of rainfall on the one hand, and replacement of some of the potable water in agriculture by reclaimed water, on the other. (Mossenson, 1986; Hochman and Hochman 1991; Amiran, 1994) . As the former Water Commissioner has put it : “..in water there needs to be a process whereby alternatives and scenarios are generated. However, such a process has not existed for decades and there is no national planning or debate”(Zaslavsky 1994).

The weakening role of long range planning is a second component of the decline of anticipatory policy. Since the mid 1960s, Tahal (Israel Water Planning Authority) has consistently submitted several long-term plans for water policy. Not one of the numerous plans was adopted as government policy. (Galnoor 1978:353). The declining role of long range planning and the lack of consideration of expert advice was clearly demonstrated in the manner that the Water Commissioner dealt with the 1988 comprehensive master plan submitted by Tahal. Following poor rainfall in 1985 which led to another water crisis, growing public and political pressures had led the Water Commissioner to mandate Tahal to prepare a comprehensive water management master plan. The master plan, costing a total of 1.5 million dollars, was prepared by forty hydrologists, engineers and economists, whose work had been directed and coordinated by a steering committee appointed by the Water Commissioner (State Comptroller Report, 1990). In November 1988 the master plan was presented to the Water Commissioner. Two years later, the State Comptroller concludes that "...the plan was discussed neither by the Water Commission nor by the government, in spite of its findings and conclusions which indicated a need for a real and immediate change in the management of the Israeli water resources and in the allocation of water to agriculture. The Water Commission had restricted the distribution of this

master plan and professionals who require it for their work may encounter great difficulties in finding a copy..." (State Comptroller 1990:176).

The decline in budget allocations for the development of new water resources represents the third aspect of the disappearing anticipatory approach to water policy in Israel, and its replacement by incremental policy. By the 1970s, investments in water decreased from an average of 3-5 percent of gross capital, that was allocated before 1965, to less than 1 percent in 1974 (Galnoor 1978). The decline in the role of long range planning for the governmental sector may also be observed by examining the changes that occurred during the period in the volume of planning activities that Tahal performed for the public sector. As it may be seen in Table 1, the sum allocated for planning of national water resources did not grow during the two decades 1960-1980, and the proportion of volume of activity for national water planning declined from 82.3 percent of the total activity of Tahal in 1961 to 27.9% in 1979-80.

As a result of this decline in the volume of government-sponsored activities in the country, Tahal began to provide consulting and planning services to the local private sector and to various governmental and private sector clients abroad (for this interpretation see: "Report on governmental corporations":1980: 1451). as may be seen in Table 1.

Table 1 about here

The expert Water Commissioner (in office in 1991-1992) attributed the shift of water policy, from anticipatory to a reactive, to the disputes over the agricultural priority paradigm. "...the Budget Division of the Finance Ministry refused to approve any large scale water development project for more than one and half decades, unless the farmers start paying the real costs of water production... The refusal to allocate budgets for water projects, has had an extremely detrimental effect on the overall water situation in Israel. In the absence of new water projects, including reclamation and water desalination,

damage has been inflicted on the water aquifers..." (Zaslavsky 1994).

However, despite the positions of the Ministry of Finance, an analysis of water prices in the years 1970-1990 (Weisbrod 1991) demonstrates that the subsidizing of water was and has remained a major mechanism for supporting agriculture. The prices for domestic use during this period were more than three times higher than for agricultural uses. This allows us to suggest that, for at least two decades, the influence exerted by the farmers in the policy network prevailed over the influence of other actors. Yet, not being able to bring to a change of the paradigm and the overall policy, other powerful actors in the network tuned to those aspects of the policy process within their jurisdiction. The Ministry of Finance did not approve budgets for the development of water projects, and this in turn deepened the reactive aspects of the water policy.

Paradoxically, however, it can be suggested that the water policy catered mainly for short run agricultural interests, and tacitly consenting to the neglect of developing new water sources, contributed in the longer run to the shaking of the prevailing water paradigm. The unfolding of the water policy crisis in the 1990s may lend support to such a supposition. In December 1990, a report on water management that was published by the Israeli State Comptroller generated great public interest. This publication reported a severe deterioration in Israel's water reservoirs, as well as irreversible damage to the quality of water (State Comptroller, Report on the Water Policy, 1990). The main reason for this state of affairs was "the allocation of water to agriculture in quantities which exceeded the amount of water replenished by average multi-annual rainfall" (1990:7). The report also concluded that "...the low selling price of water for agricultural use is, to a large degree, the reason for the acute crisis in Israel's water economy in the last decades. The low price only covers a small part of the cost of water production and supply, therefore creating artificial demand... including demand for water to be used for low-profit crops, i.e., crops the production value of which per cubic meter, after deduction of all other costs, is lower than the cost of water production..." (p.53).

The State Comptroller was joined by hydrologists and other members of the scientific community in insisting on the need to place restrictions on water production. Economists

supported the State Comptroller demand that sound economic principles must be applied to the water pricing policy in order to reduce demand. (Mossenson, 1986, 1991; Yaron, 1991; Shilony, 1991). Economists, in fact, argued that the existing policy has basically led to the export of subsidized water in the form of water-intensive agricultural products (Mossenson 1991:480)

The persistence of the policy paradigm becomes even more remarkable in light of the gradual political and economic erosion of power among the agricultural sector throughout the 1970s and 1980s. Since the Labor party's electoral defeat and the rise to power of the Likud in 1977, there has been a decline in the political power of the Labor and Leftist parties, the political parties with whom most agricultural organizations are affiliated. By the 1980s, the composition of the government had led to the marginalization of the agricultural sector, both in terms of political power and political representation (Yishai, 1991:112). The share of agriculture in the economic activity in Israel also decreased substantially. By the 1980s, only 3.6 % of Israel's work force was employed in agriculture, and the sector represents 2.1% of the GNP. Whereas in 1970, when agricultural exports represented 16.5% of all Israeli exported goods, by 1994, this percentage had dropped to a mere 3.5%. In addition, the major farmers' organizations have experienced severe management and fiscal crises, serving to further weaken the economic and political strength of the agriculture sector. (Ben-Rafael, 1997; Schwartz, 1995).

In spite of both the erosion of the political power of the agricultural sector and repeated water crises, however, no significant adjustments were introduced in the water policy. In the words of the former Water Commissioner, water policy in the 1990s still reflected the interests of the farmers " ...the present Labor leadership is a continuation of the practices of the Labor party in which the farmers lobby is given priority over national goals" (Zaslavsky 1994).

Two factors appear to account for the persistence of the policy paradigm. First, the water policy fit into a broader causal story that claimed that the accepted image of the problems of water policy were not related to farmers sectorial interests but rather to national goals. The causal story of water policy was related to the definition of agriculture as a core

value of the Zionist ethos and as basic component of life style of the Israeli society.

Within this framework, the preservation of water resources was defined as secondary in importance. As a result, the policy paradigm could be maintained in view of the increasing public policy anomalies that were derived from it. Second, the long-standing corporatist network presented in Chart 1 below proved to be remarkably resilient in the face of attempts to dismantle it.

In order to substantiate such interpretations of the factors that shaped water policy, an important building block is still missing. What is needed is support for the claim that such causal stories were in fact shared by major actors in water policy making process, and that changes of such stories were prevented by actors in the policy network. Such corroboration for the theoretical arguments emerges when we examine how two Water Commissioners account for the causal stories that were adhered to within the policy network.

In a 1994 interview with the Water Commissioner from the years 1977-1981, which was once again appointed in 1996, he was asked about his position with regard to introduction of market mechanisms for dealing with water shortage. Himself an owner of a farm and who served afterwards as the Director General of the Ministry of Agriculture, he stated his opposition to regulation through allocation and pricing. "I reject it because I don't consider water and agriculture as a separate or well defined subject, but rather as one facet of a more comprehensive question of national values and life style. ...it is not only of our interest of farmers but also in our national interest. ..." (Ben Meir, 1994\*). This attitude was also expressed by the Water Commissioner prior to the 1994 interview in a public panel discussion on water policy in 1991. (Ben Meir, 1991)

The Water Commissioner serving during the years 1992-1996, offers an explanation for what accounted for the persistence of this water paradigm. The prevalence of the policy paradigm was viewed by the Water Commissioner as rooted in the myth of agriculture and the pressures exerted by the farmers. "...the problems in the Water Commission are systemic...the origin of the problem is the agricultural myth in early Zionist thinking. The myth had two parts: first, that agriculture should be the centerpiece of the Zionist endeavor and second, that (it) is not necessarily related to market mechanisms....even

when the system was running out of water it very difficult for a Water Commissioner to stand up to the pressure of the farmers lobby ...”(Tzur 1994).

As previous research indicates, networks consist of stable and long lasting relationships, in which conventions, norms and common understanding emerge (Wright 1988). In view of the remarkable resilience of agricultural interests within the water policy network it can be suggested that the erosion of political power of participants outside the network appears to only gradually leak into the network itself. The social properties of the policy network may offer one explanation for this delay. In the present case this becomes especially evident after 1990.

### **The third period 1990-1997- Controversies and conflict over the policy paradigm**

This third period witnessed increasing public debate and controversy over the direction of water policy. Although the 1990 report by the State Comptroller was not the first report to seriously address the severity of the water shortage (see : Tahal 1974; Shamir et al 1985), it did inaugurate a new era in the debate over water policy. Calling attention to the policy anomalies that developed under a paradigm which gave priority to agriculture expansion over water conservation, the report sparked strong public interest. The report and the public interest it generated helped to turn the period from 1991-1997 into a transitional period.

Yearly reports on the water resources prepared by the Hydrological Service which is part of the Water Commission drew a very severe picture of the developments in the 1990s. The sharp deterioration in water quality during the last two decades, as may be seen in Figure 1, demonstrates the increase in the concentration of nitrites and chlorides in the water supply versus the recommended values as calculated by the governmental Hydrological Service. The report of 1994 states that one fifth of the water is pumped from sources where the concentration of nitrites exceeds the maximum allowed standard for drinking water, (90 mg/l) and 60 percent of the water is pumped from sources whose level of nitrites exceeds the recommended drinking standards (45 mg/l) (Hydrological



Service 1996; Ministry of Health 1974). The average concentration of chlorides rose to about 200 mg/l, where the recommended standard for drinking water is 250 mg/l.

Figure 1 about here

The Minister of Agriculture from the early 1990's, who came to this position after being the army Chief of Staff, acknowledged the need to introduce changes into Israel's water policy. His goal was to revise the structure of Israeli agriculture by altering the water pricing structure and by shifting the focus to greenhouse crops and other crops which are not water-intensive (Shalitin 1991). In 1991, he appointed a university professor, a water expert, to be the new Water Commissioner. The new Commissioner presented a very somber view of the water situation. According to this view the amount of withdrawn water from the aquifers and allocated for use had to be reduced by one third "...In Israel there is a constant process of deterioration of the quality of water in the aquifers by 3-5mg of minerals a year. If this process is not reversed the quality of water will deteriorate badly within a decade or so."(Zaslavsky 1994).

The prevalent policy paradigm was questioned and several efforts were initiated in an attempt to change the composition of the policy network. One major change was the reassignment of water pricing, from the responsibility of the parliamentary Water Committee to the Finance Committee. This was the outcome of a legislative proposal of Knesset members who argued that the parliamentary Water committee was biased in favor of agricultural interests and that it was necessary for the Finance committee to take over responsibility for water pricing. (Poraz, 1990) In 1992 the law was amended and the Minister of Agriculture's authorization to set water tariffs must thenceforth come from the parliamentary Finance Committee, rather than the Water Committee. Designed to increase the power and influence of the Ministry of Finance over water policy, this amendment would ensure that economic principles were to be considered in the pricing of water. However, this new shift in thinking at the Ministry of Agriculture was not necessarily shared by the Water Council. For the first time ever, the Water Council rejected the Minister's initiative to raise water prices.

In 1992, the Likud right wing party lost the election for the first time in fifteen years and the Labor Party, headed by Itzhak Rabin, returned to power. In November 1994, the government appointed a committee to develop recommendations for the reform of water management and supply in Israel. The coalescence of several major factors led to the formation of the committee: the large influx of immigrants to Israel during the previous five years (1989-1994) which increased the population by almost 20%, and changes in geopolitical orientations, namely the Rabin government's interest in concluding a peace treaty with Israel's neighbors. In the peace treaties, emphasis had been placed on the need to address water-related issues. These treaties were concluded only after Israel had agreed to an increase in water quotas for its neighbor Jordan (Committee Report, 1997). With the peace treaties as the central priority of the government, water policy ceased to be residual to agricultural policy and became an integral part of another major policy domain: the search for lasting peace.

Gradually, within these new circumstances a new approach to the role of agriculture with regard to water policy was forming and is echoed in the words of the Water Commissioner that served in the period 1992-1996. "... the Zionist agricultural myth was tarnished, because of the crisis in agriculture, the debt problem and the issue of the foreign work in agriculture... There is less pressure because of erosion in the public standing of the farmers. In addition to the large debt of the agricultural sector, (10 billion shekel) there is also the question of foreign workers. The public does not want to support farmers who employ Arab and Thai workers, this is not part of the Zionist ethos"... (Tzur 1994).

The committee that was established by the government to develop recommendations on water policy consisted of four water experts and four water economists. It was mandated to evaluate hydrological and economic matters, the issue of centralized versus decentralized water supply, and the structure of water prices. The chairperson of the committee was a water expert who had served for several years in the mid-1970s as deputy to the Water Commissioner. The committee's recommendations were submitted to the government in April 1997.

Outlining principles for a new water paradigm, the committee's main recommendations

were to reduce the involvement of the public sector in the management of Israel's water economy and, consequently, to increase the involvement of the private sector in operating water production and supply systems. It also recommended the integration of financial considerations into water management, with the implied necessity of abolishing selective pricing policies. The committee members reported that implementation of such economically-oriented policies would eventually lead to a reduction in the demand of water for agriculture use (Committee Report, 1997).

The committee recommendations actually call for a separation of the water and agriculture policies. In the recommendations, water policy is instead to be related to two other policy paradigms: the peace process paradigm and the privatization paradigm. The recommendations were met with total rejection by the incumbent Water Commissioner, especially the principles of economically pricing water for agriculture. Yet, at the same time, he did acknowledge that the water shortage was so acute that a scenario of "business as usual" could not be maintained any longer. Under pressure to offer an alternative policy solution, the Commissioner returned to an old proposal and called upon the government to begin immediately preparations for water desalination. The Commissioner determined that in order to provide enough water for the agriculture sector, the year 2000 must be the starting point for large scale desalination operations, (Haaretz, July 17, 1997). Following the submission of the committee recommendations, large scale desalination quickly became the favored policy solution of those representing the agricultural interests, including the Water Commissioner. Since that time, the Commissioner constantly refers to the urgent need for the development of desalination projects as a policy solution that would permit the further expansion of agriculture, while also addressing the problem of water scarcity.

### **Discussion and Summary**

The present article examines the evolution of policy paradigms in Israel's water policy since 1948. It distinguishes among three main periods of water policy. The early period, ranging from the foundation of the state until 1967, is characterized by an anticipatory

approach to water policy of regulated water allocation and of targeted development of water resources. It was also the period in which the foundations for the water policy network were formed. The major causal story accompanying this period was the expansion of both water resources and agriculture. The second period, lasting until 1990, represents the period when the principles of prioritizing agriculture expansion over the conservation of water prevailed. These policy paradigms of the earlier two periods was supported by a corporatist water policy network dominated by representatives of agricultural interests. Throughout this time that was characterized by acute water shortages and continuous crises, water policy-making became incremental in character and reactive in approach,

The present analysis reveals the persistence of paradigms that are supported by policy networks. For a paradigm shift to take place policy networks have to shift as well. These findings reveal a different dynamic of policy change than as presented by Hall (1993). Where water policy differs from Hall's case of macroeconomic policy is its management and control by a sectoral corporatist policy network. This network has consistently been able to bar attempts to remove agriculture's priority position, even in the face of accumulating evidence of the necessity for policy change. The policy network has resisted incorporating new important foci of interest, including environmental concerns or geo-political interests. Using Scharpf's (1989) discussion on measuring the outcomes of policy making, it may be said that the restrictive character of the network makes it prone to a decreasing social optimality of the policy outcomes.

What was the role of the policy network in the persistence of the policy paradigm? It is the argument of the paper that through the policy network, an ideology which had once enjoyed a preferred societal status retained its place in the policy process in the domain of water while its dominant role outside the network declined. A three stage process was revealed : The policy paradigm originated from the dominant ideology that both connected agriculture to nation building and viewed water policy as part of the agricultural endeavor. The ideological dominance and the political power of the agricultural sector were institutionalized in the water policy network during the early years following the establishment of the state in 1948. This network included both state actors and

agricultural interests representatives. In the next decades, the policy network retained the causal story of agriculture in the policy process long after many of the components that have built the power of the agricultural sector were gone. Agricultural interests became marginalized within the changing economic and political structure. Yet, as a result of the organizational and personal affiliations of the members, agricultural interests kept their power within the policy network.

Hence, the findings enable us to distinguish between the political and economic power of network members and the ability of the network to preserve a policy paradigm. The preservation of a policy paradigm, even after major network members lose their political power outside of the network, lends support to the arguments that emphasize the role of policy networks in policy making. Constituting long-lasting systems of mutual relationships between governmental and non-governmental players, policy networks give rise to shared beliefs, mutual understandings, a common language and causal stories (Marsh and Rhodes, 1992; Wilks and Wright, 1987; Stone 1989). These can remain intact, even when the basis of power and resources of network participants has been weakened.

Drawing on the literature of policy problem definition (Dery 1984; Linder and Peters 1989, Howlett 1991; Stone 1989; Schneider and Ingram 1993; Weiss 1989), this study argues that policy networks provide causal stories that become part of policy paradigms. The study suggests the need to further develop propositions that deal with the way in which policy networks preserve ideas about the adequate policies in the wake of challenging evidence.

The findings also show that the corporatist policy network rejected changes in the policy paradigms even when political leaders sought such change. Instead, the prevailing policy paradigm and water policies were adhered to as congruent with the basic national and state interests.

This raises the question of how state characteristics affect policy networks. Atkinson and Coleman (1989), suggesting that state characteristics affect the type of policy networks that is established, find corporatist networks to be contributors to the development of an

anticipatory policy. In this study, it was demonstrated that corporatist networks can effectively block the representation of new foci of interest and become a vehicle for reactive policy patterns, thereby preventing paradigm shifts. This is especially likely to happen when state autonomy is low, and when senior officials, who are authorized to represent the state interests, may, at the same time, also represent sectoral and groups interests. Further research is needed to analyze the conditions under which corporatist networks become involved in the negotiation of change and under which conditions they effectively block change.

One possible direction of such exploration may deal with the context of policymaking. Coleman and Perl (1997) suggest that there is a need to differentiate between internationalized, globalized and domestic policy contexts. It is possible to hypothesize that the role of corporatist policy networks will depend on the kind of policy contexts in which they are operating.

Corporatist policy networks which operate in a domestic context, will probably be better placed to fend off change than those operating in globalized or internationalized contexts. The present study in fact offers some support to such a hypothesis. The age of reform in Israeli water policy is related to two sets of factors that render the old water policy community obsolete. The peace treaty with Israel's neighbors has ample ramifications on water issues, adding an international dimension to the policy network. The second factor is the emergence in recent years of the policy paradigms that call for a restriction of state intervention and the dominance of the market forces (Doron 1998). Both the creation of the peace paradigm and the privatization paradigm are processes taking place outside the water policy network, and their influence is reflected in the new ideas emerging regarding water policy in Israel. These developments may, in the end, finally force a change in the water policy paradigm.

## REFERENCES

- Aharoni, Yair. 1991. *The Political Economy of Israel*. Jerusalem: Levi Eshkol Institute, Hebrew University. Am Oved Publishers. (Hebrew)
- Amiran, D. 1994. "Rainfall and the Water Policy in Israel." *Jerusalem Institute of Israel Studies*, No. 55. (Hebrew)
- Atkinson, Michael and W.D. Coleman. 1989. "Strong States and Weak States: Sectoral Policy Networks in Advanced Capitalist Economies." *British Journal of Political Science*. Vol. 19, No. 1: 47-67.
- Atkinson, Michael and W.D. Coleman. 1992. "Policy Networks, Policy Communities and the Problems of Governance." *Governance*. Vol. 5, No. 2: 155-180.
- Baumgartner Frank. 1989a. Independent and Politicized Communities: Education and Nuclear Energy in France and in the United States." *Governance: An International Journal of Policy and Administration*, Vol. 2, No. 1, January 1989, pp. 42-66.
- Baumgartner Frank. 1989b. *Conflict and Rhetoric in French Policy Making*. University of Pittsburgh Press. pp. 38-44, 45-60, 242-251.
- Baumgartner Frank and Jones Bryan 1993. *Agendas and Instability in American Politics*. The University of Chicago Press. Chicago.
- Ben-Meir, Meir. 1991. "Israel's Water Economy and the Predicaments of Agriculture". Panel Discussion. *The Economic Quarterly*, No. 150: 536-561. (Hebrew)
- Ben Meir, Meir. 1994. Interview to Ofira Selikater
- Ben Rafael E. 1997. *Crisis and transformation: the kibbutz at century's end*. Albany NY. State University of New York Press.
- Bressers H. and L.J. O'Toole Jr. 1995. Networks and Water Policy: Conclusions and Implications for Research. in Bressers H. L.J. O'Toole and J. Richardson (Eds) *Networks for Water Policy: A Comparative Perspective*. Frank Cass: London,
- Cantor, M. 1984a. "Water in Israel and Neighboring Countries." Unpublished paper. December 1984. (Hebrew)
- Cantor, M. 1984b. Letter to the Minister of Agriculture. December 1984. (Hebrew)
- Cantor, M. 1995. "Water in Israel, Perspectives Into the 21st Century." The Center for Agricultural Economic Research, Rehovot. Research article # 9504. (Hebrew)
- Cantor M. 1997. Interview to the Author.

- Coleman, W.D. and Grace Skogstad. 1990. "Policy Communities and Policy Networks: A Structural Approach." In Coleman and Skogstad, eds. *Policy Communities and Public Policy in Canada*. Toronto: Copp. Clark. Pitman. Ch. 1. pp. 15-31.
- Coleman, W.D. 1993. "Reforming Corporatism: The French Banking Policy community, 1941-1990." *West European Politics*. pp. 122-141.
- Coleman, W.D. and G. Skogstad. 1995. "Neo-Liberalism, Policy Networks, and Policy Change: Agricultural Policy Reform in Australia and Canada." *Australian Journal of Political Science*, Vol. 30: pp. 242-263.
- Coleman, W.D. and A. Perl. 1997. "Internationalized Policy Environments and Policy Network Analysis: Directions for Future Research." Panel Discussion, American Political Science Association, Washington, DC, August.
- Coleman W.D., G. Skogstad and M.M. Atkinson. 1997. Paradigm Shifts and Policy Networks: Cumulative Change in Agriculture. *Journal of Public Policy*. 16.3;273-301.
- Committee Report. 1997. Investigation of the Management of Water Provisions in Israel. Submitted to the Ministry of Finance, Ministry of Agriculture and the Water Commission. April 1997. (Hebrew)
- Dery, D. 1987. "Knowing: the Political Way." *Policy Studies Review*, Vol. 7, No. 1,13-26.
- Dery, D. 1984. *Problem Definition in Policy Analysis*. Lawrence, KS: University Press of Kansas.
- Dery, D. and Ilan Salomon. 1995. "'After me, the Deluge' -Uncertainty and Water Policy in Israel." The Jerusalem Institute for Israel Studies. Research Series No. 63.
- Doron, A. 1998. Social Welfare Policy in Israel. Forthcoming article in Nachmias, D. and Menahem, G. ,eds. *Public Policy in Israel*.
- Eisenstadt S. N. 1967. *Israeli Society*. London: Weidenfeld and Nicolson
- Fischer, Frank. 1993. "Policy Discourse and the Politics of Washington Think Tanks." In Fischer and J. Forester, eds. *The Argumentative Turn in Policy Analysis and Planning*.
- Galim, B and D. Forman. 1994. The Place of Politics in the Allocation of Water to the Agricultural Sector in Israel." Unpublished Seminar Paper. Faculty of Social Sciences, Department of Political Science. University of Tel Aviv.
- Galnoor, I. 1978. "Water Policy Making in Israel." *Policy Analysis*. Vol. 4, 3:339-367.



- Galnoor, I. 1980. In Raphaela Ben-Hur Bilsky. *Can Planning Replace Politics*. Van Leer Jerusalem Foundation. The Hague: M. Nijhoff Publishers.
- Grinberg, Lev Luis. 1991. *Split Corporatism in Israel*. State University of New York Press
- Grinwald H. and Bibbes H. 1987. *The Book of Water*. The Water Commission.
- Hall, Peter A. 1993. "Policy Paradigms, Social Learning and the State: The Case of Economic Policymaking in Britain." *In Comparative Politics*: 275-96
- Harris, Michael. 1986. *Difficulties and Restraints in the formulation of the Water Resourcing Policy and its Influence on the Water Crisis*. Unpublished M. A. Thesis. Tel Aviv University.
- Hochman Eitan and Oded Hochman. 1991. "A Policy on Efficient Water Pricing in Israel." *The Economic Quarterly*, No. 150: 502-523. (Hebrew)
- Howlett, M. 1991. "Policy Instruments, Policy Styles and Policy Implementation: National Approaches to Theories of Instrument Choice." *Policy Studies Journal*, Vol. 19, No. 2, pp. 1-21.
- Hydrological Service. 1996. Report on the state of water resources in Israel - Autumn 1996. Water Commission,
- Keren, M. 1996. *Professionals Against Populism, the Peres Government, 1984-1986*. Tel Aviv: Ramot Publishing. (Hebrew)
- Keren, M. 1994. "Economists and economic policy making in Israel: the politics of expertise in the stabilization program" *Policy Sciences* Vol. 26 331-346.
- Linder, S. and G. Peters. 1989. "Instruments of Government: Perceptions and Contexts." *Journal of Public Policy*, Vol. 9(1), pp. 35-38.
- Maman D. 1997. "The power lies in the structure: economic policy forum networks in Israel". *British Journal of Sociology*, Vol. 48,(2), pp. 267-285.
- Marsh, David and R.A.W. Rhodes. (Eds.) 1992. *Policy Networks in British Government*. Oxford. Oxford University Press.
- Menahem, G. 1991. "Public Policy and Political Interpretations of Socioeconomic Environments." *International Journal of Sociology and Social Policy*, pp. 37-61.
- Ministry of Health. Israel. 1974. Regulations for the nation's health.
- Mossenson, Ran. 1986. "The Budget of Water Resources, A General, Long-term Perspective." Israel Treasury Department, Budget Division.

(Hebrew)

Mossenson, Ran. 1991. "The Water Crisis in Israel: Public Regulation and Financing and Government and Public Accounting." *The Economic Quarterly*, No. 150: 479-487. (Hebrew)

Nachmias D. 1991. "Israel's Bureaucratic Elite: Social Structure and Patronage" *Public Administration Review*. Sep.\Oct.

Pierson, Paul. 1996. "The New Politics of the Welfare State." *World Politics*, 48, pp. 143-179.

Rhodes, R. A. W and David Marsh. 1992. "New Directions in the Study of Policy Networks" *European Journal of Political Research* Vol. 21 pp. 181-205

Rocheftort, David and Roger W. Cobb. 1994. Problem Definition: An Emerging Perspective. In Rocheftort, David and Roger W. Cobb. *The Politics of Problem Definition: Shaping the Policy Agenda*. Lawrence: University of Kansas. pp. 1-31.

Sabatier P. A. and H.C. Jenkins Smith (eds.) 1993. *Policy change and learning: an advocacy coalition approach*. Boulder Colo. West View Press.

Scharpf, Fritz W. 1989. "Decision Rules, Decision Styles and Policy Choices." *Journal of Theoretical Politics*, Vol. 1, No. 2: 149-76.

Schneider, A. and H. Ingram 1993. Social construction of target populations: Implications for politics and policy. *American Political Science Review* 87, pp. 334-347

Schwartz, Moshe. 1995. *Unlimited Guarantees: History, Political Economy and the Crisis of Agriculture in Israel*. Beer Sheva: Ben Gurion University of the Negev Press. (Hebrew)

Shafir, G. 1989. *Land, Labor and the Origins of the Israeli-Palestinian Conflict, 1882-1914* Cambridge: Cambridge University Press.

Shalev M. 1992. *Labour and the Political Economy in Israel*. Oxford University Press.

Shalitin, G. 1991. How Will We Pass This Difficult Period? *Hasadeh*. Vol. 71 No. 10, July, 1991. p. 1457. Also quoted in Haaretz, September 10, 1990. (Hebrew)

Shamir, A. and Y. Bar, Y. Gil-Nor, Y. Vardi and N. Salbest. 1985. "Water Policy Alternatives in Israel." Technion. The Samuel Neaman Institute for Advanced Studies in Science and Technology. (Hebrew)

- Shapiro, Yonathan. 1996. *Politicians as a Hegemonic Class: the case of Israel*. Tel Aviv: Sifriat Poalim Publishing. (Hebrew)
- Sharkansy, I. 1987. *The Political Economy of Israel*. Transaction Books. New Brunswick (United States.)
- Shilony, Yuval. 1991. Green Fields and Red Lines: The Acute Water Problem in Israel." *The Economic Quarterly*, No. 150: 488-501. (Hebrew)
- Skocpol, T. 1985. "Bringing the States Back In: Strategies of Analysis in Current Research." In P. Evans, D. Rueschemeyer and T. Skocpol, eds. *Bringing the Stats Back In*. Cambridge: Cambridge University Press. pp. 3-41.
- State Comptroller, Israel. Report on the Management of Water Resources in Israel. Jerusalem: Government Press.
- State Comptroller, Israel. 1979. Report # 30. (Hebrew)
- State Comptroller, Israel. 1986. Report # 37. (Hebrew)
- State Comptroller, Israel. 1988. Report # 39. (Hebrew)
- State Comptroller, Israel. 1990. Report # 41. (Hebrew)
- Stone, D.A. 1989. "Causal Stories and the Formation of Policy Agendas." *Political Science Quarterly*, 104(2):281-301.
- Tahal. 1965. Development plan for the water system 1965-1980. Tel Aviv. Tahal
- Tahal.1974. "Investment Plan for Developing the Water System,1974-1978." Mimeographed. Tel-Aviv. April 1974 (Hebrew)
- Tahal.1980. "Investment Plan for Developing the Water System,1980-1984." Mimeographed. Tel-Aviv. April 1980 (Hebrew)
- Tzur G. 1994. Interview to Ofira Selikater. January 1994.
- van Waarden, Frans. 1992. "Dimensions and Types of Policy Networks." *European Journal of Political Research*, Vol. 21:29 -52.
- Weisbrod, Doron and Jaffa Yehudai. 1991. "Israel's Water Economy." *The Economic Quarterly*, No. 150: 524-535. (Hebrew)
- Weiss, Janet A. 1989. "The Power of Problem Definition: The case of government paperwork." *Policy Sciences*, 22,97-121.

Wilensky, H. 1983. "Political Legitimacy and Social Consensus: Missing Variables in 'the Assessment of Public Policy.'" Spiro S. and Y. Yuchtman. *Evaluating the Welfare State*. New York : New York Academic Press. pp. 51-74.

Wilks S. and Wright M. (eds) 1987. "*Comparative Government-Industry Relations*". Oxford. Clarendon Press.

Wright M. 1988. Policy Community, Policy Network and Comparative industrial Policies" *Political Studies* 36; 593-612

Yaron, Dan. 1991. "Rationing of Water and Water Prices in Israel." *The Economic Quarterly*, No. 150: 465-478. (Hebrew)

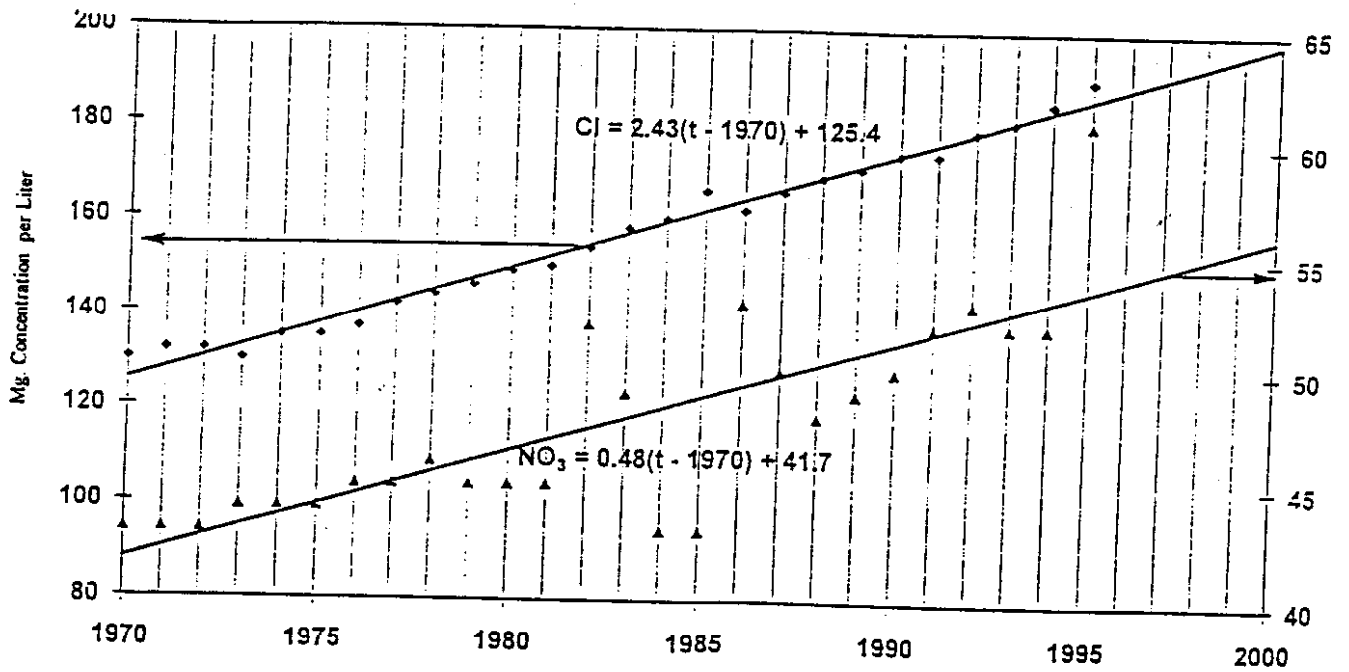
Yishai, Yael. 1991. *The Land of Paradoxes: Interest Politics in Israel*. New York: State University of New York Press.

Yunger, Miri and Naomi Carmon, Uri Shamir. 1993. *Who Benefits from Israel's Water Resources? A Comparative Study of Kibbutzim and Moshavim*. The Center for Urban and Regional Studies. Technion Research and Development Foundation Ltd. (Hebrew)

Zaslavsky D. 1994. Interview to Ofira Selikater. January 1994.

FIGURE NO.1

Changes in the Concentration of Chlorides and Nitrites in the Coastal Aquifer\*



\*Source: The Hydrological Service, Israel 1997

**Table 1. Proportional Volume of Tahal Activity in national water planning and other activities\***

Year	National water projects		Private Sector Activities in Israel		Activities Abroad		Total Activity
	percent	Volumes of work in constant prices(IL)	percent	Volumes of work in constant prices(IL)	Percent	Volumes of work in constant prices(IL)	
1961-1962	78.4	315,400,000	16.2	65,400,000	5.4	21,600,000	100.0
1962-1963	74.2	327,600,000	12.5	55,200,000	13.5	58,500,000	100.0
1963-1964	78.9	323,300,000	13.8	56,600,000	7.2	29,600,000	100.0
1977-1978	23.4	246,100,000	26.2	275,300,000	50.4	529,200,000	100.0
1978-1979	27.0	282,300,000	27.4	286,500,000	45.5	475,400,000	100.0
1979-1980	27.9	366,600,000	39.4	518,500,000	32.7	431,000,000	100.0

\*source : Israel. Annual report of governmental corporation 1980 p. 1451)

Chart 1

Period	Years	Paradigm	Policy approach	Sector type
1st period	1948-1966	State-supported expansion of agriculture and water resources	Anticipatory	Expanding agriculture and water resources
2nd period	1967-1990	Priority of agriculture expansion over water resources conservation	Incremental-Responsive	Expanding-Stabilizing agriculture, Shrinking water resources
3rd period	1991-Present	Struggles for paradigm shift: New principles of water management- water markets and mass desalination?	Reactive and towards a new anticipatory era?	Shrinking Agriculture-Shrinking water resources