CONSTRAINTS FOR COLLECTIVE ACTION IN BULGARIA'S IRRIGATION SECTOR

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ABSTRACT

Water for irrigation and irrigation infrastructure are both common pool resources, due to their low excludability and high rivalry. The well-known common pool resource dilemma is often the consequence. Collective action may be a way how societies can overcome this dilemma. First results from a three-month empirical field study in Bulgaria are presented trying to explain how actor groups characteristics, such as lack of trust between community members and effective institutional settings at the local level, such as information asymmetry, limited sanctioning and enforcement mechanisms and almost no monitoring mechanisms provide conditions under which opportunistic behaviour dominates. The effective rules-in-use in local communities are presented. The simplest example is watering crops without paying the water price. Individuals will use their power to maintain their opportunistic strategies and, consequently, they will not agree to any rule change. Moreover, the actors` attitude towards collective action is very pessimistic. This has a crucial impact on the evolving of credible commitment which is one prerequisite for collective action. The effects on water management can be severe and the common pool resource dilemma situation may continue. This article questions if there are additional influencing variables inherited from the transformation process that will have an impact on the institutional change and constrain the emergence of collective action solutions. The discussion is based on empirical material from Varbiza village in the south of Bulgaria.

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1 INTRODUCTION

Irrigation, a major water user in Bulgaria until recently, has been drastically affected by the political and economic changes and by the reforms in agriculture which started in 1989. During the transition period, the amount of water used for irrigation in Bulgaria sharply declined. The percentage of water used for irrigation dropped to 3.2 % in 1998 as compared with water consumption before the transition period (Bulgarian Statistical Yearbook, 1998). Crops, such as wheat and barley, started to replace the more intensive crops, such as vegetables, rise and maize that were traditionally grown in the areas with developed irrigation systems. At present, only 5 % of the fields with irrigation devices are actually irrigated (Petkov, 2000: 49). Bulgarian average rainfall is 637 mm per year, but the distribution varies from 450 to 1200 mm. The average annual run-off is 20.7 billion m^3, varying from nine billion in dry years to 35 billion in wet ones, excluding the flow in the Danube river (Executive Agency of the Environment at the Ministry of the Environment and Water, 2000). This shows that Bulgarian natural water resources are unevenly distributed over time and space, making irrigation necessary to reduce production risk.

However, irrigation can cause several water-related environmental problems and damages as can be observed all over the world (Shortle and Abler, 2001: 8-10). Large-scale water diversion to agriculture threatens or endangers, e.g., fish species, because their habitat gets degraded. A portion of the irrigation water runs off the field into ditches and flows back to a receiving water body. These irrigation return flows may carry dissolved salts as well as nutrients and pesticides into surface water or groundwater. If wells are not deep enough constructed, increased salinity levels in irrigation water reduce crop yields or damage soils so that some crops can no longer be grown. Salinization occurs primarily as a result of the deposition of harmful salts contained in irrigation water around the root zones of crops. These salts prevent the crops from absorbing needed water and nutrients. Another problem that occurs is waterlogging that prevents roots from penetrating the soil and cuts off essential nutrients.

According to theory, irrigation water and infrastructure are common pool resources. Collective action management solutions are propagated for more sustainable resource use and for solving the problems in Bulgaria`s irrigation sector.

2 IRRIGATION WATER - A COMMON POOL RESOURCE

Two characteristics distinguish public goods from private goods: 1) excludability that refers to the ability of suppliers of a good or service to exclude or limit potential beneficiaries from consuming and 2) rivalry that refers to whether ore not one person`s use or consumption of a good or service reduces its availability to others. As shown in Figure 1, private goods are characterised by both high excludability and high rivalry, while public goods are characterised by low excludability and low rivalry (Gerrard, 2000; Musgrave et al., 1975: 53-89).

Water falls out of the sky, and flows and evaporates with no regard to any boundary. Water is, therefore, to a large extent non-excludable. It is, however, subject to rivalry in consumption and, thus, cannot be categorised as a public good. Instead, it is a common pool resource, meaning that there is a finite amount that must be shared in common over a variety of uses and over geographic areas (Dalhuisen et al., 2000). Other best examples for common pool goods are natural resources, such as forests, pastures and fisheries.

		Excludability: High	Excludability: Low
Rivalry	Low	Club Goods (Toll Goods)	Public Goods (Collective Goods)
	High	Private Goods	Common Pool Goods

Figure 1: Taxonomy of Goods

Source: adapted from Ostrom et al. (1994: 7); Musgrave et al. (1975:57)

Bromley (1992) has a slightly different view on that categorization. He stated that there is no such thing as a common property resource per se – there are only resources controlled and managed as common property, state property, private property or resources over which no property rights have been recognized. For Bromley (1992: 14), "Irrigation systems represent the essence of a common property regime. There is a well-defined group whose membership is restricted, there is an asset to be managed (the

physical distribution system), there is an annual stream of benefits (the water which constitutes a valuable agricultural input), and there is a need for group management of both the capital stock and the annual flow (necessary maintenance of the system and a process for allocating the water among members of the group of irrigators) to make sure that the system continues to yield benefits to the group."

In her seminal book "Governing the Commons", Ostrom (1990) too complains about the misleading understandings when definitions are not clearly made. Failure to distinguish between subtractability of the 'resource units' (water spread on one farmers`s field cannot be spread onto the field of someone else) and the jointness of the 'resource system' (all appropriators benefit from maintenance of an irrigation canal) leads to confusion about the relationship of common pool resources to public resources (or collective resources). Typical for a common pool resource is the subtractability of the resource unit, which leads to the possibility of approaching the limit of the number of resource units produced (Ostrom, 1990: 31-32).

The well-known common pool resource dilemma is often the consequence. The expression "tragedy of the commons" is used to symbolise the degradation of the environment to be expected whenever many individuals use commonly a scarce resource. In Hardin's famous article (1968), he explains the logic behind this model illustrating it by the well-known example of a pasture with open access to all. The essence is that each herder is motivated to add more and more animals because he receives the direct benefit from his own animals and bears only a share of the costs resulting from overgrazing. Since users are likely to ignore the effects of their actions on the pool when pursuing their self-interest, it must be concluded that most of the resources bear the risk of a tragedy of the commons.

In more recent literature, many authors like, B. McCay, (2000), M. Olson (1965), E. Ostrom (1990, 1992) and R. Wade (1994) criticise the approaches to solve this social dilemma as not sufficient. It is neither sufficient to create a system of private property rights, nor is it the only solution that the central government keeps control over common resources. Especially Ostrom contributes to an empirically valid theory of self-organisation and self-governance with the view to the problem of common pool resources (Ostrom, 1990: 12-28). All authors mentioned lead us to the understanding that

collective action is a way how societies can overcome this dilemma and use the resource in a sustainable way.

3 FIELD WORK METHODOLOGY

Qualitative research methods are predominant in this study. Besides interviews with experts in Sofia, the strategy of case studies was chosen as a useful method to answer the research questions (Yin, 1994: 1-17). Two kinds of case studies were conducted. First, 17 village case studies were made which gave an overview about the irrigation situation in the villages. With those case studies the main hypotheses could be roughly analysed. As Ostrom et al. (1994: 37) stated, theorists interested in institutional questions have to dig deeper to understand how rules combine with a physical and cultural world to generate particular types of situations. Therefore, as second kind of case studies four in-depth village case studies were carried out which gave much more specific and very detailed information.

One stipulation for a valid and reliable case study data collection is triangulation. Triangulation means using multiple sources of evidence (Yin, 1994: 90-94; Bitsch, 2001: 120-121). This opportunity is the major strength and advantage of a case study strategy. In this empirical work, i.e. in both kinds of case studies, data triangulation and methodological triangulation was used. Data triangulation uses different data sources, for example: different interviewees from the same or different hierarchies or organisations, written or oral material, videos. Methodological triangulation means to use different methods in one problem field, for example: structured interviews and surveys, open-ended interviews, observations direct and participant, document analysis.

3.1 VILLAGE CASE STUDIES

In three regions of Bulgaria differentiated by their natural conditions for soil and water and their farming and production structures village case studies were conducted.

- In the Veliko Tarnowo region in the North of Bulgaria, five villages were studied. The North of Bulgaria is located on a higher altitude. Gravity-irrigation is almost not possible. Groundwater for irrigation has to be pumped over high elevation leading to immense energy costs, which were not charged in socialist time. Compared to the South of Bulgaria, the irrigation devices are much larger in size and capacity. They

were dimensioned during socialism for the big-sized collective farms. At present, this leads to irrigation catchment areas including numbers of villages. The farming structure in the North, is dominated by big tenant or co-operative farms, the former collective farms. The production structure is less labour intensive, grain crops are mainly cultivated. Whether grain production increased, because the consumption of irrigation water declines or if the causality is the other way around is still under debate among scientists (Penov, 2000: 22). Most of the technical devices are decayed and out of operation. The investments necessary would be too high to be covered by the water users themselves. External financial help would be needed.

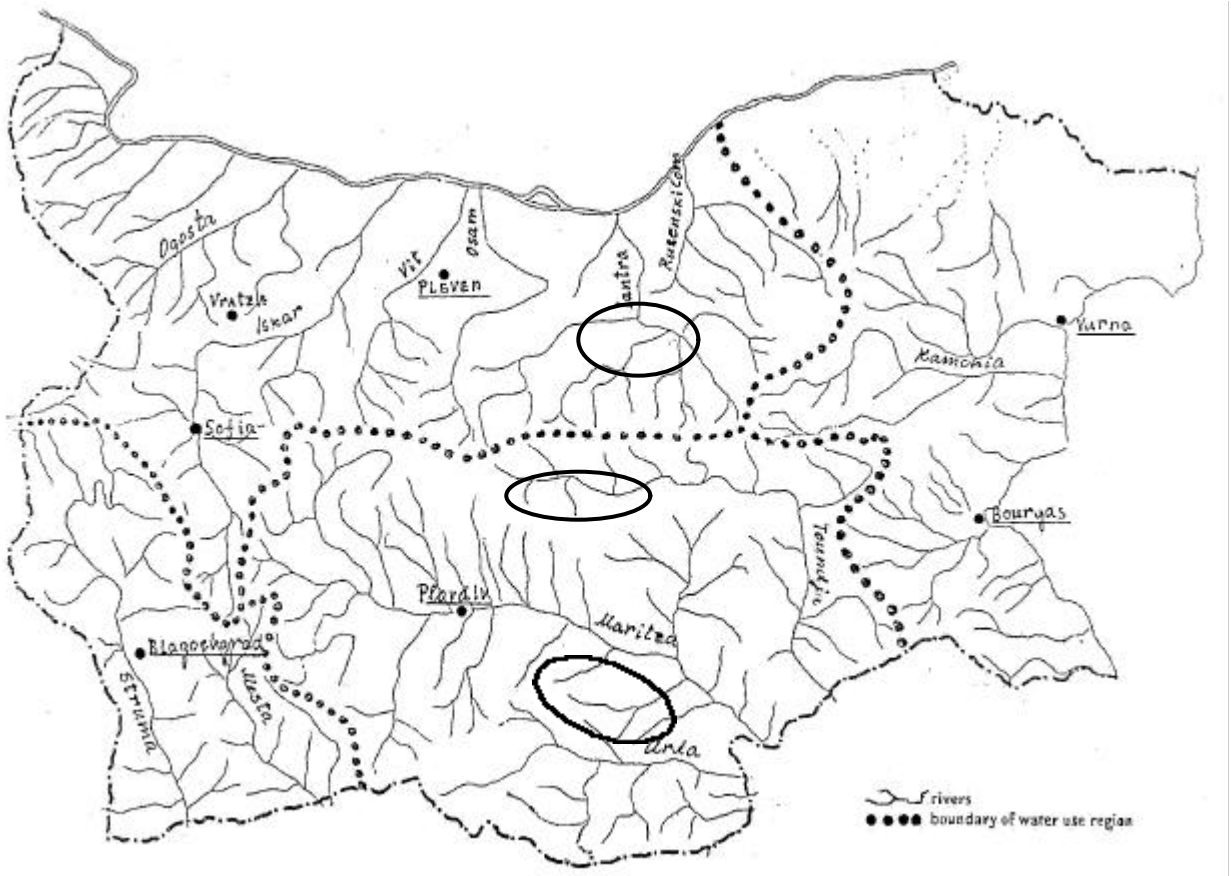

Figure 2: River Catchment Area of Bulgaria

Source: adapted from Excecutive Agency of the Environment at the Ministry of the Envrionment and Water, Bulgaria (2000)

- In the Pavel Banja region in the Centre of Bulgaria, the situation in four villages was studied. Village case studies were conducted to analyse the influence of water syndi-

cates that had been existing in that region before the Second World War. One aspect of these case studies was to identify whether inherited traditions of water management simplify the establishment of water user associations today.

- In the Haskowo region in the South of Bulgaria, eight villages were chosen.

To gain an overview and collect statistical data of each region, several interviews were carried out with experts at regional level, for example at the Irrigation System ltd. state firm and the Oblast Agricultural Office. In each village, a survey of one or two days was conducted. At first, the interviewees were selected key-persons, like the mayor, the managers of co-operatives, tenants or certain farmers. As second step, farmers were chosen by random sample and interviewed to justify the gained information.

3.2 IN-DEPTH VILLAGE CASE STUDIES

Proceeding from the village case studies of all three regions, the Haskowo region was identified for profound empirical research. By choosing this region, some variables modifying the individual actors`s decision for or against collective action could be excluded from the in-depth village case studies:

- inherited tradition from former water syndicates,
- external financial help,
- huge irrigation catchment areas leading to a host of stakeholders,
- tenants or co-operative farms holding the main share of land,
- crop structure less dependent on irrigation and
- inefficiency of pump-irrigation due to energy costs.

This means, in the four in-depth village case studies, there are smaller irrigation catchment areas with definite number of actors. This gives the opportunity to study the relations between the actors. There are some medium-sized family farms producing fruits and vegetables. This production is heavily dependent on the reliable provision of irrigation water over time and in sufficient quantities and qualities. Collective action theory says that actors must highly appreciate and depend on the continuous usage of the common pool resource in order to invest time and money in incremental changes in

operational rules to improve joint welfare (Ostrom, 1990). Parts of the irrigation infra-structure are based on gravity-irrigation. To a large extent this could be managed by the water users themselves. Joint water management does not depend on external financial help which would add another external actor and actors relations. Concluldingly and based on the theoritical approaches from Chapter 2, this selection of the study site offers more favourable opportunities for establishing new institutional rules here discussed as collective action solutions. It is important to exclude distorting variables from the study and to limit variables which constrain collective action.

3.2.1 Selection of the Study Site

In the Haskowo region, two "irrigation catchment areas" were selected. These are areas where one water resource, for example one water dam is used to irrigate most of the agricultural area. Villages located at the tail-end of such irrigation system depend in their water consumption on the water use of the villages near the top of the system. It could be that the tail-end village has additional alternative water sources independent of the water use of the village located at the top-end position. In both irrigation catchment areas two villages were chosen for the in-depth case study. In each area one village was located directly behind the water dam (top-ender), the other village further behind, at the middle or tail-end of the canal- and river system.

Other selection criteria were different farm structures and the state of establishing water user associations.

3.2.2 Varbiza Village

This article is based on empirical material from Varbiza village. Figure 2 shows the location of Varbiza in its irrigation catchment area. It is a simplified scheme showing the main canals and the rivers in order to draw attention to the dependent relationship of Varbiza village to other villages. The figure does not allow to show neither the ramified canal network or the share of agricultural land that could be irrigated from each water source.

Small parts of Varbiza`s fields can be irrigated from "Kalika" river. As regards river irrigation water Varbiza is at third position. Figure 2 shows that the river is first used

from Ezerowo village and from Bodrowo village. Twice, at the " Ezerowo water dam " and at the barrage between Bodrowo and Varbiza, it has to be decided how much water is diverted in the river, which turns the decision of waterflow in the river into a man-made decision. Most of the Varbiza area is irrigated from the canal R2 and its side-canals. This canal is filled with water from Kalika river. As mentioned above, Varbiza is at third position using this river water. The canal R1 is passing Ezerowo, Bodrowo and Bjala Reka villages before reaching Varbiza. Already at Bjala Reka, R1 has run out of water. In Varbiza, at the tail-end position, no fields could be irrigated from this source. In addition, no water flows from R1 into R2 and the water storage basins ④ and ⑤ are empty. For some parts of Varbiza`s agricultural land the alternative theoretically exists to irrigate from a hollow filled with water. This hollow can be filled with water from the small " Galwano water dam ". In practice, this opportunity is very unlikely to be realised, as fish farmers who lease the water dam refuse to let water flow. A consequence in 2000 was that Varbiza's farmers filled water tanks from Kailika river and transported them to their fields.

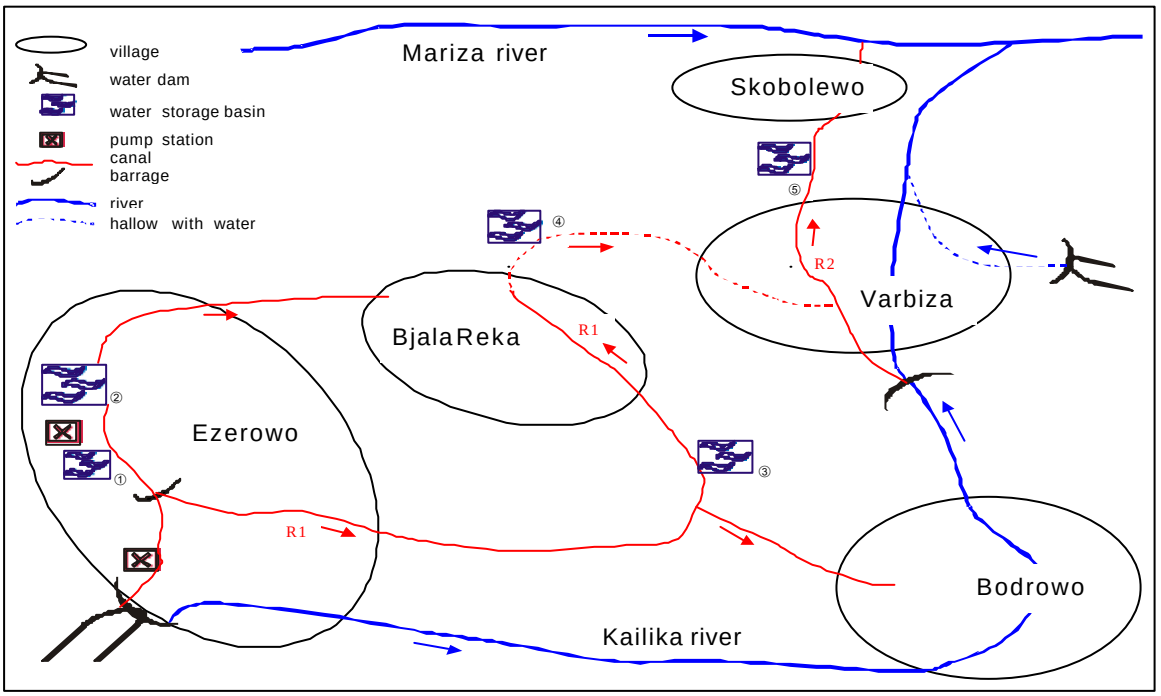

Figure 3: Irrigation Catchment Area of Varbiza

Source: own illustration

3.2.2 Participating Observation Combined with Qualitative Interviews

Referring to Potter (1996: 94ff.), active participating observation combined with qualitative interviews form the most valuable method to gain needed information. Friedrichs (1990: 288-308) classifies participating observation as qualitative research method. This triangulation of methods is suggested by Erlandson et al. (1993: 138). They recommend to supplement each single information in a study with a second. However, they prefer to supplement one observation rather with an interview instead of a second observation. This combination of methods was the basis for the in-depth village case studies. According to Spradley (1980: 58ff.), a field study journal was written every day. Spradley evaluates this as the central activity during the participating observation. His precise explanation, which kind of information needs to be documented, was followed in this study.

Once the researcher is accepted by the villagers it is possible to participate in many activities that would be, otherwise, closed to outsiders. For example, in Ezerowo village I had the chance to participate at a village assembly which was held to set up a water user association. Later, I was informed that it was the first time in the village that outsiders had participated in such a community event.

In-depth interviews with key-persons in the villages were conducted. According to the interviewee (mayor, co-operative manager, agrarnomist, water controller), different interview guidelines were used.

Twenty formal interviews with a partly standardised questionnaire were conducted in each village. Two thirds of the questions were open questions following an interview guideline which was slightly different according to the varying actors groups. During the beginning of the research the questionnaires were adapted three times to the situation in the field.

A specific interview guideline to analyse the rules-in-use for irrigation was used to interview several water users and the water controller. Ostrom et al. (1994: 12) favour this method: "rules are never written down, outsiders may have no idea unless they ask quite specific questions".

Informal interviews were made in the coffee shops, in the fields or whenever meeting with people.

Besides observations and interviews, great emphasis was put on including participatory research methods. The most valuable were drawing maps and group discussions.

4 CONSTRAINTS FOR COLLECTIVE ACTION

Recently, the government of Bulgaria released two new laws, the Bulgarian Water Law which was enforced in January 2000 and the Water User Association Act which was enforced in March 2001. Both legal acts are the result of the same motivation. The State wants to encourage collective action and the establishment of water user associations. The Water User Association Act (Article 2) outlines: "Water User Associations shall be voluntary organisations of natural and legal persons, which, in accordance with the interests of their members and the society and through mutual assistance and co-operation, shall perform activities related to the irrigation and drainage of agricultural land and the maintenance of irrigation and drainage infrastructure on a specified territory". Since 1991, many approaches by World Bank projects have been started to set up water user associations (World Bank, 1999). Most of those associations were only created formally and are not really existing. In practice, they are neither functioning nor even known by the farmers in the respective villages. Regardless of these formal efforts, little collective action in the irrigation sector can be observed in Bulgarian villages so far.

This article questions if the theories about collective action have to be expanded to features typical for transformation. *The hypothesis is that there are influencing variables inherited from the transformation process which are hindering collective action.* A complex system of interdependencies between certain variables evolve. They are grouped into six dimensions: 1) the formal political settings, 2) the effective institutional settings and 3) the evolving local rules in use, 4) the actor groups characteristics, 5) the resource characteristics and 6) the resource system characteristics, i.e. the infrastructure settings. As shown in Figure 3, these dimensions modify the individual actors` decision for or against new institutional rules discussed here as collective action solution.

In this paper, the focus is laid on two dimensions. *One sub-hypothesis is that through the combination of the formal political settings, the effective institutional settings, the local rules-in-use and the resource and resource system characteristics a milieu exists where opportunistic behaviour persists.*

Another sub-hypothesis is that the experience of the socialist time and the transformation period lead to specific actor groups characteristics and attitudes towards collective action.

The prevailing of opportunistic behaviour and the presented actor groups features are inherited from the transformation process. Both can represent constraints for collective action in Bulgaria`s irrigation sector.

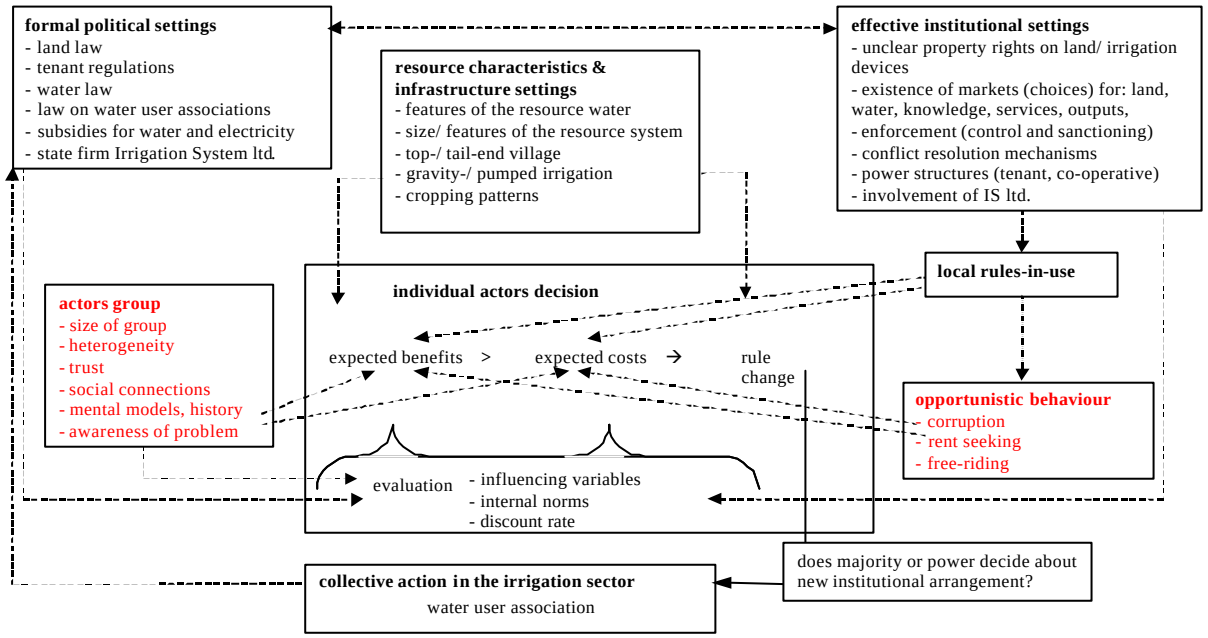

Figure 4: Dimensions Influencing Collective Action

Source: own illustration

5 EMPIRICAL RESULTS FROM VARBIZA VILLAGE

The discussion of results is based on empirical material from the in-depth village case study in Varbiza village.

5.1 RULES-IN-USE IN VARBIZA VILLAGE

This chapter is based on the following definition: "Rules provide information about the actions an actor 'must' perform (obligation), 'must not' perform (prohibition), or 'may' perform (permission) if the actor is to avoid the possibility of sanctions being imposed" (Ostrom, 1994: 38). All rules are the result of implicit or explicit efforts to achieve order and predictability among humans. Rules-in-use govern the patterns of interaction among the different actors in the system. They represent the set of rules to which participants would refer if asked to explain and justify their actions to fellow participants. However, interviewees will explain their actions to outsiders not in the same way they will explain them to fellow participants and, beyond that, following a rule can become a mechanical social habit not mentioned in an interview. To cope with these problems, the empirical methodology was enlarged by participant observation techniques (see triangulation, Chapter 3).

According to Ostrom et al. (1994: 37-50), an institutional analysis relevant to field setting requires the understanding of the working rules, i.e. or rules-in-use; that individuals use. Most formal analyses focus primarily on the structure of an action situation. This is indicated by the authors only as the surface structure of formal representations. The rules are part of the underlying structure. Ostrom et al. (1994) refer to seven broad types of rules operating configurally. In this paper, the irrigation situation and part of the rules-in-use are presented. Rules of operation and maintenance are left out, as there is no space for a deeper analysis in the frame of this discussion paper, although the empirical material would be sufficient. In this context, the reader should, however, gain an understanding of the local situation to follow the chapters below.

The agricultural area of Varbiza is 15 500 decars[1]. In 1960, almost 100 % of the agricultural area was irrigated by pump-irrigation and gravity-irrigation. In 2001, less than one third of this area is irrigated and only with gravity-irrigation.

In Varbiza village, formally, a water user association exists. It was founded under the co-operative law by seven people, not living in the village. This foundation appears to the villagers as very non-transparent. The interviewed head of this organisation refused to mention the other members. Most of the villagers do not know anything either about the possibility to establish a water user association or about its formal existence in their village. The villagers speak about this association either as a private water firm or as a tenant who rented the canal system. The villagers know only that the water controller is from their village, but they have no idea who else is involved. But, as there is at least one connection to somebody from their village, uncertainty and uneasiness to speak about this topic was obvious during the study.

5.1.1 Water Ordering

Water users have to make an order in advance at the water controller, if they want to irrigate. The formal rule is that the controller collects a certain number of orders before he opens the barrage and fills the canal with water. Compliance with this rule varies. Informally no farmer can rely on receiving water in the canal if he orders. Another fact is that the use rights for the canal system and the water dam belong to different people. The case is well-known in the village that although farmers wanted to irrigate and several even ordered water, the tenant of the water dam did not divert water into the canal or river. From this situation the informal rule appears that, once the canal is filled, everybody irrigates to be on the safe side, whether ordered water or not. The formal "first" rule that a farmer who orders water and pays in advance has the right to irrigate is not working in practice.

If water scarcity is severe and farmers do not receive water in the canal, even so they ordered water, some farmers usually join and do a "rebellion", as they call. A group of them goes to the barrage and opens it themselves. This action leads to brawls in most cases.

[1] 1 decar = 0.1 hectare

If everybody is irrigating once that the canal is filled, the question arises about the existing rules-in-use regulating the withdrawal of water from the canal. This is the crucial point.

5.1.2 Appropriation Rules

One quotation from an interview is summarising the "second" rule regulating the subsequence: "who is ahead of you at the canal is irrigating first, that is the law". Ostrom (1990: 48) describes it as a common situation: farmers who extract water from the head of an irrigation system can obtain more water than farmers who are located at the tail-end. Most of the interviewees feel the situation as chaotic. The problems of water diversion between the villages are the same like in small-scale water users have in sharing one canal. A typical situation is that a tail-ender orders water and the canal is filled. Everybody ahead of him is irrigating and the tail-ender is facing water shortage although he had ordered the water and might have even paid for it.

The "third" rule of irrigation at one canal is specified by physical strength. Physical violence occurring among the users of an irrigation system is symptomatic of inadequate assignments of spatial or temporal slots to appropriators.

5.1.3 Monitoring

There is almost no monitoring system for water appropriation. This chaotic situation leads to the habit that farmers may guard their fields around the clock. First, farmers wait for the water in the canal reaching their plot, so that they can start immediately to irrigate, before another farmer starts to irrigate. Second, while they are irrigating they have to supervise it. Otherwise another farmer diverting water from a top-end position can start to irrigate and the farmer has not sufficient water to complete his irrigation run. To secure the availability of water in all villages belonging to one irrigation catchment area, the water storage basins are filled over night. If this is done water flows at night in the canal system, attracting farmers to irrigate at night. Those irrigators try to irrigate without payment. This "black irrigation" is usually discovered at daylight, but farmers try to deny. They declare that the neighbour farmers flooded their fields on purpose and nobody can proof the contrary.

5.1.4 Excludability and Sanctioning

Water users, who have not paid the water fee, can technically not be excluded from water diversion from a canal. There is no graduated sanction mechanism, as is described by Ostrom (1990; 1992) in her design principles for enduring self-governing common pool resource institutions. Only one water controller works in the village. His plain figure represents no authority. Formal sanctioning power is largely missing. Nevertheless, he makes use of social sanctioning measures to force people to pay the water price. He is shouting in front of the black water user`s door. So, everybody can hear who has not paid and people feel embarrassed.

5.2 OPPORTUNISTIC BEHAVIOUR

Three types of opportunistic behaviour occur quite frequently in irrigation systems, because irrigation institutions create many of such opportunities. Ostrom (1992: 32-33) classifies them as free riding, rent-seeking and corruption with regard to irrigation.

- Free Riding is investing time in private activities while others are investing in joint activities, such as canal maintenance that increases the supply of water over time to all users.
- Rent-Seeking is trying to influence decisions made by donor agencies, national governments or local irrigation associations about the location of and subsidies to irrigation facilities. The person who seeks rents receives a disproportionate profit on private activities because the value of his assets is artificially increased. A person who once managed to be a successive rent-seeker can very easily keep this powerful position and expand his excessive gains (Ostrom, 1992: 54).
- The third category of opportunistic behaviour is corruption. Transparency International[2], a non-profit organisation, developed the Corruption Perceptions Index. One indicator is the country rank where among a total of 99 countries ranked, Bulgaria is on rank 63. The corruption perception indicator relates to perceptions of the degree of corruption as seen by business people, risk analysts and the general public and ranges between 10 ("highly clean") and 0 ("highly corrupt"). In 1999, Bulgaria was

[2] Transparency International (TI) is a no-profit, non-partisan organisation that works to mobilise civil society, business, academia and government to curb corruption.

scored 3.3. Based on these indicators available, corruption in Bulgaria is regarded to be high (World Bank, 2000: 103).

Corruption in the irrigation sector, as defined by Ostrom (1992), is withholding the delivery of water to those entitled to it in order to receive illegal side-payments of money, commodities or special favours. The person who commits in corruption receives a disproportionate gain by using his power over the allocation of valued resources to extract an illegal payment from someone else.

5.3 Opportunities for Opportunistic Behaviour in Varbiza Village

To repeat one sub-hypothesis, the combination of influencing variables inherited from the transformation process and the local rules-in-use create a milieu where opportunistic behaviour can persist. Some examples from Varbiza village confirming this hypothesis are given below. The water user association in Varbiza has no honest interest to formulate and enforce rules to settle the conflicts and to regulate the water appropriation. Bates (1988; 1995) describes this as "the social dilemma of second order". New institutionalists assume that people who encounter a social dilemma would forge new institutions in an attempt to transcend it. Bates (1995: 44) asks the following questions: "Given that the new institution would make all better off, the institution itself constitutes a public good. Would not the act of its provision also generate incentives to free ride? And why, then, would individuals, behaving rationally, be willing to pay the costs of its provision?" It appears that the demand for institutional solutions for collective dilemmas does not imply their supply. The solution itself poses collective dilemmas. To answer the question why, nevertheless, new institutions could evolve; credible commitment is an important factor. Some insights into the provision of this are given in the next chapter.

In Varbiza village, where the irrigation system is characterised by changing, non-transparent and unstable rules, opportunistic behaviour can occur more easily. The leaders of the association are making use of the chaos to increase their own profits. Especially with the view to these empirical findings, Bates (1995) makes a very valuable contribution to theoretical discussion, calling for a different analytical approach. The privilege of better education, access to specialised media and sources of information, or greater experience become decisive in environments of imperfect information, such as

Bulgaria`s rural areas. Bates' main point is that the new institutionalists suggest that people create institutions in an effort to move toward the Pareto frontier. Bates (1995: 42) argues: "The new institutionalists have been slower to acknowledge that the creation of economic institutions takes place not on the 'level playing field' of the market but rather within the political arena, in which some are endowed with greater power than others." The new institutionalism should take into account the allocation of political power in societies and the impact of the political system on the structure and performance of economic institutions. When social dilemmas are solved and new rules are implemented, some people benefit more than others. Indeed, some may even benefit at the expense of others. Bates calls for explaining these outcomes more with political than economic analysis.

5.3.1 Free Riding

The initiative described above shows that two or three farmers start an initiative and open the barrage themselves to divert water into the canal. Those activities always involve free riding situations. Free riders do not participate in the action, but start to irrigate as soon as the water reaches their plots. Therefore, the water is not always reaching the initiators.

Several opportunities for free riding occur with maintaining and operating the canal system. As mentioned in the beginning of this chapter these circumstances are not discussed here.

5.3.2 Rent Seeking

Heads of associations take advantage of the information asymmetry existing between them and the village members. The head of the water user association in Varbiza is a leader of the youth organisation of the Farmer Party. Holding such a position he has access to various kinds of information. He participated in a World Bank course where he learned how water user associations can be established under the co-operative law. He used his power, in terms of his position, good contacts and knowledge to establish this water user association and to persist in this position. As maintenance work is reduced to a minimum, he uses his position to gain income from collecting the water fees. Additionally, he is a young politician who wants to make a career in his party.

Another example of information asymmetry manifesting power structures is the mayor`s access to information about new laws. As the money for the mayor`s office is scarce he cancelled his subscription to the official gazette. He had no information about the Water User Association Act enforced in March 2001. He got this information during the interview I did with the head of the water association where he participated. The mayor asked the head of this association, if he could send him this new law, so that he could study it. This situation illustrates the dependencies and the information asymmetry among different actors.

5.3.3 Corruption

There are different opportunities to take advantage of one`s position. Bribes can be paid to have water in the canal in time. This is more common for larger producers with crops, such as paprika. Paprika is a crop that needs irrigation at a certain time that cannot be delayed without having huge yield losses. Paying bribes to have water in time is regarded as calculated profitable costs. In those cases the canal is filled for only one producer, even if the formal rule exists, as described above, that several orders from appropriators have to be collected before the barrage is opened.

Many opportunities for corruption are offered by the fact that the water price is calculated and collected. For example, the association adds two Lewa "XMT tax" to the water price per each irrigation run. The only information source about this tax is the water price information sheet, a little sheet of paper glued at the door of the post office. This sheet shows the water price for the season. It explains that this tax is added to each irrigation unit. Many different speculations exist among the villagers what this tax is about. In addition, villagers doubt that this price is fixed for the whole season. They feel high planning insecurity.

A second opportunity is that the controller can give wrong receipts. The water price for one irrigation run per decar paprika may, for instance, be 15 Lewa. A farmer may be offered then to pay only ten Lewa but receives a receipt for five Lewa. Additionally water users being close to the water controller can pay the water price later, when they have cash-flow.

5.4 ACTOR GROUP CHARACTERISTICS

As shown in Figure 3, the actor groups characteristics are one dimension of influence on collective action in the irrigation sector. *The sub-hypothesis is that experiences from the socialist time and the transition process have resulted in specific attitudes towards collective action.*

Varbiza village has 560 inhabitants at present; 330 of them beeing pensioners and over 60 years old. There are only four Gipsy families and no Turkish minority people living in the village. The farming structure in Varbiza is as follows:

- one tenant operating 5000 decars[3],
- one tenant operating 2600 decars,
- one tenant operating 1000 decars,
- one co-operative operating 2100 decars,
- two farmers operating 500-600 decars,
- seven farmers operating 50-60 decars,
- eight farmers operating less than 20 decars and
- other subsistence producers having less than 5 decars of land.

Disregarding the producers farming less than 20 decars, this structure shows that the number of farmers and water users is quite small, that means the number of people actually interested in establishing a water user association is limited. This is a very interesting fact, which directly calls Olson`s model (1965) back to mind. The most frequent quoted part of his book says: "unless the number of individuals is quite small, or unless there is coercion or some other special device to make individuals act in their common interest, rational self-interested individuals will not act to achieve their common or group interests" (Olson, 1965: 2, emphasis in original). Surprisingly, compared to Olson`s model, the water users do not corporate although their number is quite small. This gives another hint that in this case, other factors influence whether groups will or will not voluntarily engage for collective benefits.

[3] 1 decar = 0.1 hectare

The following two chapters will analyse two questions from the formal interviews with the partly standardised questionnaire in Varbiza. In this context, the interpretation is done without giving further information about the selection process of the probationers and the characteristics of the probationer group.

5.4.1 Assessment of Future Outlook

The questionnaire contains several questions forecasting the future by the interviewees. One of those questions is exemplary analysed: *how do you evaluate the future of your farm in the next ten years? Will your children continue in agricultural production on your land?* The answers from 21 prabationers can be clustered as follows:

- no descendant will continue farming → 14 answers (67 %)

  (Children have different interests, they do not want to work in agriculture; they live in the city and have other jobs; they have different ideas.)

- unsure, if descendants will continue farming → two answers (9.5 %)
- young families want to continue farming → four answers (19 %)
- descendants want to expand the agricultural production → one answer (4.8 %)

According to Ostrom (1990: 211) the likelihood of common pool resource appropriators adopting a series of incremental changes in operational rule to improve joint welfare will be positively related to internal characteristics of the group. Exactly those incremental changes in operational rules are needed when establishing water user associations based on collective action. One characteristic mentioned is that most appropriators highly appreciate the continuous usage of this common pool resource. In other words, their discount rates should be low. This actor groups characteristic is examined, among others, by the question presented above. People not expecting their descendants to continue farming on their land have little motivation to invest time and money in the establishment of collective action solutions or another more sustainable resource management.

5.4.2 Assessment of Collective Action

Another characteristic of the actor group fostering collective action solutions explained by Ostrom (1990: 211) is that most appropriators must share generalised norms of reciprocity and trust that can be used as initial social capital. Likewise, the World Bank (World Bank 2000: 87-88) calls for the development of social cohesion in South and Eastern Europe. They admit that this requires values imbedded and taught of the societies which make social cohesion and regional collaboration a desirable behaviour. Policies which enforce mutual collaboration and interaction are required. Drawing on this thoughts, a group of questions evaluating the actors` attitude towards collective action was developed.

One, on purpose, provocative question from this question`s group is: *if you hear the word "collective action", do you spontaneously have positive or negative feelings*[4]*? Why*? This open question was asked to 22 prabationers in Varbiza. Analysing the answers, the result can be shortly summarised: 15 actors (68 %) gave negative answers, four (18 %) did not understand the question, and only three (14 %) gave positive answers related to trust and collective action. Some recurrent arguments of probationers are given in extracts.

- Bulgarians have at the moment no mentality to do something jointly; Bulgarians are at the moment not grown for joining; the collaboration period is over for the Bulgarians.
- Irrigation is in the responsibility of the State; the State should take care of this.
- People cannot do something like this; they are too old; too many old widows.
- I want to work 100 % individually; I am sick of co-operatives and collective working; I want to be responsible only for myself; at the moment it is better to work alone; I am not interested in what other people do, I care for how my own things are running; everybody is working for his own profit in the village.
- too many free riders; all villagers are very envious; there is no trust among the people; you can trust nobody; people behave to each other like animals; there is no trust

[4] The word *collective action* was here explained from the translator.

in collaboration; people have been lied to from all sides for the last ten years; collective leaders only want to gain profit and enrich themselves.

- positive, if professional could co-operate; they could enforce their interests better; those who collaborate believe in the future; with trustful and serious initiators I would join.

5.4.3 Proverbs in Varbiza

In informal interviews, the following proverbs well-known in the village could be identified. The existence of proverbs is a good indicator of how people think and of cognitive patterns.

Neither God is with us nor is the King!

No dog will ever join a pack for action!

If three people are given a 50 Lewa note, at least one will say my note is dirtier!

I can stand being not well off, unless my neighbour is not better off than me!

6 CONCLUSIONS

The empirical results from Varbiza village in this paper confirm the hypothesis that there exist transformation-typical features constraining the process of finding collective action solutions for common pool resource management. The analysis will continue in this direction.

Most of the people living in Varbiza are too old and are no more active in agricultural production, not regarding the subsistence producers having less than 20 decars. Only a few young families want to live on agriculture and they have to rely on irrigation for their production. Therefore, only a small actors group is concerned when discussing changes in operational irrigation rules towards collective action. The attitude towards collective action is very pessimistic and there seems to be no trust among the villagers. Moreover, individualistic behaviour prevail. Another fact is that information asymmetry

discriminates most of the actors in decision making. For this variety of reasons the initial social capital fostering collective action solution is restrained. The combination of transformation-typical and resource-typical features provides a good ground where opportunistic behaviour can grow. Especially the actors characteristics and the information asymmetry paves the way for opportunistic behaviour. Another transformation-typical feature are chaotic water appropriation rules. They are deliberately misused from a few powerful people for profit making. The appearance of non-sustainable associations, founded often by outsiders, is the consequence. Those specious associations do not have the aim to enforce rules which would minimise the high uncertainty of irrigation in agricultural production. Those water user associations will come and go in the future, but the crucial point is that they destroy the trust of local people in this kind of institutional arrangement to deal with common pool resources. People are confirmed in their individualistic behaviour.

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