

Water for Food – Water for Profit

The World Bank's policy in the agricultural water sector



Index

Introduction.....	7
1. Water and Bread	9
2. Ethiopia – Water for Private Sector Development	14
2.1. Approaches to Agricultural Water Usage.....	15
2.2. Governmental Water Policy.....	17
2.3. World Bank Aid: CWRAS.....	19
2.4. Big benefits – But who gains?.....	24
3. World Bank Policy	29
3.1. The „New Strategy”	29
3.2. “More crops, jobs and cash per drop”.....	33
3.2.1. Irrigated Agriculture as a Priority.....	34
3.2.2. Withdrawal of the State.....	36
3.2.3 “Autonomous” Management.....	37
3.2.4 Cost Coverage and the Price of Water.....	39
3.2.5. Water Rights – “Cornerstones of Water Management”.....	41
3.3. A New Era of Commercialization.....	43
4. The Water Market Syndrome.....	46
4.1. The Political Economy of Reform.....	47
4.2. Re-allocation: Water for the Cities.....	50
4.3. Who loses? The Small Farmers Do.....	52
4.4. “Virtual Water Trade” or The End of Food Security.....	54
4.5. The “Invisible Third Party” or Market and Regulation.....	56
4.6. Water for Profit.....	58
5. Summary	61
6. Annex	69
 Literature.....	 69
Index of Abbreviations.....	73

Boxes:

The Water Users.....	10
How Much Water Do We Eat?.....	11
Water Conflicts.....	15
Sledge hammer rainwater harvesting.....	18
Dam Projects in Ethiopia.....	19
Nile Basin Initiative.....	22
World Bank investments in the Water Sector.....	29
World Bank: focal points in irrigation sector.....	34
„We are back again!“.....	36
Morocco: The first Public-Private-Partnership-Project in the Irrigation Sector.....	39
Tanzania: A Failure.....	43
New Business Areas for Water Groups.....	45
The State as Water Broker.....	49
Manila: Corporate Groups as Driving Force for Water Markets.....	52
Vision 2020.....	54
Virtual Water.....	56
Experimental field Ethiopia.....	70

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Foreword

Accessible water is a human right. This is a statement by the United Nations mentioned in the General Comment No. 15 of the Committee on Economic, Social, and Cultural Rights. In this context, the “Bread for the World” campaign Human Right to Water (MenschenRechtWasser) has been researching for three years now data on international water policies. We observe the political reactions of the Federal Government, the European Union and International financing institutions; make our criticism known, if we consider this necessary, and lobby correspondingly.

So far an essential subject of this research and lobby work has been national and international privatisation policy regarding urban water supply. Yet the results presented in the study at hand reveal that (by now) water has to be discussed in a broader context. With this study we make for the first time a point in focussing on the subject water in agriculture and the current role of the World Bank in the rural area.

Two essential changes in the World Bank policy have been the reason for this study:

Firstly, the return shift to major hydraulic projects: Still in the early 1990s support of big dams had been terminated due to massive protests of many people in numerous countries as well as scientific studies on the negative ecologic effects. On the premise that increased national storage capacities should be one of water policy's main concerns, dam projects now receive increased funding. We regard this U-turn most critically. With the renaissance of this old concept re-emerges a policy that primarily strives to generate profits with the precious good water and not really considers social or ecological effects.

Secondly, the World Bank started to increase drastically the funding for the rural area. Overcoming the previous disregard of agriculture is by all means welcome, given that it remains being the most important livelihood for the majority of people in the South, in particular the poorest population groups. Yet with the World Bank policy looms an initiation we consider alarming:

- It mirrors a strong commitment to commercial irrigation, while still neglecting or even replacing small farming and rain-fed agriculture as uneconomical;
- The main focus is not the cultivation of staple crops, but the cultivation of so-called high-value-products for exportation, like fruit, vegetable, flowers or herbs;
- Applied to small farmers, the principle of cost recovery would considerably increase the pressure on the poor rural population. It already caused considerable strain for low-income population groups in the urban supply sector. Hence it should be checked precisely under which terms cost recovery in water supply makes sense – if at all.
- The reorganisation of water rights figures on top of the World Bank's agenda, hereby specifically promoting the separation of land and water rights and establishing the concept of tradable rights of use and water markets. This may cause an additional discrimination of the small farmers,

who depend on an equivalent access to water and land. It is predictable that financially strong users like exporting agriculture, municipalities and industries will dominate water markets, which will bull the (water) market and make water unaffordable for low-income population groups.

Subsequently the World Bank funds and reforms mainly benefit bigger export-directed operations, while in contrast aggravating the situation of small farmers forming the majority of the rural population.

The case study of Ethiopia proves that the promotion of new major hydraulic infrastructure and export-oriented irrigation are no adequate answer to the social, economic and ecologic problems of the poorest countries and their rural population. Once again the trend towards the globally applied blue print concepts of the World Bank seems to be corroborated. Likewise the term sustainability is first of all defined economically – ecology is given lower priority.

In our understanding, water is a common good. And its allocation belongs into the public hand. In a democratic society it is the only way for people to exert an influence on the design of water policy. Access to water is vitally important; hence it cannot be subjected to economic criteria. That doesn't mean that water has to come for free, but (the lack of) financial power cannot become a criterion for accessible water. Governments cannot be relieved of their responsibility in guaranteeing generally accessible water. Last but not least the General Comment No. 15 on Economic, Social, and Cultural Rights that codifies accessible water as a human right confirms this statement.

Certainly it is true, that in many places a reorganisation of water rights is necessary. Sometimes it is even a question of legal regulation, since conflicts concerning the access to water are relatively new, and therefore no legal framework exists so far. But here as well one has to ask according to which criteria use of water rights are being allocated and what are the public control mechanisms. We have observed in many instances of the World Bank's policy that the restructuring of frameworks is above all aligned to mere economical principles. So for tradable water rights are only tested in pilot projects of the World Bank. We reckon, however, there is the danger that the World Bank policy will set the course, and water will be increasingly treated as a commodity. This commercialisation would be advanced by new concepts like the "payment for environmental services for instance.

Likewise problematic seems to be the concept of safeguarding food security primarily with the import of staple foods, financed with the export of high-value products, instead of proper local agriculture. This is going to create dramatic states of dependency from powerful agro-exporting countries like the USA, the EU or Australia and New Zealand as well as between small farmers and exporting companies. He, who can't pay ...

"Bread for the World" demands the support of poor countries, particularly in the water sector. Specifically projects benefiting the poor ought to be funded. In the agrarian sectors these are the small farmers.

That means in specific:

- **support increasingly small infrastructure that can be operated with a minimum of expertise;**

- **support locally adjusted projects and focus on sustainable and simple technologies, like rainwater harvesting or watershed management;**
- **clearly emphasize the support in the management sector;**
- **give up the flat-rate cost recovery principle in the water sector and make the economic and social situation the directive criterion Number One;**
- **reinforce small-scale agriculture's rights of use in the water sector, similar like their ownership rights for land and other resources. These cannot be subjected to private profit estimates.**

In our opinion the World Bank approach is incoherent with the human right to water. With its concept, the World Bank strives for the highest-value use of water. Experience in the urban sector has shown that this is most likely going to conflict with a cost recovering supply of the poor population groups. The World Bank is worldwide the biggest donor in the water sector. The Bank's lending conditions have been marking global trends in water politics for some time now. In doing so the Bank has hardly ever been controlled, not to mention held liable.

For "Bread for the World" and its Human Right to Water campaign the results of this study signify that clearly more public relations regarding the World Bank are required. It also means that we have to differentiate and check our analysis, sharpen our arguments and make a point of continuing to include the World Bank as an addressee of our lobby work. As a result we turn to the Federal Government with our concern, which is one of the biggest donor countries of the World Bank. We expect the German government to lobby in the World Bank for the prevention of the development concept to become a mere development of markets.

As mentioned before: It is indispensable to take a good look. We'd like to further contribute to that with this study.

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Introduction

Since the World Bank renewed the strategies and principles of its water policy in the early 1990s, it has gradually adjusted its commitment to these new values by:

- advancing the commercialization and privatization of public utilities in the municipalities¹,
- introducing the so-called Demand Responsive Approach (DRA) for cost-recovery and self-help into/of the rural supply²,
- reinstituting its engagement in the funding big dam projects with the Infrastructure Action Plan (IAP, World Bank 2003a) .

Likewise in the agricultural water sector, the World Bank expanded its position as one of the most influential global “water managers” with strategy papers, numerous new projects and an increase in funding.

Cornerstones of this new strategy are the government’s withdrawal from the area of operation and restricting its involvement to the creation of the legal and institutional framework for a fortified private commitment, commercialization of supply based upon the treatment of water as an “economic good”, and a massive investment into building hydraulic infrastructures for power generation, floodwater protection, irrigation, wastewater disposal and treatment.

Agriculture holds a key position in the water sector. It represents the highest percentage in human water use by far, which is about 70 per cent worldwide, reaching as much as 90 per cent in some developing countries. It accounts to a considerable extent for such problems as the depletion or pollution of groundwater. Irrigated agriculture/agricultural irrigation in particular is notorious for wasting a lot of water due to the mismanagement by governments, local authorities and farmers. Consequently, it has developed into an important issue for new water policy globally, and not just within the World Bank.³

The objectives pursued by the World Bank with this new strategy are noble: they aspire to a comprehensive restructuring of the agricultural water sector, so as to improve the efficiency of water usage while simultaneously reinforcing agriculture’s position as the foundation for rural development. Thus, water policy is the key element of a new development strategy with the explicit demand of poverty reduction and food security (“Reaching the Rural Poor”). Therefore, the title “Re-Engaging in Water for Food” was given to the mid-plenary of Water Week 2005, the annual meeting where World Bank employees and advisors compare notes.

Even if this new agricultural strategy, presently implemented by the World Bank in an increasing number of countries, is still in its infancy, it becomes apparent that it follows the same principles as the controversial and fiercely disputed policy for the urban water sector. The purpose of this working paper is, firstly, to present the

1 This policy, as well as the criticism and the opposition to it have been documented many times at this point, as well as its partial failure; see the papers by the research institute of Public Service International PSI: www.psiu.org; Stadler/Hoering 2003;

2 For Demand Responsive Approach, see: Hoering/Schneider 2004

3 Apart from the FAO in Rome, these are especially the International Food Policy Research Institute (IFPRI) in Washington, the International Water Management Institute (IWMI) in Colombo and the Global Water Partnership (GWP), which are working closely together with the World Bank.

details of these principles and their implementation in policies, programs and projects for the rural sector. Moreover, this paper offers a preliminary assessment of the possible effects of these reforms, focusing on for small-scale farming, and its continued ability to thrive, and food security.

Part 1 begins with an outline of the situation in the agricultural water sector. The case study, Part 2, depicts the water and food situation in Ethiopia, and examines to which extent the World Bank policy offers an adequate response with its Country Water Resources Assistance Strategy (CWRAS). This study provides the background for Part 3, which is a detailed analysis of the significant elements of the “renewed” World Bank’s policy and its implementation. The analysis is mainly based on the Water Resources Sector Strategy (WRSS) of 2003 and the Rural Development Strategy (World Bank 2003b), the Sourcebook for Investment in Agricultural Water Management (World Bank 2005), the new Country Water Resources Assistance Strategies (CWRAS), and various other project documents. At the heart of Part 4 are considerations regarding the effects of commercialization and privatization of the agricultural water sector on water usage and distribution, small-scale farming and food security.

1. Water and Bread

Apart from soil and crops, water is the one indispensable prerequisite for agriculture. It is not only our food supply that depends on water, but in many countries, where agriculture remains a critical part of the economy, so does employment, economic development, trade and foreign exchange earnings as well.

Availability of water resources, however, can vary greatly depending on region and time of year. In contrast to, for instance, most of Europe with its year-round precipitation and numerous rivers and lakes, rainfall in India, Africa and regions of Latin America is often limited to a few months out of the year, so that rivers usually turn into rivulets during the dry season. Wells can only help in those areas where the water table isn't too low. Consequently, cultures in those areas, where freshwater is a scarce and precious resource have traditionally developed manifold methods and regulations for the efficient use of water, to tap into new sources and regulate distribution. Industrialization opened up new possibilities: huge dams, powerful pumps and gigantic canal systems permitted an immense expansion of agriculture, long-distance water transportation and a seemingly inexhaustible provision of fields, towns and industry.

The expansion of irrigation in the course of the "Green Revolution" with its technology package including infrastructure, new seeds for rice and wheat, and a broad variety of agro-chemicals, contributed most significantly to the fact that, particularly in South and Southeast Asia, the food supply could be secured in spite of the increasing need. In contrast to the beginning of the 20th Century, the amount of agricultural production worldwide using modern irrigation technologies has increased five-fold to 250 million hectares. This change often came at the expense of traditional irrigation systems, which were abandoned and subsequently became dilapidated.

Regardless, rain-fed cultivation maintained its great importance for food security in many situations, in spite of it having been repeatedly neglected by agricultural policy. In developing countries, it still yields 40 per cent of the corn and almost 60 per cent of the rice harvest, and most importantly, various traditional staple crops, which are specifically adapted to local conditions. Mostly practiced by subsistence farmers, rain-fed cultivation is a source of direct, secure food and income for hundreds of millions of people.

Nonetheless, the world's freshwater resources are limited, and, in the last decades, overall use has been rapidly approaching these limits. Water usage has doubled at about twice the rate of the population over the last fifty years. Irrigation's rapid expansion contributed to that increase, but industrialization, as well as urbanization, changed usage patterns and increased living standards also had an impact: Rivers are re-routed to cotton plantations and paddy fields, freshwater lakes such as the Aral Sea and Lake Chad are drying up, in many parts of India and China the water table is dropping dramatically due to overuse, and wetlands are disappearing. Moreover, there have been changes in the water cycle,

due to deforestation and climate changes. Mankind and nature are increasingly left stranded.

The water shortage is seriously intensified by pollution. The largest share of water by far, which is used by industry and private households, returns to the general water cycle but is contaminated with faeces, bacteria, heavy metal and toxic chemicals. In agriculture, about 40 per cent of the water used is absorbed by the plants or eventually evaporates, with the remainder flowing into the rivers or groundwater carrying with it toxic agro-chemicals, causing long-term harm to humans and the environment in the long run.

The Water Users			
Though people only withdraw 8% of the total annual renewable freshwater, still we appropriate 54% of the accessible runoff. (UNESCO 2003, 10).			
	1950	1995	
Agriculture			
Withdrawal	1.100 km3/per annum	2.500 km3/ per annum	
Per capita	437 m3/per annum	436 m3/ per annum	
Quota	79 per cent	69 per cent	
Industries			
Withdrawal	200 km3/ per annum	750 km3/ per annum	
Per capita	79 m3/ per annum	131 m3/ per annum	
Quota	14 per cent	21 per cent	
Towns und municipalities			
Withdrawal	100 km3/ per annum	350 km3/ per annum	
Per capita	40 m3/ per annum	61 m3/ per annum	
Quota	7 per cent	10 per cent	
Source: FAO 2002. Crops and Drops. p.2.			

The race to accommodate the increasing demand by creating more and more new dams, pipelines, waterways and wells also becomes more and more difficult and expensive. According to Mark W. Rosegrant of the International Food Policy Research Institute (IFPRI), "there is practically no unused economically feasible water source left. (Rosegrant et al., 2002, xix). That takes many regions to the limits of the supply-sided approach employed so far, which sought to satisfy an apparently ever-growing demand by increasing the supply.

Besides, most governments simply lack the money: debt service, sinking proceeds, together with requirements by structural adjustment programs to withdraw from many areas of the economy allowing for private sector investment, leave many governments without this option since the 1980s.

The shortages lead increasingly to distributional conflicts and "small water wars." Farmers in India destroyed lines and blocked tankers bringing water into the cities. Ethiopian shepherds resorted to violence in defending their water holes against advancing crops. The prognoses points towards an intensification in such conflicts: according to current trends, the demands from factories, mines, energy supplies, and households will increase far more rapidly due to changed living standards and

further industrialization in developing countries, than that from agriculture – in 2025 by at least 50 per cent more compared to 1995.⁴

Thus, a deepening of the water crisis also threatens a food crisis, all the more so as farmland or arable land is becoming scarcer, as well as soil erosion, is turning fertile lands into marshland, and salinization due to improper drainage from irrigation taking its toll. According to the FAO, ten countries – predominantly in the Middle East and Northern Africa – were using, as early as in the 1990s, more than 40 per cent of their renewable water resources for irrigation. This critical limit could be reached in South Asia by 2030, and in the Middle East and Northern Africa the irrigation percentage might even be at about 60 per cent (FAO 2002b, 46).

At the same time, the demand for agricultural goods will increase due to a growing population and changing consumer patterns (see diagram: How much Water Do We Eat?). According to FAO assessments, production in developing countries will have to increase by almost 70 per cent by 2030. Therefore, three international research institutes and the World Conservation Union IUCN sounded an alarm in the spring of 2005:

“Food requirements are increasing, and food consumption is moving towards more water-consuming items. Irrigation possibilities are limited and agricultural land is shrinking“ (SIWI et al. 2005, 3).

How Much Water Do We Eat?			
The average daily diet with a meat percentage based on US standards requires approximately 5400-litres of water to generate the corresponding amount of raw products. An equivalent vegetarian diet reduces this amount by approximately half. (Lozán 2005, 306).			
Minimum water usage (required) for the production of:			
1 kg corn	600-2.000 litre	1 kg soy	1-2.000 litre
1 kg palm-oil	2.000 litre	1 kg lentils	1.000 litre
1 kg rice	3-5.000 litre	1 kg beef	13-16.000 litre
1 litre orange juice	25 litre	1 kg chicken	3.5-6.000 litre

The dilemma sounds like the quadrature of the circle: producing more with less water. One possible solution: a significant increase in agricultural productivity accompanied by an increase in water productivity, given that water usage in irrigation is not regarded efficient. Whereas, in Taiwan or Japan 50 to 60 per cent of the water directed into the fields is used for production, it is only 25 to 45 per

4 Molten/de Fraiture evaluated varying predictions regarding additional water usage for irrigation from 1995 to 2025/30. Accordingly, the increase will range between 4 and 24 per cent. Thus, not everybody shares the opinion that agricultural water usage is the main cause for the water crisis: “While some countries have reached extreme levels of water use for agriculture, irrigation still represents a relatively small part of the total water (resources) used in developing countries. The predicted increase in water withdrawal will not significantly alter the overall picture” (UNESCO 2003, 209). In contrast to that, a trend towards increasing water needs in other sectors due to changes in living standards, industrialization and ecological awareness, seems to be inevitable, following the example set by the developed countries. Thus, Rosegrant et al. (2002a, 5) predicts by the year 2025 an increase of about 64% for households, industry and livestock compared to 1995.

cent in many developing countries.⁵ Drip irrigation, conversion to less “thirsty” plants, and expansion of cultivation techniques that result in higher yields, should decouple increased agricultural production from water usage, similar to achievements in the energy sector of the developed countries. Irrigation and rain-fed cultivation should both use the limited resources in a better, more efficient way, and produce higher yields per water unit (“more crop per drop”) with wide-reaching positive effects, so the expectations go:

„Getting more crop per drop enhances food security and makes more water available for nature, industry and domestic users. It enables us to reduce the need for investments in new water storage and irrigation infrastructure – investments many countries can’t afford. By improving the productivity of water on rain-fed lands, we can contribute to the food security and incomes of some of the world’s poorest people” (Water Policy Briefing 2003, 1).

Not only could such a „Blue Revolution“ (FAO 2002a, 13) mitigate the increased water use without threatening food supply, but municipalities, industry and the environment would have more water at their disposal, thus softening distribution conflicts. Hence, the International Water Management Institute IWMI announced that “the cultivation of food with less water is the key to solving the water crisis” (Water Policy Briefing 2003, 1).

Institutions like the World Bank, World Water Council and International Food Policy Research Institute (IFPRI) demand a fundamental new approach. Mark W. Rosegrant from IFPRI, for example, predicts that in maintaining the current water policy, farmers will have difficulties in meeting global food demands (Rosegrant et al 2002a, v). Comprehensive political reforms, institutional changes, and improved management are required to provide a new regulatory structure for the usage and distribution of the limited resource of water, both within the individual sectors as well as among them:

“To achieve more effective water governance, it is necessary to reform and develop water institutions and policies. Institutions and water policies need to address conflicting property rights and fragmented institutions, facilitate efficient private and public sector initiatives, and provide a regulatory regime which allows clear transactions between stakeholders and shared responsibility for safeguarding water resources. (...) The challenge in the new millennium is to adopt a new approach. Water resources need to be managed in a more holistic way” (WWC 2002, 106f).

Not long after the Earth Summit (United Nations Conference on Environment and Development, UNCED) in 1992 in Rio de Janeiro, when the crucial significance of water for holistic and sustainable development and the threat of a water crisis were brought deeper into public awareness, comprehensive management approaches like the concept of Integrated Water Resource Management (IWRM) were developed, in terms of Global Water Partnership:

“[...] a process, which promotes the co-ordinated development and management of water, land and related resources, in order to maximize the

5 Yet not all the unused water leaving the fields is wasted. Downstream or via the groundwater it benefits other users. Thus, an increased or more “efficient” water usage in one region or system can result in loss of water for another region, with extensive negative effects on the economy and environment.

resultant economic and social welfare in an equitable manner, without compromising the sustainability of vital ecosystems.” (GWP 2000, 22)⁶.

At the same time, the “Dublin-Principles”, adopted in January 1992 at the International Conference on Water and the Environment (ICWE) in the Irish capital, emphasized the “economic value of water in all its competing uses.” Thus, treating water as an “economic commodity” is regarded as an essential prerequisite to induce “an efficient and equitable usage, and for encouraging conservation and protection of water resources.”

The new water policy, developed within the last ten to fifteen years by multi-lateral development organisations like the World Bank and the FAO, by international research institutes like IFPRI and organisations like Global Water Partnership, focuses increasingly on the agricultural water sector, as indicated by the warnings of an impending double crisis of both a water and food shortage, and the demands for a comprehensive restructuring of agricultural water policy.

The prospect of increasing water scarcity has led to an immediate renaissance in agricultural policy through international cooperation, apparent not only because the long-time downward trend in funding came to an end, but it was even reversed by institutions like the World Bank. “Water for Food and Ecosystems” was the programmatic title of an international conference organised by the FAO and the Government of the Netherlands in early 2005, and the World Bank as well announced its intention to increasingly re-engage in “Water for Food.”⁷

⁶ For information on IWRM see (for instance) Snellen/Schrevel 2004. Global Water Partnership (GWP) – where the World Bank was a major factor until recently – played a decisive part in the development of the Integrated Water Resource Management. Presently, it advises the governments of numerous countries in its implementation.

⁷ World Bank Water Week 2005, www.worldbank.org/water.

2. Ethiopia – Water for Private Sector Development

Hunger, aridity, flooding – Ethiopia is a particularly dramatic case of poverty and under-development. Almost half of the rural population suffers from chronic food insecurity. Year by year, six to eight per cent of the 70 million inhabitants are dependent on food aid. And if the rains fail the percentage is considerably higher.

Yet, the problem is not a lack of water. In the rugged mountainous region, with some peaks rising to over 4,500 metres, the precipitation ranges between 1,400 and 1,800 millimetres annually– twice as much as in Germany. Whereas, yet in the Great Rift Valley, which bisects the Ethiopian Plateau into the northwestern and the southeastern highlands, and the associated lowlands, the precipitation only reaches about 400 ml, or even less. Moreover, the rainfall is limited to only a few months, sometimes only weeks, a year. Due to the climatic change, the unpredictability and variation in precipitation have increased. Among the few rivers to carry water year round, one is the Awash River, which originates west of the capital Addis Ababa, and then flows east and disappears into the saline lakes near the Djibouti border. Another is the Tekezé, which flows into the Atbara River in Sudan, a tributary of the Nile River. But the largest river is the Abbay River, or Blue Nile, which originates at Lake Tana, which is the biggest lake of the country with a surface area of 3,600 km².

Land is equally plenty. But most people live in the densely populated highlands. The region was deforested and bare, steep mountainsides remained. The heavy rainfalls wash away the fertile topsoil, the natural capacity of the earth to soak up and store water is lost and the water cycle loses its balance. Each year flooding causes severe damage to streets, bridges and harvests.

The main cause for the problems, however, is the many years of neglect of agriculture, namely, of the small-scale rain-fed cultivation which 80 per cent of the population depends upon. After the military brought down Emperor Haile Selassie's feudalist regimen in 1974, land reforms, reforestation projects and development programs were initiated. But the pseudo-Socialist development regime of Derg's military government's war against Eritrea, and the Civil War, which finally led to the coup d'état in 1991, signified that money was spent on weapons instead of development programs, and destruction of infrastructure in many cases.

Environmental destruction, the precarious condition of agriculture, as well as insufficient infrastructure, have a direct impact on the country's economic development in general. Lost crops influence the price for staple foods and necessitate food imports and aid. Farmers are incapable of putting their products on the market, the marginal power generation of the few hydropower plants affects development in other branches of economy. This is in addition to the water conflicts between urban and rural areas, agriculture and livestock production, and the economy and environment (see box).

Water Conflicts

- Principal source of water supply for Harar, a province town east of Addis Ababa, is Lake Alemaya. For a couple of years now, farmers in the region have increasingly been cultivating the narcotic “khat”, a cash crop, which became Ethiopia’s second biggest export crop. As a result of their water removal the lake has practically vanished, leaving the city no choice but to invest into a new supply.⁸
- Nomadic herdsman in the arid lowlands lose their watering holes in the low plains due to the expansion of agriculture and the usage of wetlands. Especially during drought periods, they leave their traditional grazing lands, thus evoking further conflicts with the farmers.
- Since the 1960s water is withdrawn from the Awash, the most important river flowing east, for big cotton and sugarcane plantations. The consequences: in the arid, low rainfall region at the lower reaches, processes of desertification begin to show; Lake Abe, which is where the river ends, on the Djibouti border, has shrunk during the past 70 years to a third of its original size.

Since the Derg regime was overthrown in 1991, politics and economy slowly began looking up.⁹ But so far, the rural areas have hardly benefited from stability and massive foreign aid. Hydro-engineer Gebreyes Haile is convinced, that one could feed everybody. Winfried Zarges, coordinator of a GTZ food security project, even goes a step further, by saying that the neighbouring countries could be supplied as well, and quite easily so, provided the available resources, i.e. water and soil in particular, were used more effectively.

2.1. Approaches to Agricultural Water Usage

The most widely applied form of water usage in Ethiopia is rain-fed cultivation. Subsistence or small farmers, sustaining 80 per cent of the population, provide 85 per cent of the agricultural production, three quarters of which is designated for themselves, and contribute almost half of the gross national product. Apart from the cereal *tef*, used for the preparation of *injera*, [a flat, spongy, and slightly sour bread that looks like a giant bubbly pancake the size of a serving tray], predominantly top grade coffee is being grown in the southwest highlands, accounting for about 70 per cent of the country’s export earnings.

Rain-fed cultivation means to be at the mercy of Nature. To diminish this and increase crops yields, a variety of possibilities is used to bring more water to the fields.

Using Flash Floods in the Segen Valley

The Konso people, one of the many smaller ethnic groups in the multinational state, have been living for generations on hilltops 600 km southwest of the capital Addis Ababa, not far from the Kenyan border. Over centuries, they have created artful stone terraced fields, which descend down the steep hillsides. Sufficient precipitation in spring and autumn, as well as a creative mixed cultivation system

⁸ Harar Water Supply, ADB, 28 Mio. (CWRAS, 96)

⁹ But it suffered a serious setback from the armed boundary dispute with Eritrea end of the 1990s.

allows them to attain the highest possible yield from the small surfaces, without damaging the earth.

In spite of malaria, wild animals and the long and arduous paths back to their villages, some years ago the first of the Konso people moved down into the wide, fertile river valley, because the mountainsides no longer offered enough land, leaving many of them dependent on food aid. They cleared the thickets and shrubs in the wide plain between the Yando, Faro, and Segen Rivers and divided the land among themselves. Here every family was allotted at least one parcel of land in the front row, directly on the riverbank.

Due to the fact that rainfall in the valley is low or even stops before harvesting can begin, they've created dams/barrages made of rubble and sand sacks. Once the dark rain clouds start gathering up in the mountains, they know that the river will soon rise and they can re-route the water via a ramified system of channels onto their fields – an inexpensive system using mainly local material, while interfering only slightly with nature. "With good planning using the precipitation in the valley and in the mountains alone facilitates three crops a year", declares Helmut Spohn, who works as an advisor for the Konso on behalf of Bread for the World.

A variety of Solutions

The Relief Society for Tigray, REST, likewise, uses this traditional system of „spate irrigation“, so that the farmers can provide their fields with extra water. In addition to that, it has developed a whole store of methods and technologies to “catch the precipitation” and bring more water on the farmland – both during the rainy season as additional irrigation for the cultivation of grain, as well as during the month-long dry season to facilitate a second harvest of cash crops.

For instance, reservoirs are being constructed by means of simple dams made of earth and stone, some of them up to 15 metres high and three hundred metres long; diesel pumps provide irrigation water from rivers carrying water all year long. Every family is allotted a quarter hectare of land, fruit tree seedlings and elephant grass for planting the earth walls, which separate the fields and slow down erosion. Advisors facilitate the creation of water users organizations, as well as the introduction of improved cultivation methods, and a frugal use of the unusually ample available but precious water. Some families try their luck with the cultivation of cotton, sesame and vegetables; the majority, however, plants chillies, a coveted commodity during the dry season on the nearby market of the small town Abi Adi. Downhill, below the irrigated fields, the groundwater table has risen in the meantime, due to infiltration. Farmers have drilled wells that are five, six metres deep. Using a treadle pump, they can now carry the water to their field and direct it into the furrows between the rows of chillies and cotton plants.

Each week prolonging the availability of water beyond the rainy season possibly provides more security and better earnings. Likewise, there is the possibility of increased financing for the further improvement of cultivation methods, the purchase of fertilizer and superior seeds, to buy a corrugated sheet roof for the stone cottage or a transistor radio. Hence REST regards water as an “entry point” for long-term rural development.

Mulugeta Berhanu, head of REST's environment and agriculture department, is convinced, that "Tigray is not a hopeless case." Certainly, the stony, rugged terrain is a challenge, he concedes. But as long as the people are inclined to stay, all possibilities are to be exhausted. Purely economic cost-benefit analysis alone can not be the determining factor here, rather, in choosing technology, ecological and social benefits should be considered.

The problems of irrigated agriculture

Modern irrigation, which would allow less dependence on rainfall, hardly exists in Ethiopia: a total of about 200,000 hectares benefits from medium-sized (two-thirds) and large-sized (one third) systems. One reason for that is the lack of money. Dams, like the Koka Dam across the Awash River built in 1960, cemented long-distance canals, and drainage are expensive. Moreover, irrigation places greater demands on water management in order to prevent arable land from salinisation and becoming swampy. Yet, the rather marginal implementation of irrigation in agriculture is also due to political reasons. In the past, Egypt has been particularly successful in torpedoing numerous plans for large-scale irrigation and dam projects on the Nile's headwater by using diplomacy as well as threats, because every drop diverted onto the fields of Ethiopian farmers is feared to be lost to the farmers downstream in the Nile Valley. Whereas in Sudan and Egypt new areas in the desert are converted time and again into farmland with Nile water, the small farmers at the source, i.e., the Blue Nile and its tributaries, are left stranded for most or part of the year

In the mid-seventies the government and NGOs, like the Lutheran World Federation, realized a series of small- and medium-sized irrigation projects that were mostly managed by cooperatives and water users organizations. Due to lack of experience, as well as insufficient guidance by the state and marketing opportunities, many of them were neglected.

The large-size irrigation systems, created mainly in the 1960s for the cultivation of sugar cane and cotton, suffer as well from mismanagement, soil erosion and salinization. "There is no framework capacity for modern irrigation management," says GTZ employee, Winfried Zarges. In the meantime, some of them become re-privatized. Most of them receive their water from the Awash, the lower reaches of which are already showing serious environmental problems (see box: Conflicts).

2.2. Governmental Water Policy

Aided by numerous policy and strategy papers, as well as advised and supported by the World Bank, the African Development Bank and the European Union, the Ethiopian government has defined the framework for legal and institutional reforms of the water sector.¹⁰ Several development projects are pushing for the extension

¹⁰ These are primarily the Water Sector Development Programme (WSDP), the Water Resources Management Plan (WRMP) and the action plans based upon, the Sustainable Development and Poverty Reduction Program (SDPRP, July 2002), and the government's Food Security Strategy (March 2002), as well as the Country Assistance Strategy (CAS), and in particular the World Bank's Country Water Resources Assistance Strategy (CWRAS, March 2005).

and development of the different areas, including urban water supplies and irrigated agriculture in particular.

The investment needs for the realization of the Water Sector Development Programme is estimated at 8 billion US\$ for a period of 15 years, with about 1.7 billion accounting for irrigation. The goals set are for both food security, as well as an increase in the cultivation of raw materials and export products. Another aim is to win over the private sector more and more for investments.

Within the scope of said food security strategy, the government puts some emphasis on rain-fed agriculture. Support for improved cultivation methods and the expansion of micro water infrastructure are supposed to increase productivity and reduce the danger of crop losses. For this, the government largely relies on NGOs and bilateral donors like Ireland, France and Belgium, as well as self-help initiatives of the local population. But according to the Sustainable Development and Poverty Reduction Program, SDPRP rain-fed cultivation alone is not enough to provide food security (87).

Sledge hammer rainwater harvesting

The Sustainable Development and Poverty Reduction Program and other programs give high priority to "rainwater harvesting" in improving the irrigation of small farms. Based on the recommendations made by a Canadian business consultancy this includes the "household ponds", which now are scattered across the hills of some of the highland regions like a cratered landscape after the government declared their creation part of the official program. The small water reservoirs are supposed to help save the crop in case the rain doesn't suffice. For the excavation of the holes, the families frequently receive some corn rations. To line the cavity with plastic foil or cement they often have to procure a loan. In the meantime, the ponds proved for the most part to be too small to save the crop in case of emergency; and most of the water evaporates uselessly.

Therefore, irrigated farmland is to be more than doubled, to 274,000 hectares by the year 2016. About half the land is supposed to offer small farmers the opportunity to put in a second crop during the dry season, apart from the rain-fed cultivation.¹¹ The other part of the newly irrigated area, 150,000 hectares, will be made available for 26 medium- and large-sized irrigation systems. This is consistent with the intentions of the government to place "increasing emphasis on the development of large and medium-scale irrigation systems in the medium to long-term" (WSDP, 30). Calculations indicate, that if half of this area were used for the cultivation of grain, the national food deficit would be reduced by 11 per cent, and, thus, food security would be improved of its own accord. Within the scope of its "Agricultural Development Led Industrialisation (ADLI)" strategy the government will open up new areas for large-scale agricultural production in order to encourage commercial farming (Food Security Strategy, 11).

11 Numbers slightly diverge in the WSDP, see page 30. According to data from the Sustainable Development and Poverty Reduction Program (SDPRP), currently (2002-2005) about 24,000 hectare small-scale irrigation systems are to be developed for 93,000 families.

12 FAO-Aquastat. The United Nation's Food and Agriculture Organization (FAO) estimates the total potential for irrigated agriculture to be about 5.7 million hectares, the economically feasible area however, only at 2.7 million hectares.

Increasingly, the end users are to be involved in the management and funding of irrigation projects. Thus, the Water Sector Development Programme plans to introduce cost coverage and cost sharing: 20 per cent is envisioned for small projects, and in major projects the users are to shoulder 10 per cent, and private investors another 10 per cent. Likewise, the Water Resources Management Plan states: "All irrigation projects should include the development of appropriate cost recovery systems and mechanisms" (1).¹³

Initially, an additional 90,000 hectares of land are to be developed with the Awash River, the water of which has already been used for several major national and private farms. The nomads, who are grazing their herds in large areas of that region at the lower reaches of the Awash, shall be relocated and resettled.

A whole series of new dam projects are planned or already under construction within the scope of the development programs, which are to facilitate, apart from power generation, the aspired expansion of irrigated agriculture (see box).

Dam Projects in Ethiopia

- Koga, tributary of the Blue Nile, commenced in 2001, irrigation for 6000 hectare, 42 million US\$, loan from the African Development Bank (ADB)
- Tekeze, 225 MW, designed for irrigation, expenses: 224 million US\$, Chinese construction company, loan from Chinese government
- Gilgel Gibe I, inaugurated in 2004, 184 MW, supported by the World Bank
- Gilgel Gibe II, 420 MW, part of the World Bank-assisted Ethiopia Energy II, cost: 259 million US\$, funded by Italian government (277 million \$US), European Investment Bank (EIB)
- Finchaa IV, stage IV under construction
- Gojeb, 150 MW, cost: 270-300 million US\$, first private sector funded hydro-electric plant (IPP) by investors from the Middle East
- Bir-Kog, 36 million US\$, loan from ADB
- Tis Abbay II, 73 MW, small irrigation project planned
- Beles, multi-purpose dam, 460 MW, 7000 ha irrigation, 540 million US\$, 70% funded by Italian government
- Feasibility studies for Baro (Multi-purpose dam, 650 MW) and Karadobi (1000-1600 MW), both part of the Nile Basin Initiative, are being funded by the Norwegian government (1.4 million US\$)

Sources: IRN; Fortune, July 10, 2005; CWRAS; several articles in newspapers

2.3. World Bank Aid: CWRAS

The World Bank regards Ethiopia as a focal point of its renewed comprehensive water policy.¹⁴ "Managing Water Resources to Maximize Sustainable Growth" is

¹³ The Sustainable Development and Poverty Reduction Program has also designated full cost coverage, cost sharing and self-funding of programs and projects for water services. (85)

¹⁴ Apart from the World Bank and the African Development Bank, which pursues similar approaches, several bilateral donors are active in the water sector, including France and Norway. For the German Development Cooperation (EZ) the sustainable use of natural resources for food security has been agreed

the programmatic title of the World Bank's Country Water Resources Assistance Strategy for Ethiopia (CWRAS) that has also influenced government policy.¹⁵ According to an assessment by the World Bank, low "water security" due to high variation in the amount of precipitation, lack of storage capacity, and thus unreliable availability of water, increase the poverty rate by 25 per cent. Moreover, the World Bank says, that it is costing the Ethiopian economy about 40 per cent of its growth potential and "leaving growth rates hostage to hydrology" (CWRAS, xv). Thus, water resources development and management of the water supply (...) "remain at the heart of the struggle for sustainable development, growth and poverty reduction" (xiv).

To achieve this the strategy recommends a series of "strategic shifts", or rather a concentration of efforts on "areas that stand out as priority investments" (xvi): by investing in infrastructure, institutions and management capabilities "water security" will be increased. In addition to that, the strategy mentions improving marketing opportunities, expanding the private sector's participation and comprehensive macroeconomic structure reforms as a means to reduce the dependency on precipitation and unreliable water availability. It also recommends that the Bank invest more intensely than it has so far in improving drinking water supply and wastewater disposal, as well as into watershed management projects.

Infrastructure

To develop the storage capacity of small, medium and major systems "must be seen as a development priority across the entire economy" in order to improve water availability year-round and control the discharge. Compared to South Africa, with 750 cubic metres of storage capacity per capita, not to mention developed countries like the United States with 6,150 cubic metres, Ethiopia ranges way behind with its 43 cubic metres of average storage capacity.

Here major dams in particular require public funding, since such investments amortise and are only profitable in the long run – if at all – hence, interest on part of private investors is rather small. The finances required to attain the standard of South Africa, considered a rough measure for water security, are estimated at 35 billions US\$ (CWRAS, 33), that is five times the current gross national product of Ethiopia.

Such an expansion of infrastructure ought to have "relative priority" compared to a comprehensive development of management capabilities (xiii). For developing countries like Ethiopia, the World Bank stated under reference to its Water

upon as one of three focal points. In Amhara, Tigray and Oromiya soil conservation measures are being realized, the GTZ is developing, among other things, concepts for soil and water protection, the *Kreditanstalt für Wiederaufbau*, (KfW Development Bank for Reconstruction) is funding, e.g., a small WSS project in three cities.

15 Draft, June 2005. It has been elaborated jointly by the IFPRI, the IWMI and a few Ethiopian scientists and government ministers. The preparation of such country strategies originates in the Water Resources Sector Strategy, adopted by the World Bank in 2003. Objective: To improve the orientation and coordination of several World Bank programs and to support the government in realising its policy and strategies in the water sector. Such Country Water Resources Assistance Strategies (CWRAS), currently available or in progress for 14 countries, are to be adjusted to the specific situations and needs in each country. Hence they vary from country to country. Yet, the Ethiopian CWRAS allows an initial insight into current priorities and ideas of the World Bank in the water sector.

Resources Sector Strategy (World Bank 2003), it “may do better to adopt a principled and pragmatic approach to management while putting greater emphasis on concurrent infrastructure investments” (xiii). In this case, the World Bank strategy functions as an advocate on behalf of countries like Ethiopia to other donors from developed countries that would attach greater importance to the development of management than to the expansion of infrastructure.

Multi-purpose dams

Wherever possible, the new infrastructure projects in the water sector were to serve both power generation and agriculture. Such multi-purpose dams are regarded as a “powerful investment”, because they “can provide resilience both by directly regulating flows and by promoting structural shifts in the economy” (CWRAS, xv). So far the World Bank is only directly involved two Ethiopian dam projects: the hydro-power plant Gilgel Gibe I, which has been inaugurated in the meantime, and the construction of the Gilgel Gibe II Dam with a planned capacity of 400 MW. But that is about to change:

“The far-reaching potential benefits of multi-purpose dam development, and the unique qualifications of the Bank to support these investments, strongly recommends support of multipurpose dam development with an emphasis on hydropower generation and interconnection in the Nile River Basin as a first priority for future Bank assistance in water resource management.” (72)

Due to own experience, the World Bank knows about the “risks” of such major projects. Thus, the CWRAS concedes, that the necessary resettlements and negative effects on the environment could cause opposition and protests in Ethiopia and on international level. But the Bank is convinced *ex ante*, and without thorough examination, that many locations “pose moderate environmental and social impacts” only. (70) And the World Bank makes reference to its “rigorous safeguard policies“, which, in the case of such negative effects, would help to reduce and lighten them, even if “these requirements are sometimes viewed as onerous by our clients, and may be perceived to slow project preparation and add costs to the bottom line.” (71)¹⁶

One crucial requirement in order to accomplish this is further rapid progress in the Nile Basin Initiative (NBI), which is substantially supported by the World Bank.¹⁷ A significant objective is to end opposition by the littoral states of the Nile’s lower reaches to its use by Ethiopia, and likewise by Uganda and Tanzania. This has already been met with success: the NBI Council of Ministers has in the interim

16 Organizations like the IRN complain, however, that the World Bank has not accepted the by far more comprehensive recommendations of the World Commission on Dams, WCD, for the construction of new dams. On the contrary, under the pressure of its clients, the Bank has even begun to mitigate its active environmental and social standards, see, for example, Bosshard 2004.

17 True, the Ethiopian government, which has an increased interest in the initiative, operates as facilitator, but the financial means for the Nile Basin Trust Fund to finance the activities originate from foreign donors like the ADB, CIDA, United Kingdom, Netherlands and Scandinavian countries, coordinated by the World Bank. The German government has also supported this initiative, for example, in 2001, with 3 million DM.

accepted four hydropower and four irrigation development projects proposed by Ethiopia on the headwater of the Blue Nile (see box).

Nile Basin Initiative

"Recently, due to international law, which supports equitable utilization of the water resources, positive progress has been observed in that riparian countries are deciding on common water development programs. Thus, the Nile Basin Initiative was created and a Strategic Action Program prepared. The aim is to help create an enabling environment for action through building trust and skill, as well as delivering concrete development projects involving two or more countries. Projects are selected by individual riparian countries for implementation and submitted to the Council of Ministers of the Nile Basin Initiative for the approval. "The council has already accepted four hydropower and four irrigation development projects proposed by Ethiopia. Sudan, Ethiopia and Egypt have also adopted a strategy of cooperation in which all projects to be launched on the river should seek the common benefit of all member states."

Source: FAO-Aquastat

Energy

According to an estimate of the World Bank, only two per cent of the "economically justifiable" potential for hydropower plants assessed for 30,000 MW of production are currently in use (vi). Not only would more power advance the necessary structural change, but it would also protect the environment by burning less biomass, thus reducing deforestation and soil degradation. Investment needs for the designated expansion: almost 2 billion US\$ (WSDP, ES, 37).

Utilization of all planned or commenced hydropower plants, however, would exceed Ethiopia's energy needs by far. Yet, the World Bank defends the high investments, because apart from producing foreign exchange earnings, power export into the adjacent countries might as well – true to the intention of the NBI's "common benefit" concept – prove useful for the riparian countries at the lower reaches of the Nile, and, hence, meet with their consent.

Irrigated agriculture

Furthermore – continuing with the cost-benefit-analysis – those energy proceeds could improve the financial balance sheet of multipurpose dams, and thus increase the economic carrying capacity of irrigation investments (xv). The Ethiopian potential for an expansion in irrigated agriculture is estimated at approximately 3.5 million hectares¹⁸. It is hardly fully tapped with less than five per cent presently in use. In addition to that, the Bank also sees a great potential for large-area mechanized rain-fed cultivation, following the example of the developed countries¹⁹. Accessible farmland is mainly in the Ethiopian lowlands in the East and West, which at present is still frequently used by herdsmen like the Somali, Afar and Borana.

18 Same as the energy potential, such estimates have to be considered carefully. How much of it can be "economically justifiable" used not only depends on the costs, but also on social, political, ecological and many factors more. Moreover, estimates as such take economical interests into consideration.

19 See Country Economic Memorandum, quoted in: CWRAS, 68.

Financing irrigation would reduce agriculture's dependency on variable precipitation, improve food security and provide agro-products for the domestic market. As a result, farming prices could be stabilized and investments in agriculture, as well as non-agricultural areas, be furthered (CWRAS, 63).

Commercialisation

Apart from the insufficient water-infrastructure, the deficient transportation system and commercialization potential play a pivotal role in Ethiopia's economic problems. After many years of civil war, the infrastructure is still underdeveloped: The few good traffic arteries are connected to the capital Addis Ababa, many of which are impassable or even destroyed during the rainy season, so for the most part the commerce potential is locally confined. During critical times, food surplus from one region frequently can't reach another region, hence, leading to a situation where farmers in one area can't sell their crops or can do so only at low prices locally, while people in other areas have to rely on food aid.

For that reason, the CWRAS regards marketing as another important focus of massive investments. Hence the transportation sector accounts for the largest item (596 million US\$) in the World Bank portfolio (fiscal year 2005), followed by agriculture/rural development with 309 million US\$ (CWRAS 68).

Traditional concepts of water resource management would, at best, regard the expansion of marketing avenues as a matter of minor importance, states the Bank. Yet, they can assist in shifting "the economy from subsistence agriculture to an economy that can produce and market agricultural surplus and support value-added processing services." Therefore they should "be considered potentially powerful hydrologic risk-management investments." (73f)

Private sector participation

The infrastructure investments recommendations are supposed to create conditions for stronger participation of private companies "that will enhance productivity" (CWRAS, viii). Public spending on infrastructure, not immediately profitable like dams, roads or canals, is to create the security for subsequent private investments to advance economic growth: irrigated agriculture with secured water supply "at reasonable costs" (CWRAS, 35). The expansion of marketing opportunities and an improved energy supply offer "incentives and opportunity for farmers to transition out of subsistence agriculture into surplus/commercial agriculture and non-agricultural activities" (CWRAS xvi).

The Bank recommends reforms in the water sector with the objectives of a stronger involvement of the private sector in other strategy papers as well. In the Country Economic Memorandum (CEM), the government is requested to advance rehabilitation, or rather completion, of commenced dams and irrigation systems in order to win over private investors. The privatization of state-operated farms should be accelerated and "suitable public goods" made available, so as to attract private investments, for instance in mechanized agriculture, it says.

Structural reforms

In addition to that, the government is requested to accelerate appropriate policy environment to develop irrigation agriculture. That includes a further liberalization of investment policy so as to improve the conditions of foreign and domestic investors, secured right of ownership – including land – and right of water usage. The abrogation of existing restrictions is considered as one significant incentive for private participation and agricultural development (38). So far farmers are not allowed to sell land they've been allotted by the state. One of the reasons is the government's fear of a decreased rural population, owing to the farmers' selling their land out of desperation or due to the lack of agricultural investment possibilities. The World Bank, as well as other donors, is seriously pressuring the government into changing the right of ownership, thus facilitating sales.

2.4. "Big benefits" – But who gains?

The World Bank, with its claim of achieving sustainable growth through improved water resources management, clearly focuses on expanding infrastructure and economic structural change. Power generation, irrigated agriculture and roads for commercialisation are supposed to boost the economy and create conditions for private investments.

That corresponds with the rebound formulated in the Water Resources Sector Strategy and Infrastructure Action Plan: though holding "high risks", investments in dam and other major infrastructure would at the same time yield "high rewards."²⁰ Therefore, the World Bank is obliged to accept said risks; it says, e.g., in the WRSS:

"There is broad agreement that an essential part of good development practice is the assessment of risks. Most practitioners, however, believe that the application of the precautionary principle would be a recipe for paralysis and that few development projects would ever be undertaken if such an approach to risk were taken. (...) There are strong concerns from governments, the private sector and many Bank staff, that when development risks are high, and Bank engagement is particularly valuable and important, the Bank must ensure, that it is a risk mitigator, not a risk multiplier." (World Bank 2004b, 46).

Here the World Bank, as the driving force for economic growth by implementing, e.g., commercial agriculture, counts on the domestic and foreign private sector. Governments and donors are supposed to provide the necessary infrastructural outline conditions. In other words: non-profitable costs are to be shouldered by the treasury, while the companies will pocket private proceeds.

From the World Bank's point of view, the strategic focus on prerequisites for economic growth, ostensibly to boost the private sector, makes quite a bit of sense. Because a water and agricultural policy focusing mainly on economically

²⁰ For criticism of the so-called "high risk/high reward strategy" see for example, Environmental Defense et al (2003)

speaking “premium picks“, like multipurpose dams and major irrigation projects, offers the prospect of showing high returns on the investment. If the calculation works at all, the promised “high rewards” will materialize only for the state, private companies, and last but not least, the World Bank and other financiers, to be repayed on the loans they have granted.

With expanding the infrastructure the CWRAS focuses on the limited approach of a “supply-side” resource management in contrast to the comprehensive approach of an Integrated Water Resources Management (IWRM). The organization of management capabilities – regardless if for resource management or planned irrigation projects – is explicitly identified as of lower priority. Equally, other areas like watershed rehabilitation remain lower ranking. Yet, Ethiopian water experts, like former government official Habtamu, are convinced that for Ethiopia “software is more important than hardware,” meaning an improvement of management skills, agricultural advice services and adjusted cultivation methods.

Environmental protection

Observing the Ethiopian water situation from an integrated point of view makes clear that the problems start in the highlands. Deforestation and soil erosion cause the massive precipitation to directly runoff, not giving small farmers a chance to make use of it. Consequently, this water is not available during the dry season. Desertification due to topsoil removal threatens to drastically reduce the useful function of dams drastically, as well as to rapidly devalue the high investments.

An example for this was the government’s plan to build a dam close to the province town Karete, 600 km to the southwest of Addis Ababa, through the Yando Faro River to facilitate a year-round irrigation in the fertile valley of the river. Matter of expense: 50 millions Birr, that is almost 5 million Euro. However, hydraulic engineer Gebreyes Haile, called in as an advisor, pointed out that without implementing complex and expensive stabilization and erosion protection measures, the storage lake would silt up in a matter of few years. Hence, the project fell through.

Environmental protection measures that tackle the problems at the source are crucial here, says Gebreyes Haile. That includes, for instance, blocking the numerous, often running twenty to thirty metres wide, erosion gullies. These deep furrows sweep down the mountainsides. Fields, trees and houses are swept away by the torrents when it rains, allowing prosperity only to the farmers at the lower reaches of the rivers. Conservation measures like terraces and forestation could hold the water and allow it to drain into the soil, which still proves to be best water storage of all. Often new, year-round sources emerge after a short while at the bottom of such stabilized gullies – for drinking water and small-surface irrigation.

Measures for “gully control/gully sheeting” can be carried out rather economically with local material and by self-help. For the most part, the rural population is well aware of the erosion issue. But there are only technical guidelines for erosion control, no legal consequences if they are ignored. Moreover, it is not guaranteed that investments remain “in the family” due to only limited rights of land usage. The solution to that is not necessarily private property, as demanded by the donors.

The possibility of inheriting usage rights would suffice, in the opinion of Helmut Spohn.

In Tigray, in the North of Ethiopia, the municipal government has resorted to drastic measures. To slow down the erosion that robs the farmers of soil fertility and fields, it has without further ado closed off some areas at the mountainsides. No livestock, no collecting of firewood is allowed in these enclosures. Only during the rainy season the grass may be cut. In no time at all, the undergrowth regenerated, the roots holding the soil, the rainwater absorbs better, and flows more slowly, without causing damage downhill into rivulets and rivers.

But measures for watershed protection are a subordinate matter in the World Bank's strategy. Even the CWRAS states that it is striking that there is no dedicated watershed support in World Bank portfolio (69). If the Bank sees need for action at all, this is in regions, where dam or roadwork projects are being realized, that which is in support of its infrastructure strategy.

Moreover, major irrigation projects may cause further environmental problems. Ethiopian scientists caution that if even more water is withdrawn from the already intensely used Awash river, this might cause dramatic changes in climate and ecology, like for instance the further drying up of wetlands, thus threatening the environment and living conditions (Tadesse et al, 2004, 1).

Small-scale agriculture

With their policy, the government and World Bank announced it will create "incentives and opportunities" for farmers to shift from subsistence farming into commercial agriculture and surplus production. But irrigated agriculture hardly helps solve the problems of small farmers.

It completely ignores, for instance, the needs of rain-fed cultivation, in spite of the grave problems here and its importance for poverty reduction, food security and environment. What these farmers really would need is a simple, inexpensive water infrastructure adapted to the local realities, adjusted cultivation methods, and access to nearby markets. According to Helmut Spohn, priority should be given to the construction tens of thousands of micro dams and river barrages, like those built by REST or the Konso people, instead of focussing on a handful of big dams and rushed methods like the household ponds, most of which were useless.

Though a settlement of small-scale farmers is envisaged in the new irrigation systems, as well as the creation of cooperatives, attempts in the past often enough have been realized half-heartedly, in a top-down and bureaucratic manner. They frequently failed, because of lacking management skills to control these complex systems, insufficient advice services and economic problems.

Still the old mistakes are being repeated again: The Koga irrigation project, for instance, shall be handed over to 10,000 farm families ready to use. In the opinion of irrigation expert Habtamu, such projects are doing a disservice to the country, because they're planned and executed without the participation of the population.

Instead, financially strong farmers and plantations will be the beneficiaries of the expanded irrigation, who make sure that they'll get the favoured locations with good soil and the new irrigation possibilities. The World Bank is well aware of that,

but doesn't care to ruminate about the danger of "only a small set of farmers being in the position to take advantage of" an improved infrastructure (CWRAS 64).

So it is only logical, even if unrealistic, that the World Bank recommends the farmers to seek out non-agricultural activities:

"Solutions to water resources challenges need to be sought outside the "water sector", with a greater emphasis on alternative livelihoods to decrease the share of the population most vulnerable to hydrological shocks." (xvi)

Resettlements

The water and agriculture strategy realised by the government and World Bank in Ethiopia, moreover, signifies massive resettlements and work migration, because in the often only sparsely populated lowland regions enough manpower for the commercial farms does not exist.

In this way, for instance 1.5 million people from the drought-ridden highland are to be resettled into the Western Ethiopian region Wollega, where irrigation projects are planned (Berger 2005, 49). In addition to that, according to government data, 300,000 families could find work in the new irrigation projects – even if most of them only seasonal. Plus the nomadic people, whose grazing land and watering holes are affected by the irrigation projects, have to be compensated and settled down so as to avoid conflicts.

Justified with the food insecurity in the highland, the government now plans such relocations and resettlements on a large scale – in spite of the bad reputation they gained during the Derg regime. Therefore, the World Bank remains hesitant about her decision to support them directly, and still "debates" with the government. On principle, the Bank considers voluntary resettlements into regions with less risks and high productivity as necessary (CWRAS, 66).

Food security

It is clear, that the aspired expansion of irrigated agriculture won't solve the problems of food insecurity. In light of the low prices for staple foods, investments only become profitable through the cultivation of high-value products (cash crops). Here too, the World Bank beholds problems: "Crops to be grown under irrigation should be carefully selected to maximize the return from investment. Most cereals may not be as profitable as cash crops (cotton, sugarcane, etc.)" – without, however, drawing any conclusions from this insight (CWRAS 35). In contrast to that, Gebreyes Haile demands in the interest of food security to cultivate "corn instead of cotton" (that is mainly staple foods) on the productive irrigation areas, instead of industrial raw materials and products for export.

But development already turned in another direction: on a privatized former state farm not far from Addis Ababa and its international airport a German breeder is

currently growing begonia-seedlings, a German-Israeli joint venture grows flowers, and an Arabian-owned poultry farm cultivates forage corn.²¹

As a result, this situation threatens a bi-partition of water and agricultural policy similar to the commercialization of urban water economy: public and private investors, water and land, follow the promise of profit and go, where the state can make foreign exchange earnings, thus improving its debt service capacity (also towards the World Bank).

In contrast to that, the development of small-scale farming could make an immediate, if not crucial, contribution to food security and poverty reduction. Yet, it hardly offers any investment potential, earnings and foreign exchange, that is, to support it with public funds – including the necessary subsidies – would be costly, but without proceeds. Small-scale farming is neither profitable for the state nor the private sector nor the World Bank.

²¹ According to the WSDP, 18 private irrigation systems with a total of 6000 hectares existed already in early 2000.

3. World Bank Policy

For the past five decades, the World Bank has played a major role in the water sector of the developing countries, both as a donor as well as an advisor. This dual capacity placed the Bank into a position to exert equally their influence and pressure.²² On average, about 3 million US-\$ went each year into dam and irrigation projects, drinking water supply and wastewater disposal, into water resource protection or the organization of agencies and institutions. With this the Bank held a share of about 5 per cent in the overall investment. Yet its influence on water policy goes far beyond. John Briscoe, leading water advisor of the Bank, announced:

“As water challenges grow in scale and complexity, the Bank is perceived as one of the few institutions that can provide integrated support on the macroeconomic, financial, technical, social, and environmental dimensions. (...) It can engage at all scales – local watershed, city, irrigation district, river basin and aquifer, country, and regional – and help develop an integrated approach.” (Briscoe 2003a, 19)

Moreover, the Bank has become “indispensable” – beyond its own lending – in mobilizing additional, private investments for their “clients”, that is the governments of developing countries, Briscoe continued.

World Bank investments in the Water Sector

In fiscal year 2004, Bank lending for projects with major water components increased to 3.3 billion US\$, which is 800 million US\$ more than the year before.

Overall, Bank lending for projects with major water components increased to 16% of all Bank lending (compared to about 12% in the 1990s, and about 7% in fiscal years 2000 – 2002). Total lending increased from 2.5 billion US\$ in fiscal year 2003 to \$3.3 billion US\$ in fiscal year 2004.

Lending for water components, per se, increased from 4% in fiscal years 2002 and 6% in fiscal year 2003, to 9% in fiscal year 2004, which is about the same level as for the whole of the 1990s.

Source: World Bank, Issue Brief Water, September 2005.

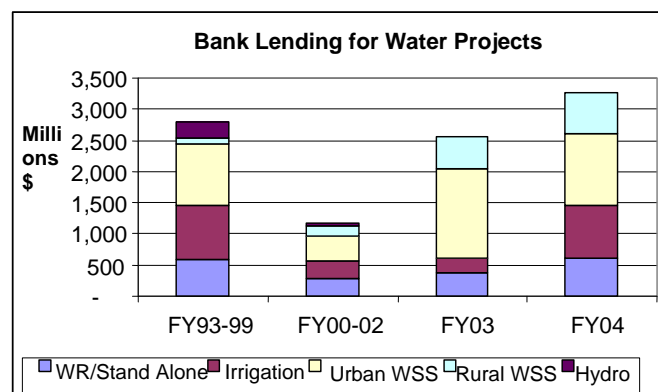
3.1. The „New Strategy”

Until well into the 1990s, the World Bank had mainly focused on supporting a publicly funded, operated, and controlled water sector. But with its 1993 policy paper for water resources management, the Bank set the course for a fundamental change in its policy (World Bank 1993). It made the Bank one of the first institutions to formulate an integrated management approach. Key components of the new strategy are the demand for comprehensive reforms of political and institutional framework, linked with decentralization, privatization of

²² Apart from the World Bank, that is the IBRD and IDA, several multilateral regional banks like the African and the Asian Development Bank promote numerous projects in the water sector. Bank lending, for instance for urban water supply, has repeatedly been subjected to the privatisation of public utilities (“conditionality”).

management and utilities, and restriction of the state to the creation of legal and institutional framework. Apart from an avowal of a stronger emphasis on environment and resource protection, and strengthened participation of the stakeholders, the importance of economical aspects in reforming the water sector is stressed. Treating water as an “economic good” – in terms of the Dublin-Principles – is regarded as a crucial prerequisite for an efficient and just usage.

Initially, the urban water sector had been at the core of this new water policy. In order to advance the commercialization and privatization, the funds provided by the World Bank for this sector increased drastically in the early 1990s (Briscoe, 2004). In contrast, subsidies for irrigated agriculture were notably reduced, since they were “in view of sinking prices for agricultural products economically hardly justifiable.”²³ Likewise, immediate World Bank involvement in major hydraulic infrastructures, like dams, declined to a large extent in large part due to fierce worldwide opposition because of their negative social and ecological effects. Instead of conventional infrastructure projects – that is, instead of “brick and cement” as stated in the Infrastructure Action Plan – environmental protection and resource management projects were increasingly funded (see box “Bank Lending for Water Projects”).



Quelle: The World Bank, Issue Brief Water, September 2005, 2

The Water Resources Sector Strategy, WRRS, (World Bank 2004b) agreed to in February 2003, represents, in the words of its main author John Briscoe, another “significant new chapter”. The new strategy is based upon the policy paper from 1993, yet has (its) general principles “pragmatically” adapted to economic, political, social and cultural circumstances, and is hence more strongly geared towards practical implementation (Briscoe, 2003a, 18f).

On the one hand, the strategy is justified with the “urgent” need for increased investment in infrastructure and services for water supply, food production and energy,” and on the other hand, with the challenge of “developing the laws, regulations and institutions to manage water resources in ways that are economically productive, socially acceptable, and environmentally sustainable”

23 (ARD Website: www.worldbank.org/rural, September 2003. Accordingly the World Bank reduced its loans for irrigation since the early 1980s from almost 2.5 billion US\$ to 500 million US\$ by 2002 (World Bank promises, three-yearly average, as per Briscoe 2004).

(Briscoe, 2003a, 18). According to the World Bank and John Briscoe, they are two priorities complementing one another: the expansion and maintenance of the material infrastructure and the “non-structural management solutions”.

Briscoe acuminates its consequences for the program and project policy in four “main messages”:

- Most developing countries require promoting both management and development of water resources infrastructure at the same time, instead of first realizing reforms, and subsequently, investing;
- A “pragmatic but principled approach” is needed, which in view of the tedious, slow, and conflict-loaded reform process will have to develop a realization strategy tailored to the specific circumstances of the so-called “political economy of reform”;
- The World Bank will have to re-engage in the development of high-reward, high-risk major hydraulic infrastructure;
- Improvement in management and access to water resources are of vital importance for ecologically and socially sustainable growth and poverty reduction.²⁴

The right mixture of investments in infrastructure, sound institutional governance and management is required to achieve water security, he claims. Especially in the least developed countries, where water resources are only minimally utilized, for instance in Ethiopia, but likewise India²⁵ and Pakistan²⁶, initially, an expansion of infrastructure ought to be carried out, meaning in particular, major hydraulic infrastructure like dams and the inter-linking of rivers.²⁷

In no other area do these new principles and approaches come together and complement one another as they do in the agricultural water sector. In recent years, this field has moved back to the top of the Bank’s active agenda. “Everybody calls on the World Bank to re-engage in water management for agriculture,” says Salah Darghouth, World Bank Senior Advisor for Water, Agriculture and Rural Development, ascribing this upgrading to the call of the water community (Darghouth, 2005a).

The increased significance of the rural water sector is in conjunction with the Bank’s rediscovery of the agricultural sector as a whole reflected in the “renewed” rural development strategy (“Reaching the Rural Poor”) presented by the World Bank in 2002 (World Bank, 2003b). This strategy aims to make an important contribution to economic growth and poverty reduction by developing a competitive agrarian sector, the diversification of rural economy, through the sustainable management of natural resources, that is, especially soil and water, as

²⁴ In the same way: the Water Resources Sector Strategy, 73. For a critical analysis of the WRSS see McCully 2002; regarding the “high-reward/high-risk” strategy: Environment Defense et.al. 2003

²⁵ John Briscoe at the IWMI Annual Meeting, early March 2005 in Anand, India

²⁶ John Briscoe, quoted in DAWN, Islamabad, 20.9.2005

²⁷ Water Security, Growth and Development. Media Background Paper. The World Bank, April 2005. The keyword of World Bank Water Week 2005 was also “Water Security”, see www.worldbank.org/water

well as the promotion of worldwide agricultural trade by reducing trade-distorting subsidies and an additional trade liberalization.²⁸

Water is regarded as a key resource in fortifying agriculture's contribution to economic growth and thus to food security and poverty reduction. Political and institutional reforms are to add to a more just distribution of water resources, the development of sustainable distribution systems and an improved capitalization of investments (Website ARD).

This new strategy was accompanied by a rather dramatic change in funding. The World Bank funds for rural development (from poverty-reduction and capacity building over fishery, resource protection and afforestation to land reforms and road works), which had reached a low level in 2002 with approx. 5 billion US\$, rose drastically to 8 billion US\$ until 2005. The biggest part of that, namely one third, goes to the infrastructure sector²⁹, followed by agriculture with 2.1 billion US\$, that is twice as much as it was at around the turn of the millennium.³⁰ Half of the money for agriculture is allotted to irrigation and drainage, compared to the 335 million US\$ three years before. For India alone, the Bank's lending for irrigation projects will increase in the next years (2005-2008) to 1.4 billion US\$, likewise to 600 million US\$ for dams, and additionally provide 400 million US\$ for sector reforms.³¹

Operating as the main creditor of many developing countries allows the World Bank to put this new strategy into practice. Several countries have since elaborated a new and comprehensive legislature for the water sector and introduced sector reforms. Currently, "tailor-made" Country Water Resources Assistance Strategies (CWRAS) are drawn up for 14 countries³², which are to adapt the water sector policy with the World Bank Country Assistance Strategy (CAS) and, where existing, with the Poverty Reduction Strategy Papers (PRSP). The result should be, according to John Briscoe, a Water Treaty that clearly states the main criteria for the Bank's lending.

To assist project managers on how to work the Water Resources Sector Strategy (WRSS) into programs, "A Sourcebook for Investment in Agricultural Water Management" has been issued (World Bank 2005).³³ In the meantime, the new policy has been implemented in a whole series of new World Bank projects for the reorganization of the water sector, including projects in India, Indonesia, Mexico, Brazil and Niger. In most of them, the subject of water management in agriculture plays a major part (see annex).

28 World Bank Website Agriculture and Rural Development (ARD): www.worldbank.org/rural. Led by the Department for Agriculture and Rural Development work on an Irrigation und Drainage Business Plan (IDBP) has been in process for quite some time now, as part of a comprehensive strategy for agriculture and food security. The IDBP however, remains far behind schedule and will be presented mid-2006 at the earliest. More specified information was unavailable.

29 World Bank, Issue Brief Agriculture and Rural Development, September 2005

30 2000: 872 million. US\$; 2001: 951 million US\$

31 John Briscoe, Consultation on the Report: India's Water Economy: Bracing for a Turbulent Future, New Delhi, October 5, 2005,

http://siteresources.worldbank.org/INTINDIA/Resources/India_Water_Strategy.pdf

32 Brazil, India, Philippines, Peru, Honduras, Dominican Republic, Bangladesh, Pakistan, China, Indonesia, Ethiopia, Kenya, Yemen and Iran

33 Another directive aid has been announced for early 2006: Agricultural Water Management: An Agenda for Sustainable Development. Directions in Development Report

3.2. “More crops, jobs and cash per drop“

So far, the urban water sector has held centre stage in the debate on commercialization and privatization, and the World Bank's part here. Compared to that the social, political and ecological problems in the agricultural sector are notably more complex and difficult. While in the case of the urban sector the main question is whether the public utilities or private companies are better suited to improve the supply and secure the access of especially the poorer population to drinking water and humane sanitation, in the agricultural sector the challenge to reform water usage and expand “water security” is so much more comprehensive:

- Especially in rain-fed cultivation there is often not enough water to ensure good yields, not to mention an increase in production. Often there are insufficient funds, capabilities and outlying conditions like secured ownership to counteract seasonal problems like varying precipitation. The fact that rain-fed cultivation in many developing countries has been neglected for years by the agriculture policy is taking its toll.
- Contrary to this the most severe problems in subsidized irrigation are due to an excessively used, unregulated water supply: a free public supply of water and unmonitored exhaustion of groundwater resources are reflected for example in arable land turning to marsh, salinization of the soil and a sinking groundwater table, which are already serious side effects of the increase in productivity with irrigated agriculture.
- In many cases, the huge public investments, as well as the associated subsidies, are only benefiting a privileged few of the population at the place of opportunity. Moreover, they are increasingly burdening the lean public budgets and make their stabilization difficult within the scope of macro-economic structural adjustment programs.
- Similar to urban supply, many public utilities in the agricultural water sector are overstrained, overburdened and corrupted.
- The scarcity of ground and surface water leads to unjust allocation and ensuing conflicts both in agriculture and between agriculture and the municipalities and industries, threatening the provision of agriculture, and thus, the livelihood of millions of families.

As the Ethiopian example (see part 2) has illustrated, for many countries and national economies, the development in its entirety depends upon the agricultural sector and thus upon water. Therefore, reforms are indeed necessary in order to tap the agricultural potential for economic development, food security and poverty reduction in a better way than has been done so far.

To strengthen the role of water in rural development is central to World Bank water policy. For agriculture, that means to improve both supply and use in order to increase productivity. Policy papers like the Water Resources Sector Strategy and the CWRAS, individual water sector reform projects, as well as the “renewed” rural development strategy „Reaching the rural poor“ prove that in doing so, the Bank mainly focuses on irrigated agriculture, massive infrastructure investments, unbundling of provision and allocation structures and the re-organisation of the

institutional and legal framework in the water sector, as well as on economic tools like cost coverage and water rights.

3.2.1. Irrigated Agriculture as a Priority

In most of the World Bank projects, reshaping irrigation is a key component of the water sector reform, as well as rural development. In addition to that, there is an increasing amount of projects focusing exclusively on irrigation in agriculture. With a new “irrigation philosophy” (WRSS, 13ff) or rather a “renewed vision” (Rural Development Strategy, 141) the World Bank promises its clients reform recipes to transform irrigation and drainage into efficient, highly productive and sustainable systems that will generate “more crops, jobs and cash per drop.” The Bank sees itself in a key position to assist client countries with these reforms.

“The World Bank’s borrowers [...] perceive the World Bank to have a unique combination of legitimacy, institutional and technical skills, knowledge, advocacy and financing power, and they look to the World Bank for leadership in revitalizing the sector.” (WRSS, 17).

Thus the Integrated Irrigation Modernization Project (PMIR) in Mexico is to assist in improving “the competitiveness of irrigated agriculture and the efficiency of irrigation water use.” The main components of this “new model” are:

- Demand driven integrated investment plans to modernize and rehabilitate infrastructure, increase productivity and diversification in high-value agro-products,
- transfer operation of infrastructure to water users,
- strengthen water users associations institutionally
- implementation of cost recovery for both, operational and capital costs,
- establishment of a comprehensive system of monitoring and evaluation.

In view of the grave problems with waterlogging and salinization of many existing older irrigation projects the Bank emphasizes on one hand the importance of improved management and on the other one, the need to invest into improving drainage, for instance, in India and China (CWRAS).

The World Bank summarizes the focal points of its technical and financial aid in the South Asian irrigation sector as follows:

- Financing the rehabilitation, modernization and construction of irrigation systems and infrastructure, including barrages, dams, and canals.
- Supporting institutional, fiscal, governance, legal, regulatory and policy reforms that are necessary to improve water resources management.
- Promoting the creation of Water Users Associations (WUAs) to encourage greater voice, participation, and eventually leadership by farmers in the operation and maintenance of irrigation and drainage facilities.
- Promoting public-private partnerships in irrigation and drainage investments and operations.

Source: Website Department Agriculture and Rural Development (ARD), Irrigation & Drainage, www.worldbank.org/rural

Apart from a better management in existing systems, like for instance in Ethiopia (see part 2), the World Bank perceives in many countries high investment needs for the expansion of hydraulic infrastructure, both for energy as well as water supply for agriculture, industries and cities. That applies, for example, to some Central Asian countries like Kazakhstan, Pakistan and India, which, according to John Briscoe, need to invest in major dam projects in order to avoid a major crisis. Yet the same would be true for Africa, he stated, where numerous new projects are underway. One essential objective of the Nile Basin Initiative (the organization of which included, apart from the World Bank, the German government, i.e., the BMZ) is to overcome the political resistance of the Nile riparian countries, in particular that of Egypt and Sudan, against new major hydraulic infrastructure and irrigation projects on the river's headwaters.³⁴ Furthermore, the World Bank cooperates with the African Development Bank, the FAO, IWMI and CGIAR in elaborating a political strategy for the agricultural sector in Africa south of the Sahara (CGIAR/IWMI 2004), which says:

“Current emphasis on demand management ignores a parallel need to improve water availability through river regulation, improved distribution and storage capacity.” (16)

Apart from building major dams, river diversion increasingly gains in importance, which is meant to compensate for water shortages in one region with water from another. This includes the Brazilian project, which diverts water from the Sao Francisco River to the semi-arid lands of North-eastern Brazil, the Wanjiazhai-Project in China, which is diverting water from the Yellow River, and the disputed Godavri project in India. Yet even the Bank admitted that a “simple economic analysis” was able to show that, for this large-scale Indian project, which plans to improve the agricultural provision in the region around the Krishna river with water from the Godavri River, “developing these water resources for irrigation may (is) not the best use of limited financial resources.” (WRSS, 62) Such high investments would only pay off if the water went into the cities and industry (see CWRAS China, 60).

The World Bank plans to win more and more private investors with Private Public Partnerships (PPP): They would, for instance, finance the profitable power generation for multipurpose dams, while the state pays all the other incurring costs and guarantees the required hydrologic, economic, ecological and social conditions, that is, for instance, the rehabilitation of water sheds or to carry out the resettlements.

34 see WRSS pp. 70ff

„We are back again!“

By pleading for a stronger commitment to investments in infrastructure, like, for example, in Ethiopia (see part 2), vis-à-vis the other donors, who would rather focus on building expertise and management, the Bank acts as the advocate for the developing countries in the name of “water security”. Yet it she is acting also on its own behalf.

As a bank, the World Bank needs clients, who raise loans and pay interest. But with the “good clients”, the threshold countries, the Bank fell behind the private investors in recent years. Governments and private companies alike regard the Bank as a less preferred source of financing due to its costly and risk-averse approach, the WRSS states. In the meantime, the Bank allowed Brazil and India to be “pushed” by them again into providing massive lending for dams. John Briscoe, a long-time supporter of a stronger Bank commitment to major dams, proudly states in his talks, that the Bank is “back again”!

Rain-fed agriculture, however, has a back seat in the new water policy. Nevertheless, agronomists, like, e.g., IFPRI, have been persistent in stating that potentially, rain-fed cultivation contributes significantly to an increase in overall food production, by both improving the use of soil and water, as well as attaining higher yields. In the opinion of Mark W. Rosegrant from IFPRI, for example, “rainfed agriculture also emerges as a potential key to the sustainable development of water and food.” (Rosegrant et al, 2002b, 205).

By adapting integrated management methods, like, e.g., “rainwater harvesting” or other simple irrigation methods as they are being successfully used in India or Ethiopia, crop yields in many regions can even be increased and water availability and soil fertility be improved. At the same time, higher productivity in rain-fed cultivation reduces the need to expand irrigation which always poses the threat of depleting the surface or ground water it uses. Moreover, rain-fed agriculture offers the best approach for rapid poverty reduction.

“Upgrading rain-fed systems in developing countries through additional water and water productivity gains can go a long way in reducing poverty and food insecurity for the rural poor.” (Molden/de Fraiture 2004, 16)

3.2.2. Withdrawal of the State

Similar to the commercialization and privatization of the urban supply since the early 1990s, the need of reform in irrigated agriculture is justified by the Bank due to the poor condition of many public institutions. Water authorities, for instance, controlling and directing to a large extent the distribution of water both in agriculture and also between cities, industries and agriculture, are for the most part regarded as especially bureaucratic, inefficient, and corrupt, as well as inefficient.³⁵ Investments in irrigation agriculture and its management represent a considerable financial burden for the national budget. Among other things the reforms are meant to relieve the state financially and create the prerequisites for

³⁵ Thus it says in the “Manual for Investment in Agricultural Water Management”: “In irrigation, government planning and top-down solutions often led to poor choices, high costs, poor service, low cost recovery, and a culture of dependency on the state.” (World Bank 2005, 4)

mobilising additional financial resources for the investment needed for maintenance, expansion and increased efficiency.

To “unbundle” supply and distribution infrastructure and to develop an institutional model, where the roles and responsibility of the different players (i.e. especially the state, users and private sector) are re-defined, is essential to the framework of reforms advanced by the World Bank in the rural water sector.

As facilitator, the state is to be largely restricted to create the conditions for operational water use. That includes above all:

- Establishment of regulatory framework for the allocation of water based upon water usage rights, including the need for ecosystems (WISMP Indonesia),
- The provision of “raw water” in sufficient quantity and better control of pollution and water quality, for example, with economic regulation instruments (WISMP Indonesien),
- Establishment of a comprehensive system to monitor and evaluate development in the water sector (PMIR Mexiko)

The World Bank offers its support to help strengthen, reform or re-establish the institutions required for that on national, regional and river basin watershed levels.³⁶ It is intended to promote, for instance, accountability, transparency of regulatory decisions and a competitive environment.

3.2.3 “Autonomous” Management

The management of the irrigation system as such is to be transferred from the mainly centralized bureaucracies to local agencies, autonomous institutions, user’s organizations or private companies:

“It is necessary to have autonomous, cost-efficient, financially self-sufficient, well-managed and user-oriented irrigation and drainage entities to deliver efficient and reliable services” (Water Sector Restructuring Project Madhya Pradesh, PID, 6).

In this context, the preferred solution is the “Participatory Irrigation Management” by Water Users Associations (WUA). In the case of agriculture, the transfer of increased rights and responsibilities, which is a credo of principal in the World Bank reform policy, refers mainly to privileged farmers and their organisations.³⁷

The buzzword “privatization” seldom emerges in the World Bank water policy for the rural sector. Salah Darghouth, World Bank agricultural senior advisor,

³⁶ Sometimes this assumes rather bizarre shapes: In the Indian state of Madhya Pradesh for instance, the Water Sector Restructuring Project inaugurated August 2004 is first of all occupied with the organisation or reform of various institutions or rather the elimination of redundant staff (9): That includes a Project Steering Committee, an Empowered Committee, the Project Implementation Coordination Unit of the Water Resources Department, the SwaRA, in charge of water allocation, the SWaRDAC and autonomous regulation authority SwaTReC, meant to observe costs and proceeds as well as to fix rates for raw water, with the aim of making activities in the water sector financially sustainable; furthermore Basin Development Boards, the reorganisation of Water Resources Departments, etc.

³⁷ However experiences with WUA in World Bank projects repeatedly turned out negative, given that they came apart after completing the project. Even Salah Darghouth conceded during the Water Week 2005: “We have oversold WUA as the solution”.

explains, that without reliable raw water provisions and cost-covering tariffs, and in view of wide-spread poverty and underdeveloped marketing conditions, the risks for foreign and domestic private investors are too high. He sees the most likely entrance opportunities for a stronger involvement of private companies in the service-providing sector or in PPP projects, since investment needs and economic risks here are low.

In the interim, the World Bank is quite willing to focus on heightened involvement of private investors.

“While many donors are involved in rural water supply and irrigation, the World Bank has a comparative advantage in pushing forward a policy agenda at the central level which promotes private investment in irrigation.” (PIP2 Niger, 19)

In Madhya Pradesh, India, options are examined, like the leasing of irrigation systems to private operators and the establishment of financially independent, decentralized irrigation institutions, which could be a preliminary stage to privatization. The Bank understands the promotion of Public Private Partnerships (PPP) in investing and operating irrigation and drainage projects as a focal point of its technical and financial aid in South Asia (see box below). In his talk on future perspectives in the public-private responsibility assignment he gave at the World Bank Water Week 2005, John Briscoe empathically questioned the rationale behind public irrigation systems.³⁸

And now all this commercializing and privatizing in irrigated agriculture produces its first results: in Morocco a major irrigation project of the World Bank’s sister organisation International Finance Corporation (IFC) has recently been realized for the first time as a PPP (see insert). True to form (as before in privatizing urban water supply) expectations are running high: Hassan Benabderrazik, general secretary of the Moroccan ministry of agriculture, expressed great satisfaction, saying:

“By bringing in the private sector, Morocco will benefit from the integration of capital and management expertise from the private operator, which should produce cost-reducing efficiency”.

But in the opinion of Salah Darghouth, private investors and companies should increasingly move into the picture as the “third party” (apart from public institutions and farmers) in the management of irrigation systems, which as such would remain in the possession of water users associations or individual farmers.³⁹

38 There are World Bank projects in rural water management with “incentives for the private sector and private operations” for instance in Vietnam (Bang Hung Hai), China (Guanzhong) and Mali (Office du Niger). The West Delta Irrigation Infrastructure Development Project in Egypt “will assist GOE (Government of Egypt) develop and implement an appropriate institutional, regulatory and financing model to supply surface irrigation water available on the basis of full cost recovery and private sector participation.” Quoted by: www.WorldBankWatch.org (March-June 2005)

39 The World Bank is preparing a background paper on PPP in I&D, examining the relevant prospects in countries such as Brazil, Madagascar, India, Turkey and Middle East, Northern Africa and Niger (see Darghouth, Water Week 2005). Further Information was not available.

Morocco: The first Public-Private-Partnership-Project in the Irrigation Sector

The International Finance Corporation (IFC), the private sector arm of the World Bank Group, announced in August 2004 that the government of Morocco chose - in a highly competitive bidding process - a private partner for the irrigation project in the citrus-growing area of Guerdane, Taroudant province. The bid was won by a consortium led by the Moroccan industrial conglomerate, Omnium Nord-Africain (ONA).

The consortium received a 30-year concession for the construction, co-financing, and management of an irrigation network. The network will sell water from a dam complex, located some 100 km from Guerdane, to some 600 citrus farmers. The conveyance pipe and irrigation network will cost an estimated US\$85 million to build, of which the Moroccan government will provide around US\$50 million - half as a loan and half in grant form. In addition to the subsidized investment costs, the water tariffs will also be subsidized, because commercial tariffs covering the total cost of provision would be too expensive for the citrus farmers. That is to say, public funds will guarantee the profitability of private investments.

Source: World Bank Group, DevNews Media Center, August 19, 2004, and Salah Darghouth Water Week 2005 (See also similar projects in: Egypt, Senegal, Saudi Arabia, India (Uttar Pradesh))

3.2.4 Cost Recovery and the Price of Water

A crucial component of the new commercialization policy in the water sector is the demand for cost coverage for the allocation and operation by the users. So far, the allocation of water in the rural sector has been largely for free or the rather minimal user's fees are based on the size of the irrigated area and not to the amount of water used. Water meters or a share in the massive investments in irrigation systems are largely unknown. Even in the industrialized countries, the state pays the lion's share of the investments. In contrast, many farmers must pay the costs for groundwater irrigation with deep wells and pumps, whereas the price for electricity and diesel is often highly subsidized. In traditional farming and rain-fed agriculture, simple irrigation methods, like rainwater harvesting or diverting water from rivers with barrages and small canal-systems, are mainly carried out through self-help cooperatives.

Pricing is accredited with multiple functions in the reform discussion:

"Water pricing is an essential instrument to enhance the sustainability of the resource, expand services, including operation and maintenance in irrigation systems, and to maintain water resources management functions, etc." (World Bank, Water – A Priority, 20, see as well, WRSS, 16)

On the one hand payment for the allocation of water is to contribute partially or completely to cover the cost and thus relieve the state financially ("financial function"). The World Bank is expecting from the cutback in subsidies a relief of the national budget, and promises its borrowers, i.e., the governments, as much. According to the Bank's data, the water sector project in the Indian state of Madhya Pradesh, implementation of a better cost recovery would notably reduce the costs for the state's budget, currently amounting to 28 per cent.

Moreover, the Bank expects greater economic sustainability as a result of greater responsibility on part of the users for the operation and funding of irrigations system (see Demand Responsive Approach).

In addition to that, water pricing is regarded as a signal and indicator for scarcity and thus as an incentive for more efficient water use, especially if it is priced based on water units used ("economic function").

"Key to inducing higher water efficiency gains in all sectors is introducing market (or market-style) incentives into water use decision-making. Incentive prices for water could have a major impact on water withdrawals and consumptive use, thus freeing water for environmental use." (Rosegrant et al 2002b, 203)

The prediction is that increased rates will encourage the farmers to adjust their consumption downwards, for instance by shifting to crops that need less water or high-value products yielding better prices. Thus according to Rosegrant "innovative water pricing policies [...] will encourage water-saving innovation" (Rosegrant/Cline 2002).

This is accompanied by the belief that water pricing could likewise impact the allocation of water, both within agriculture, that is, e.g., among different agro-products, as well as between the areas of use like agriculture and municipalities.

Finally, it's expected that, price mechanisms would encourage the private sector to invest their financial resources and management expertise in the development and use of water resources.

The World Bank is advancing cost recovery in its co-financed projects in several areas simultaneously, cumulating in price-boosting effects on agriculture:

1. The World Bank introduced consumption-oriented prices in projects in the Philippines, in China and in the Indian states of Madhya Pradesh and Maharashtra for raw water that are to fully recover the costs for allocation (CWRAS China).
2. Within irrigation networks, users are to increasingly take on the costs for operation, maintenance and replacement investments. In the Indian state of Maharashtra, where the World Bank supports a Water Sector Improvement Project focussing on irrigation agriculture⁴⁰, a Water Resources Regulatory Bill announces hefty price increases on water tariffs and irrigation costs that are meant to yield full cost recovery for the irrigation management, administration, operation and maintenance, plus part of the capital investments. (in: The Hindu, 27 April 2005)
3. Simultaneously subsidies for energy or diesel, which from the Bank's point of view, contribute to the depletion of groundwater, are to be reduced, making the use of pumps more expensive for the farmers and thus increase irrigation costs.

In contrast to the urban supply sector, the World Bank considers a full cost recovery in the rural area as still unachievable. Thus the Bank admits that in case of the Private Irrigation Promotion Project (PIP2) in Niger, which is directed towards an increase in productivity and profitability of high-value, irrigated agro-products from small-scale agriculture with simple, inexpensive technologies:

40 Within the project's scope – funded by the World Bank with a loan of 325 million US\$ - the WUAs are expected to pay the raw water, the cost for operation and maintenance as well as a proper co-payment to the total of the project's costs.

“Possibly the greatest challenge for the project will be to make irrigation technology affordable for the framers.” Even in situations like this where irrigation is possible mainly as a result of cost-effective technologies, farmers will hardly be able to afford the investments and cost for necessary energy and diesel, which will increase considerably due to cutback in subsidies demanded by the World Bank, because productivity and prices for the cultivation for products like rice is often much to low.

At the same time, it is evident, that water prices will rise over time and therefore also the financial burden to the farmers. R. Maria Saleth (IFPRI) for example sees that “there is a vast gap between actual water rates and the economically ideal prices for water”, and, she estimates, that those increases presently discussed, would skim off not more than 10 percent of the additional income the farmers hope to achieve through irrigation, without even taking into considering the appreciation value of the land (Saleth, 2001).

3.2.5. Water Rights – “Cornerstones of Water Management“

Implementing cost recovery and price increases for use serve as a first step towards introducing free-market elements into the predominantly public (command-and-control) management of water. Yet water pricing as such, is generally regarded as insufficient for optimal regulation of efficiency and allocation, and to balance supply and demand. Rosegrant and Cline point out, that the price of water is inelastic, and that prices high enough to induce significant changes in water allocation (or recover capital costs) will severely reduce farm income (Rosegrant/Cline 2002). Thus apart from introducing cost-coverage elements and higher prices, the World Bank is also pushing for the establishment of clear individual or collective water rights for the customers, like for instance in the sector reform projects in Sri Lanka⁴¹, Niger, Peru, India and the Philippines. One objective of the Private Irrigation Promotion Project (PIP2) in Central African Niger is to change the existing rights to natural resources, which are partially based on traditional, and partially on modern, law, in a way so that they offer a clear directive for water management and irrigation. The same is true for the water project in the Indian state of Madhya Pradesh, that is based on the assumption that “improving the productivity of irrigated agriculture won’t be feasible without an independent fixing of tariffs, as well as reliable and enforceable water rights”.

In doing so the Bank emphasizes, that this is to be only the right to use, not the right to own water, which is to remain in the public domain (WRSS, 16).

The expectations associated with the assignment of water rights as “the cornerstone of efficient and equitable water managements” (IFPRI) are almost exceeding the functions ascribed to the new price policy. As the World Bank explains:

“The assignment of water rights is essential in ensuring the long-term vision of harnessing the water resource, putting efficient and equitable allocation mechanisms into place, building structures, motivating good performance and providing for effective drought and flood management. [...] Water rights also

41 Gunatilake/Gopalakrishnan 2002

incorporate obligations by stakeholders to take care of their resource” (Water – A Priority, 20).

Guaranteed and clearly defined water rights are regarded, like guaranteed land rights, as an incentive for owners to invest in water-saving technology. Likewise, positive effects are expected for the groundwater management, which proves to be particularly difficult, because the resource is invisible, constantly changing, and there is only minimal data available on the quantity and sustainability of profits:

“Incentives like water pricing and water rights could improve services and practices that, in turn, would raise production and productivity and also promote sustainable use of the resource base, including the protection of environmental services.” (www.worldbank.org/rural, accessed 9/2003)

But water rights are also advocated as a precondition to soliciting increased interest by private companies to invest in the water sector.

Compared to water prices, which are often “politicized”, water rights and their transfer to, or management by, user associations or other private users offered the advantage of “privatizing” the debate on the amount of that charge (World Bank 2005).

Moreover, recognizing and managing water rights would give rise to a series of fundamental and healthy changes, says the WRSS:

First, those requiring additional resources (such as growing cities) will frequently be able to meet their needs by acquiring the rights of those who are using water for low-value purposes.

Second, there are strong incentives for low-value water users to voluntarily desist, making reallocation both politically attractive and practical.

Third, establishing formal water rights would increase the pressure to improve the data base, indispensable for water management. Because apart from legal reforms, precise quantitative definition of user rights and reliable stock-taking of the water quantities available are vital for the establishment of water rights.

However, currently the water right situation in most countries resembles an intricate, chaotic mesh of diverse legal claims and systems like customary law, traditional community law and concepts of modern ownership. In many cases, rural water rights have priority over other uses, like in California, where they are linked to the historical seniority of the settlers; or they are they bound to land ownership and thus linked to property laws. But often water rights have not been established, since water is regarded a “free good” belonging to nobody, thus withdrawal occurs arbitrarily and irregularly, and frequently not in a sustainable way.

In many countries the reform of water rights has been accessed by separating the rights of water use from the land rights. In Chile, water rights were already assigned independently from land ownership within the scope of a comprehensive structural adjustment and privatization program in 1981, while simultaneously promoting an unrestricted trade of those water rights. The new Zimbabwean water law, in the formulation of which the German Gesellschaft für Technische Zusammenarbeit (GTZ) had been instrumental, has implemented this separation

as well. Elected catchment councils, supposed to represent all user groups, are in charge of the allocation of rights.

It seems that the establishment of WUAs is frequently used for a re-organisation and re-allocation of water rights. It was in such way that, water rights in Mexico were assigned exclusively to newly founded organizations instead of being tied in with existing water agencies and water rights. Not only did this cause a considerable amount of bureaucratic effort, cost and confusion, it also meant dispossession of traditional users (Palerm-Viqueria 2005). At the same time, the new National Waters Law promotes the division of communal water rights into individual members, who are allowed to utilize their shares rather freely. The generation of “water markets” in the irrigation districts is explicitly intended.⁴²

This linking of “modernization” of irrigated agriculture with the establishment of water rights is in sync with the World Bank:

“Investments in new or existing hydraulic infrastructure and irrigation projects provide a chance to introduce the basic concepts needed for the issuance of water entitlements.” (World Bank 2005, 78)

At the same time water rights should preferably be coupled on “farm level” (ibid, 71). With such an individualization, like, for instance, the one realized in Mexico, and the flexibility achieved by the separation of water and land rights, the stage is set for an easier transfer.

Tanzania: A Failure

Ten years ago the government in Tanzania, with funding from a World Bank loan, started to build a new system of water rights to improve the river basin management and the resulting public proceeds. But contrary to expectations, the new system failed as a registration tool, a taxation toll and a water management tool, and has contributed to aggravating rural poverty. Corruption diminished the expected proceeds, users, making reference to their payments, diverted more water than they were entitled to, thus aggravating the conflict between users on the headwaters and those on the lower reaches, the latter ones deprived of water in spite of their permitted allotment. While “modern” users like those in the towns and the large plantations are more or less capable of adjusting to the new system, it proved counterproductive in respects for the small-scale users, accustomed for decades to their own traditional principles for water use and management. The study recommends as a solution the need to accept existing traditional rights and to integrate them more effectively into the new system. Regarding distribution conflicts, the study suggests the “pie” to be enlarged by expanding storage capacities.

(Source: van Koppen et al 2004)

3.3. A New Era of Commercialization

The World Bank makes the claim to fundamentally and comprehensively improve the management of the increasingly scarce water resources with its new water policy, and thus achieve higher economic growth, poverty reduction and greater food security. Parallels between the aspired and funded restructuring in the rural

⁴² See Schmidt 2005. In the same way new farmer associations were established in Sri Lanka, where the World Bank has been exerting wide influence on the national water policy for some time now, as a mechanism for the establishment of saleable water rights. See Brot für die Welt, Kampagnen-Rundbrief 1/03

water sector and the commercialization and privatization in the urban water sector are highly visible: whereas the former is being pushed with the claim of transforming the sector into the driving force for economic development and poverty reduction through efficiency and productivity, the latter finds its legitimacy in an increase in efficiency and better provision of the poorer population. In both cases, the state is expected to continue providing a framework, but leave the management to the private economy, which are allegedly more efficient players, and in doing so, displace the previous command-and-control approach in water use and distribution with private and free market principles and incentives.

Another similarity is that the reorganization focuses on areas potentially attractive for private investors: this happens to mean the water supply in the cities, especially in the big cities, and for the most part in the better and well-funded neighbourhoods and for industry, and not for the poorer districts or the improvement of sewage disposal in those districts; and it means modern agricultural irrigation in the rural sector, often concentrated in the hands of richer farmers, and not the majority of farmers, most of which are small scale farmers, still traditionally managed and rain-fed.

But there is a crucial difference in the nature of the rural water sector and its problems: In its overall social importance and the extent to which it is embedded into economic, social and ecological cycles and political structures, it is far more multifaceted than the urban supply systems, and, therefore requires a considerably more comprehensive and complex political approach.

Another vital difference: Unlike the urban water sector, whose modest attractiveness for the envizaged private, in particular foreign, investors only became apparent in the course of reorganization⁴³, it is clear from the outset, that the rural sector has little appeal for private investors in the current situation. In most cases, the required large long-term investments, the resulting low returns due to low prices for agro-products, especially for staple foods, a burdensome bureaucratic-administrative entanglement, as well as a lack of or insufficient infrastructure present unfavourable conditions for for the quick and guaranteed profits investors want. That rather scales down the expectations for a quick mobilization of additional financial resources via new investors for rural water development, in contrast to the early years of privatization of urban supply systems.

Consequently, the priority of the rural water sector is to set a stage of favourable conditions to attract private investors: Institutional reforms, withdrawal of the state, management transfer to non-governmental agencies, introduction of cost sharing, water pricing and user rights, as well as promoting a shift to “high-value” products would contribute to setting that stage. Public Private Partnerships are to assist in reducing the initial risks with public funding and guarantees.

⁴³ See for example the corresponding publication of the Public Services International research institute: www.psiru.org

New Business Areas for Water Groups

That private water companies have an interest in the market of agriculturally used water, proves a talk by Pierre-Alexandre Lacarelle of the Suez Water Resource Division, at the Sixth International Seminar on Participatory Irrigation Management in April 2002 in Beijing. There PPP is hailed as “the preferred approach in developing countries” to facilitate private participation investments for construction, management and consultancy, starting with “resource mobilization”, with, e.g., dams, over water transfer up to the irrigation infrastructure. The Suez Water Resources Division as such manages an irrigation PPP in Lyon, France.

One requirement for said improvement of investment conditions and subsequent mobilization of private investments is the establishment of the necessary legal and regulatory framework, like the ones that accompanied commercialization in the urban sector.

“Reforming public sector agencies, which currently manage most of the world’s large irrigation systems, is arguably the number one priority for improving overall performance of the irrigation sector. As with other infrastructure services, increased accountability and a competitive environment are vital for improving performance” (WRSS, 15).

These requirements include, above all, the commercialization of water as such, it being the most important production good besides soil and seeds. Apart from institutional and legal reforms, economic tools like cost recovery, water pricing and user rights will contribute to generating the lacking “water security”, increasingly featured as a central issue by the World Bank in recent times, given that it affects the security of private investments.

With the measures implemented by the World Bank in the water sector, as part of the sector reforms promoted by the Bank altogether, it decisively pushes forward the prerequisites for treating water as an “economic good”. True, water as such is not to be privatised. But the designated water rights turn water *de facto* into private property, even if it is, like every property, subjected to certain public restrictions and regulations. That lays the foundations for systematic trade with water or rather water rights, by what costs, supply and demand, as well as possible profits, would determine the allocation between the different users and usages:

“If water rights are tradable, water markets can develop, helping inter-sectoral transfer and optimizing economic incentives by raising the market price to match opportunity cost.” (World Bank 2005, 10)

This constitutes the real scope and new quality of the initiated reforms. They herald a change of system, the harbingers of which appeared already in the urban water sector, with grave results not only for agriculture, but the water sector altogether. In practice, serious distortions in water allocation between the different sectors, as well as within agriculture as such, are imminent due to the initiated free market tools, which would impact the agro-production of staple foods and increase poverty.

4. The Water Market Syndrome

The World Bank's ambitious interest in commercializing water goes way back. As early as the mid-90's, John Briscoe, senior water adviser at the World Bank, had announced as the key target of these neo-liberal expectations that "the ingeniousness of the market approach" would help to solve the complex tasks of a comprehensive and integrated water management. Water markets were "a brilliant solution" for the problem of synchronizing practical and economic water management, he stated (1996, 21). Instead of public bureaucracies, the "invisible hand" of the market would manage to secure both the provision, as well as the efficient and considerable handling of the vital, scarce resource— elastically, demand-oriented and fair.

The establishment of tradable water rights and water markets is hailed with a whole bunch of alleged advantages. Firstly, it would help advance the necessary increase in efficiency and agro-production:

"An efficient system of water rights and volumetric delivery, which can support a market of these rights, has the potential to become an incentive to increase efficiency (less efficient users can transfer water temporarily or permanently to more efficient or higher value users)". (World Bank, Water – A Priority, 12).

The WRSS promises, that in this way the allocation conflicts and thus their potential political brisance can also be solved elegantly and economically:

"Reallocating water then becomes a matter of voluntary and mutual beneficial agreements between willing buyers and willing sellers, and not a matter of confiscation or an endless search for ever more costly new sources of supply." (WRSS, 24)

Another vital advantage: the water would flow there, where it holds the "highest value" and thus the highest economic use:

"In well-regulated river basins in the arid areas of Chile, the water markets function as one would wish: water is traded from lower-value uses to higher-value uses; prices are responsive to both temporary (seasonal) scarcity, as well as longer-term scarcity; trading is quite active" (Briscoe 1996, 21).

Moreover, the trade with water would balance the mostly weaker position of agriculture in the allocation battles with the cities by turning water into a source of revenue, for instance, for poorer farmers with water rights:

„ The question is not, whether water will move from agriculture to households and industries, but whether this transfer will be done in a way that leads to more efficient water use, and that protects farm incomes. Key reforms to achieve fair allocation are establishment of secure water rights and the implementation of non-punitive economic incentives" (Rosegrant/Ringler, in: IFPRI Forum, 8).

Finally, one expects that by establishing water markets to promote investment and employment, "investors would be assured of access to secure supplies of water".

With the promise of profit, it is expected that the interest of the water-right holders in a sustainable, comprehensive resource protection would grow. The WRSS

mentions the private water companies in Manila as an example, which have initialized a program for soil and water protection because they recognized that their raw water assets were jeopardized by erosion in the watersheds (WRSS, 66).

4.1. The Political Economy of Reform

Informal water markets are long-standing reality in many countries: thus it is estimated, that half of the farmers in India temporarily buy groundwater from their neighbours. Additionally, there are approaches in California, Spain, Australia and Mexico to regulate a market-type water sale, and in China the commercial water markets have been in existence nationwide for twenty years.

The evaluation of the water trade and market experiences so far – many of which were commissioned by the World Bank⁴⁴ – show that it is necessary to establish adequate amount of legal, institutional, and infrastructural frameworks and conditions, without which “the more extreme variants of privatization, such as full water pricing and unregulated market allocations, are likely to do more harm than good” (Perry et al 1997:15). These are above all:

- A management approach permitting active participation of water users, e.g. in the distribution of water;
- a reliable and efficient system of user’s fees (cost recovery);
- clearly defined and enforceable usufructuary rights, since “effective water markets and water pricing are utterly dependent on secure and effective property rights in water” (Perry et al 1997:12), whereby traditional and existing user rights should be determined and taken into consideration;
- institutionalization of market processes, including an infrastructure distribution net work allowing the water to get from the vendor to the buyer;
- an institutional framework securing the completion of contracts and regulation of entities to prevent negative impacts of “market failure”, institutional framework containing mechanisms which guarantee abidance of contracts, e.g., water councils or courts, and regulation authorities, capable of protecting “Third Parties” from negative effects;
- reliable, detailed information regarding available water quantities and systems of consumption measurements.

Plus the material prerequisite that sufficient “goods” will be available, either through water release from agriculture as a result of an increase in efficiency and economization, or by tapping new resources with dams. For the most part, these prerequisites align largely with the World Bank policy in the rural sector.

Whereas, exchange in limited areas takes place rather easily, the comprehensive development of water markets requires an adequate infrastructure. That includes, on the one hand, developed water transfer systems between suppliers and buyers, and on the other, reliable information in supply and demand. It requires an allocation system, authorizations, licenses and property deeds. The transference

⁴⁴ Such as Easter et al. 1999; Marino/Kemper 1999, Thobani 1997; Simpson/Ringskrog, 1997; Kemper 2001, Brehm/Quiroz 1995

of rights has to be registered and their exertion needs monitoring. Controls are to prevent that more water is sold than there is available. The future of the market-based water economy in most countries rests on how quickly the institutional reforms are undertaken, Saleth claims⁴⁵. He conceded that the implementation of such fundamental structural reform changes certainly involved huge costs, but were equally worthwhile:

“International experience shows clearly, that the promotion of intra- and intersectoral water allocation through markets in tradable water rights can have financial, efficiency, and equity gains far higher than the costs of transacting the reforms”. (Saleth 2001,2)

A serious obstacle to carrying out this system change in the water sector, resulting from the commercialization of water rights and the establishment of water markets, is that politically, it is a hot potato. Renunciation of the current management approach, which consists of a combination of public-administrative control and laissez-faire, could become the match in the powder keg of conflicts between the various regions, populations and areas of use. The World Bank is quite aware of that. The question of water rights, John Briscoe pondered during Water Week 2005, is one of the three “most difficult and controversial issues” in the critical public’s perception of the World Bank, along with its role in the construction of major dams and as a harbinger for the participation of foreign financial interests in the urban water supply in developing countries.

An example for these difficulties, likewise experienced by the World Bank, is the aspired cutback in subsidies, the enforcing of increased prices and cost recovery. In commercializing and privatizing metropolitan provision, water pricing proved time and again to be the essential stumbling block – in Cochabamba, Bolivia, in the Philippine capital of Manila, in Jakarta, and many others cities. On the one hand, it incites political resistance in the user groups and the civil society, but also in public entities fearing the political effects of increased prices. Then again, the fixing of tariffs, which effects both economic and social concerns, is a permanently contentious issue between the managers and the regulatory boards. This issue has frequently been the reason for multinational utility companies terminating their existing agreements or demanding extensive remedies in their favour.

In agriculture, the degree of cost recovery still remains considerably lower than in urban supply; in many public irrigation projects the farmers receive their supply *de facto* for free. At the same time, price increases in the agricultural sector are much harder to enforce than in the cities. Likewise, the pricing and realization of a “fair” price and tariff systems in rural areas are so much more complex. Thus, the farmers’ demand for irrigation water is not “price elastic”, i.e., farmers can only react to increasing prices to a limited degree, by, for instance, absorbing higher costs with water economization. Moreover, any water price high enough to cause significant changes in water distribution or recovery of capital investments, would

45 Some of said institutional prerequisites for working water markets are the same as required for a reform of the so-called “administrative water management approach”, like stock-taking of water resources, regulation and control of water withdrawal or involvement of water users in the management of irrigation systems. Others specifically correspond to the creation of water markets like the establishment of tradable water rights, adequate infrastructure and transaction mechanisms (Kemper 2001). Moreover, the regulation of nation-wide water markets or even across the border transfers with their numerous players and transactions would make high demands on public regulation.

drastically reduce the farmers' income, especially in food crops (Rosegrant/Cline 2002, 7).

Implementation of the cost recovery principle in agriculture is an example for the "new pragmatism" in the World Bank water policy. Whereas, in the urban sector users still have to pay the full cost of water, the Bank recommends "realistic" approaches and "greater flexibility" -- "the art of the possible" -- in the rural sector. They aim merely to cost recover initially limited to operation and maintenance, then gradually to include smaller replacement investments, like new hand pumps, and steadily to encompass privatized consulting services. That signifies that in the future cost sharing between users and state will take place. Mostly, a co-payment of 10 to 30 per cent is required of the small farmers, which can be in the form of manpower.

Similar problems are emerging in the re-organisation of water rights. The World Bank concedes:

"There is no unanimity on the concept of water rights, for some see this as an unhealthy commodification of a public good. Nor is it simple to introduce rights-based systems for a fugitive resource with deep cultural implications in administratively weak environments." (WRSS, 16).

In view of the potential conflicts, the restructuring pleads, according to Karin Kemper, who is in charge of preparing the CWRAS for Bangladesh, for an "incremental process of change" (Kemper 2004b). Initially, "water measurement systems, defined (though not tradable) water rights, and water user participation" should be "[put] into place"(2001)⁴⁶. Scientists Rosegrant and Ringler of IFPRI recommend using the state as a broker until the market is sufficiently developed (see box: The State as Water Broker)

The State as Water Broker

Fortunately, water-pricing systems can be designed in ways that introduce incentives for efficient water use, recover operating and maintenance costs, and protect or even increase farm incomes. Our recent research suggests that a water brokerage system, with a river basin authority brokering water trades, could meet these conditions and be politically and administratively feasible. A base water right would be established at major turnouts to individuals or groups of water user, which would regulate distribution within the group. A fixed base charge would be applied to the initial quantity of water, sufficient to cover operation, maintenance, and longer-term asset replacement costs. The brokerage agency would then broker water trades. For demand above the base water right, users would pay an efficiency price equal to the value of water in alternative uses; for demand below the base right, users would be compensated at the same price for unused water." (Rosegrant/Ringler, IFPRI Forum March 2004, 9)

Likewise World Bank itself assures, that it is only starting to accumulate „practical experience in the legal and administrative machinery for setting up and managing rights-based systems of water management" (WRSS, 16). For instance in Manila, the Bank prepares together with private utility corporate groups and authorities

⁴⁶ Similarly Saleth: "A realistic strategy for water pricing reform involves an incremental approach that sequences reform components appropriately, focuses first on cost recovery, and gradually broadens to address the economic and allocative role of water pricing" (IFPRI 2001).

mechanisms for water allocation within the framework of transferable rights (see box: Corporate groups as driving force for the water market). In other parts of the Philippines, pilot projects on how to transfer water rights temporarily or permanently are also in force (CWRAS Philippines).

This gradual approach is what the Bank is concealing with its new catch phrases “pragmatic but principled approach” or “political economy of reform”. After their in part disastrous experiences with commercializing urban supply, the Bank has doubtlessly learned a lesson: a whole variety of possibilities or country specific strategies have taken the place of “blueprints”, showing more consideration for the individual circumstances, needs and antagonisms. The central issue is no longer vision, but the way: “how to move from here to there?” (WRSS 60) Or rather pragmatically: “[Pick] the low-hanging fruits first, for instance, by starting with temporary trading in well-defined systems, where good infrastructure is in place“ (WRSS, 25). But quite obviously, the real goal is by no means abandoned. In spite of difficulties and high political, administrative and monetary transaction costs, the World Bank regards the establishment of water markets as a „long-term solution“:

“One of the many virtues of a market-based system is that, once started, there is a strong demand for better measurement, transparency, regulation and information. And all such established systems, often after initial adjustments, are working reasonably well. In none of the countries that have adopted such systems is there any thought of returning to the previous allocation procedures.” (WRSS, 24f)

4.2. Re-allocation: Water for the Cities

Cities and industry rarely possess their own sufficient local water resources, such as groundwater, lakes and rivers, to guarantee provision. They have always drawn their water from rural areas, which with increasingly greater distances and costs, frequently increasing disproportionally with growing need. This is presently the cause of many conflicts, especially in agriculture.

- The Angat Dam supplies water to both the inhabitants of Metro Manila and for the irrigation of about 30,000 hectares of land. During a long-term drought in the late 1990s, the water of the farmers was turned off so as to maintain the supply in the Philippine capital.
- In rural regions of South India, mineral water bottling plants of companies like Coca-Cola, withdraw in exchange for a minimal licence fee such an enormous amount of groundwater, that the wells of the adjacent villages, like e.g., Plachimada in Kerala, have dried up.
- Chilean copper mines, the coal mining in the Southwest of the USA, and the extraction in India of Bauxite for large new aluminium works belonging to foreign companies, use substantial amounts of water, often groundwater, with grave effects on mankind and Nature (Zimmerle 2005).

So far, water for irrigation, municipalities, power generation and industry is allocated by public water agencies, mostly for free or in exchange for small fees. Cities and industries already get preferred treatment over the rural regions, as the example of Manila has demonstrated. And their needs will rapidly increase over

the next years due to growing populations, new companies and higher living standards. Even now, private companies, like in Manila, are complaining that they don't receive enough water to satisfy their needs, and consequently, suffer profit losses. Hence, new dams are being planned or already under construction for the Philippine capital, for Maputo, the capital of Mosambik, and other metropolitan areas.

The establishing of tradable water rights and water markets would replace the administrative-bureaucratic allocation oriented towards "opportunity costs", as they are called in economic lingo.⁴⁷ The pricing won't be regulated by the actual cost of provision but by the market, i.e., by supply and demand:

"The existence of a water market means, that behavior is not driven by the financial cost of the water, but rather by the opportunity cost – if the user values the water less than it is valued by the market, then the user will be induced to sell the water". (Briscoe 1996, 21)

It would signify that more water would flow into cities and industries, because there, the demand/value is bigger, and consequently the better price offered. At the same time, the buying power to realize such prices is considerably higher in cities than in rural areas. That makes it a stronger incentive for those who have rights to use water to sell them, for instance to urban supply systems or energy generators. The reallocation in favour of cities and industries, which is taking place largely unchecked in Plachimada in South India or in Peruvian mining, would become legalized, subjected to free market rules and accelerated. That would usually imply a further increase in price for urban consumers, adversely affecting, in particular, the poorer populations.

In contrast to the current practice of administrative allocation, economists and private companies expect it to yield greater "legal security", as well as less risks, because it would allow for long-term delivery/supply agreements with those who have abundant water rights, undisturbed by political influence or bureaucratic obstacles. And as long as higher rates can be passed on to the consumers, the prospect of profits will grow through secured supply and increasing sales. Thus private operations are quite interested in the establishment of working water right systems: the World Bank writes:

"The Insertion of the private sector (as operator of an urban water supply or a hydropower plant) provides a powerful incentive for change. Private operations have become a potent source of pressure to modernize the system of allocation and management of water rights, so that transfers can take place voluntarily and with compensation" (WRSS 45).

Moreover, it opens completely new opportunities to do business with water. For instance, Azurix, at that time the subsidiary of the energy giant Enron, founded as early as 1999 a water trade daughter company (Water2Water), which bought into the "Water Bank" Madera, a huge aquifer in California. Azurix intended to sell the bulk of water in the basis of long-term contracts and fixed pricing. Part of it was to be held back for speculative trade and "profit optimization" so as to be thrown on

⁴⁷ Technically, the "opportunity cost" is defined as the value of the water in its highest value alternative use (Briscoe 1996, 9)

the market during years of aridity or drought, when the demand far exceeds the supply⁴⁸.

Manila: Corporate Groups as Driving Force for Water Markets

In resource management, the ripple effects from Manila are transforming the way water resources are managed in the Philippines. The concessionaires have helped raise awareness of the need for fair and transparent rules for addressing competing uses between urban and agricultural users, and are helping develop a robust solution to the allocation issue. The hidden issues of allocation rules, water rights and fairness were thus brought to the surface by private sector participation in Manila. The World Bank has been active as a knowledge partner on water rights issues, and is helping define transparent mechanisms for water reallocation under a transferable water rights framework with equitable compensation. (WRSS 66)

The infrastructure expansion required to transport the ever-growing water quantities across ever-growing distances from the sellers to the buyers offers new profitable investment opportunities as well. To protect the investors, the World Bank demands – similar to the way it is done for private electricity producers – “take or pay” contracts (CWRAS China). That signifies that purchasers like urban utilities agree to a long-term arrangement and have to pay even then, when they no longer need the commodity, in this case water.

Since many global water corporations are closely associated with international construction firms, this kind of development would offer them the opportunity to control the entire chain of supply, in manner of speaking, from the source over the consumers up to treatment and disposal, the latter an area where they are already quite active.

4.3. Who loses? The Small Farmers Do

In individual cases, the emergence of water markets might prove rather profitable for the sellers. Thus the farmers in the Californian Central Valley are provided with markedly more water than they need due to their traditionally existing water rights, which they get at heavily subsidized prices. Part of it they sell for good profits to the utilities of the large metropolitan areas in the arid South of California. These extra profits due to the “[vast] gap between the observed water rates and the ideal economic prices of water” (Saleth, 2001) turn the water trade especially for the big farmers into a profitable business. (Los Angeles Times, 16.2.2005).

Yet, both the cost for the infrastructure expansion, as well as the emergence of lucrative urban or industrial water demand, would also cause an increase in the price of agricultural water. Moreover, the attractiveness of the urban water market might enhance water scarcity in rural areas, especially during the arid seasons when demand, and hence prices, are especially high, which is the very same time

48 www.azurix.com/html/about_us/subsidiaries_affiliates/AZMaderaWater.html. But this plan was never carried out due to Enron’s collapse. But other companies carried on: the US company Cadiz Inc., for instance plans to stash away up to one million acre-feet of water from the Colorado River resources in groundwater storages for the water supply of Southern Californian cities during dry seasons. (Coy 2002)

the farmers themselves need more water to save their crops. Hence aridity and drought would pose an even greater threat to the livelihood of the farmers.

Wealthy farmers and modern plantations would be less affected. They are in a position, for example, to reduce their water needs by investing in increased efficiency, and if need be, they could simply buy more water. In contrast, the effects on small-scale farming are much more serious:

- Indebted small farmers are pressured into selling their water rights to repay their loans. In Mexico it has been reported that farmers sell their rights to big agricultural companies, because they don't have the money to invest into wells. They get the money, but as contract farmers they become dependent on the syndicated Agribusiness.
- In Chile, where private water trade was facilitated as early as 1981, energy corporations took over water rights in large quantities in order to guarantee power generation at the expense of farmers, who were incapable of realizing the long-term effects of selling their rights of use (Kemper 2001).
- The opening of water-markets lead to the "awakening" of the value of "sleeping" water rights, which had been left unused so far. When owners begin to sell their rights with the prospect of profit, water resources so far used by small farmers for free or at a bargain price, might dry up for them.
- In the CWRAS for the Philippines, the World Bank recommends stopping irrigation during the dry season if necessary in favour of supplying the cities with water, adding that affected farmers should shift to rain-fed agriculture or other economic activities (43).

By giving priority to commercial irrigated agriculture, this water policy jeopardizes small-scale agriculture: the higher productivity and profitability sought after with irrigated agriculture widens the possibilities to develop fields that have so far not been irrigated. In doing so, the small farmers and herdsman using these areas would be displaced. There are other facts indicating that the World Bank doesn't nurture a strong belief in the future of small farming. Like the Bank's conspicuously frequent mentioning of irrigated agriculture as being a major asset for poverty reduction, by creating jobs, for instance,⁴⁹ ignoring the fact, however, that – thanks to favourable natural conditions and public funding – it is incomparable to small-scale rain-fed agriculture and its conditions. Moreover, with the new rural development strategy, the Bank focuses increasingly on off-farm occupations like skilled trades, services and manufacturing operations. Obviously, there is no place left for small farming and rainfed agriculture in the commercialization and privatization-oriented World Bank strategy – its huge potential to contribute immediately, economically and with rather low technical, organizational and institutional expenditures to the reduction of poverty, starvation and environmental damage, notwithstanding (see box: Vision 2020). During World Week 2005, John Briscoe quoted, with affirmation, the Indian correspondent of the Financial Times, who's report on the situation in the rural areas concluded with the words: "The best way to escape poverty is to escape agriculture."

49. In unirrigated districts of India, 69 percent of people are poor, while in irrigated districts only 26 percent are poor." (The World Bank News Release No. 2003/236/26.02.2002)

Vision 2020

In 1999 the government of the Indian State of Andhra Pradesh presented its “Vision 2020” – a strategy for the modernization of agriculture, supported by the World Bank and the UK Government Department for International Development (DFID). Mechanisation and contract agriculture were to promote the generation of big agricultural companies, producing especially for the market and exportation. At the same time, it was expected to reduce the fraction of the population earning its livelihood from agriculture from 70 to 40 per cent, i.e., 20 million people would have been obliged to find another occupation. Following fierce protests and the government being voted out of office, the vision vanished.

4.4. “Virtual Water Trade” or The End of Food Security

To neglect small scale farming and rain-fed agriculture puts food security into jeopardy, because it remains crucial for the supply of food both on household as well as on national level in many agrarian developing countries. It can also not be expected that aspired or rather commenced in-progress reforms and reorganizations in irrigated agriculture will contribute to an increase in food production and a better use of “Water for Food” (Saleh Darghouth). The reason for this is, that the “Green Revolution”, which essentially contributed particularly in South and Southeast Asia during the 1960s to a rapid rise in food production--at least regarding staple crops like rice and wheat, with its technology package of irrigated, high-yielding varieties, and agro-chemicals -- could not be repeated under present conditions.

India, for instance, only succeeded in notably increasing the production of wheat and rice during the 1960s and 70s (thus transforming from the “country with the alms dish” into a grain exporting country) due to considerable public subsidies of the large-scale irrigation agriculture. But the government not only paid the costs for the infrastructural expansion, it likewise subsidized costs for resources like pesticides and fertilizer and the price of grain, in order to allow farmers to make a living and still provide cheap staple crops for the poor. Moreover, it prohibited food imports that showed a promise of flooding the markets.

Today, this situation has changed. World market prices for staple foods have been on the decline for years due to excess production in the industrialized countries, and likewise, imports from Thailand and Vietnam. And global liberalization, induced by the WTO and Free Trade Agreements, coerces more and more countries into dropping protection measures like customs and quotas. Hence, the high investment costs can't be paid back by cultivating staple crops, but instead with market products, if at all, which yield higher prices, especially by exporting them into industrialized countries.

The establishment of water markets and increase in water price would have the, -- by water economists and development strategists rather desired -- effect that the increasingly scarce and expensive resource would be more and more used for the cultivation of higher-value agricultural products. In the Australian Murray-Darling Basin, for instance, this left the capital intensive wine growing corporations as main water market users purchasing additional water.

This perspective corresponds to the long-standing demand pushed by many agro-experts and international development bankers, like the World Bank, forward to

the countries of the “South” to use their “site advantages” like climate and low salaries, so as to cultivate export products like flowers, fruits, and vegetables, while using the earned foreign exchange to import inexpensive staple foods.

This demand gets new and pressing brisance when coupled with the new water policy and alarming news regarding the prognosticated water shortage, indicated in the debate in trading with “virtual water” (see box). The arguments: Water scarce countries should export high-value products, the cultivation of which requires little water and import in return “thirsty” staple foods like grains and sugar from the industrialized countries:

“Populations living in water scarce countries will have to be fed increasingly from food imports produced in water rich areas.” (World Water Council 2002, 52)⁵⁰

Countries such as the United States, Canada, France and Argentina would be among the beneficiaries, producing massive grain-surpluses with highly productive rain-fed agriculture, but rice exporting countries like Thailand and Vietnam as well, thus accessing new markets.⁵¹

Accordingly, the World Bank advocates in its rural development strategy a thorough checking of the possibilities agrarian trade offers for more efficient use of water: trade conditions in water scarce regions are to support a shift to the production and export of high-value crops and products while promoting in return the import of water intensive inexpensive staple foods (146). As a result, the Bank pleads for an accelerated global liberalization of the trade policy and cut-backs in subsidies and tariffs, which consequently, are regarded as compulsory for a successful reform of irrigation agriculture.

Yet the import-export-calculation doesn't add up in most cases, particularly where small producers are concerned. This is best illustrated with the downward trend of the coffee price⁵²: while costs are rising for the often capital intensive production of flowers, fruit or vegetables, prices for the products are plummeting in view of the fierce competition among the exporting countries and the market power of the syndicates controlling the trade. Food security of many countries would depend to an even higher degree than already exists on production in the industrialized countries, the world market and trade corporations. But above all, hunger and malnutrition result mostly from poverty and a lack of spending power. These are conditions, which can't be changed with a global reallocation of surpluses, but only with poverty reduction measures, and here again small-scale agriculture can make a difference.

50 The BMZ is equally enthusiastic about the “virtual water trade” concept. “Especially water scarce countries prove that the same water quantity can yield foreign exchange proceeds up to ten times as much with industry, services or rather tourism than with the export of agricultural products.” This leads to the conclusion: “Hence it might be essential to give up prior food security concepts in favour of purchasing food on the world market.” (BMZ 1999,16).

51 The Sourcebook for Investment in Agricultural Water Management cites irrigated grain cultivation and cultivation of cane as well as livestock and lactic production as “water intensive” sectors – exactly the sectors, where industrialized sectors produce their subsidized surpluses. (World Bank 2005, 38)

52 While the coffee exporting countries received approximately 12 billion US\$ [annually], their proceeds had plummeted to 5.5 billion US\$ - in spite of increased exportation. At the same time, retail trade turnover in the importing countries increased from 30 billion US\$ since 1990 to 80 billion US\$ (UNDP 2005, 181).

Virtual Water

The term “virtual water” emerged for the first time in the early 1990s. It describes the amount of water necessary for the production of an agricultural product. Thus trading agricultural products is at the same time trading the water used for their production, the cost of which however, is only insufficiently considered in the product price. If in trading with agricultural products more attention were given to the water contained in the products, the trade could contribute to smoothing the water crisis by reducing the pressure on the scarce resource and achieving worldwide a more efficient use of water and higher water productivity.

But within the social, ecological and political context of many developing countries, this concept contains more hazards than chances.

- * imports could jeopardize the livelihood of the populations depending on agriculture, especially small-scale operations;
- * forced importation of food could cause further debts;
- * dependency on food might lead to political dependence;
- * production bottlenecks would threaten the food security of the importing countries or drastically increase the prices.

Source: Misereor, 2005, 32f

4.5. The “Invisible Third Party” or Market and Regulation

The California Department of Water Resources (DWR) is already experienced in water trade. In 1991, at the peak of a drought that had already lasted for several years, the DWR organized a “Water Bank”. It paid farmers in Northern California for not irrigating their land. The water made available through this economization was sold with a higher price to farmers and urban utilities in the drought-ridden South. “The Bank has shown that even during a drought enough water can be found if only the incentives are adequate,” the Pacific Research Institute rejoiced, for many years one of several economy-sided US consultancy firms, promoting the expansion of water markets.

Yet what turned out fine for the farmers, who took up the offer of the water bank, spelled unemployment for many of their field workers. Likewise, the bio-diverse delta of the Sacramento and San Joaquin River, also affected by drought, gained nothing through this water trade due to its nature of being an insolvent client. Even worse, the opportunities to sell water rights might cause considerable environmental damage:

- Thus a higher-value use of water in agriculture is not necessarily an ecological improvement, but might result in attempting to develop unsuitable land with irrigation resulting in negative effects for the soil.
- Sleeper entitlements could be activated, thus launching unused resources on the market that had so far remained in the water cycle.
- Profit prospects might contribute to accelerating the depletion of water resources, as can be observed on the Canary Islands.

- Many years ago, the farmers in California's Owens Valley sold their water rights to Los Angeles. The once very fertile valley is today so dry that even desert plants can no longer grow there any more. (Hodgson 2004, 97)

Therefore, it is conceivable that market conditions can improve the efficiency of water use and profitability of investments, but it doesn't guarantee ecological sustainability and social justice.

One of the conclusions the DWR arrived at from their experiences was that beyond the trade as such between seller and buyer, the effects on the "third party", e.g., the environment or financially weaker user groups, have to be considered. Their protection requires corresponding laws and regulations, as well as adequate institutions for their implementation.

Hence, the government remains necessary as "manager", the entity who puts down the rules, controls their compliance and takes measures in case of a "market failure", for instance, in the case of monopolization of user rights or depletion of resources – either in form of controls or incentives. In view of the multifaceted, complex and largely unknown effects the reorganization of the water sector has on water pricing and allocation, on the consumer, agricultural production and eco-systems, the need for public regulation is rather great.

In doing so, the new water policy performs the same paradox in the rural area that already marked its implementation in the urban utility sector. On the one hand, the state is called to withdraw, allegedly because it can't cope with the management. Then again, it is apparently capable enough to regulate powerful interest groups and complicated market processes – a task industrialized countries like the USA and Australia have tried to deal with for years now, which has had a history of causing conflicts between, e.g., regulation authorities and the corporate groups. In any event, experiences in the urban water sector prove that regulation departments are often not sufficiently equipped nor competent enough to deal adequately with their tasks.⁵³

At the same time economists and investors insist on a level of regulation that does not interfere with private water trade and market development. From an economically controlled water management perspective, John Briscoe argues, "the less restrictions there are on water trades, the more the true opportunity cost will come into play (1996, 22).

Along these lines, the US-American economy professor K. William Easter, criticizes existing permit procedures by public departments in California, for instance, for the sale and purchase of rights of use. They are too time-consuming, too expensive, and slow down the market growth, he argues. A regulation should "not damage the goose that lays golden eggs". (2002, 24)

The supporters of water markets prefer instead to also advance the development of economic tools in water management in environmental protection. "By purchasing water entitlements from other users at market rates", David Horn from the US research institute Future Directions International states, "governments and environmental groups can increase environmental allocations without

53 Even the World Bank Operations Evaluation Department concluded: "A decade after beginning the effort to create regulation, only a handful of countries have put in place well-functioning systems of quality and economic regulation in water supply and sanitation." (World Bank 2003b, vii)

expropriation“ (Horn 2003). Hence, environmental protection organization Nature Conservancy in Nevada, USA, paid farmers 1,5 million US\$, to leave water for the protection of fish stock in the river instead of diverting it to their fields. And when the wetlands in the Northern American State of Colorado need more water, environmental departments have to buy the water rights for that from the farmers.

In the Western US, 61 million US\$ were spent from 1990 to 1998 on the purchase of water for environmental protection measures like the protection of fish stock and water quality (Landry 2002, 26). The expansion of such payment for “environmental services” could increase the demand and become an point of invasion for the expansion of water markets.

4.6. Water for Profit

By the UN Conference on Environment and Development in 1992 in Rio de Janeiro, the crucial significance of water for holistic and sustainable development, as well as the multi-faceted, complex circumstances in the water sector and the threat of a water crisis had been brought deep into the public awareness. Because of over-exhaustion and pollution, human water consumption is more and more approaching the natural limits of the resource. In some regions and areas, and at certain times, they have already been surpassed as a result of with exhaustion of groundwater or during long drought. Better management on all levels and in every sector is required, as well as an institutional reform.

The development of comprehensive management approaches, like the concept of Integrated Water Resources Management, is one possible answer. However, the task goes beyond some unsolved process issues and associated problems like fixing measurable criteria. IWRM has to balance complex interrelations and contradictions between different objectives, like environmental protection and economic growth. At the same time the implementation causes considerable opposition on part of the different parties, when questioning existing modes of allocation and use.

The World Bank is sceptical as well. The Bank’s evaluation department drew up the conclusion:

“that the IWRM concept is too complex to define operationally, often poorly focused and understood more in terms of process (although important for local ownership) rather than in terms of outcomes and impacts.” (World Bank 2004a, x)

In contrast to the still rather academic approaches of the IWRM, the World Bank claims to have developed a comprehensive, integrated management approach with its renewed strategy for the water sector, which is all at once -“principled but pragmatic” – realistic and practicable. The Bank’s approach and policy, however, are less influenced by concern for the water resources and their sustainable management, than by economic objectives like economic growth, promotion of the private sector and market control mechanisms, while asserting its own best interest as creditor.

As can be illustrated with the example of this policy’s implementation in the rural water sector, so far, in doing so, the Bank contradicts crucial points of the

objective set by itself, such as increased efficiency instead of supply expansion, poverty reduction and food security.

Firstly, the World Bank gives priority to irrigation over rain-fed agriculture with the focus on export production, so as to accelerate economic growth and create investment opportunities for the private sector.

Secondly, the Bank promotes major infrastructure projects, like multi-purpose dams and inter-basin transfers instead of small, inexpensive, manifold and locally adjusted structures along with a radical demand management, thus creating further new investment possibilities, as well as government demand for loans.

Thirdly and finally, the Bank advances the commercialization of water as an “economic good or rather as a commodity, with the excuse of an “ingenious” solution for all practical water management issues. In doing so, the Bank makes the resource accessible for private water trade and speculation, which threatens water reallocation in favour of the more profitable urban supply and at the expense of agricultural development.

Implementation favouring the involvement of private investments in infrastructure and irrigation agriculture is subsidized in many direct and indirect ways through public-private partnerships, compensation of risk and profit covering.

Obviously, this approach proves far more attractive to creditors, governments, foreign consultancy firms, technicians, engineers and investors than small-scale projects, environment and resource protection or the promotion of small scale farming. But not only does this policy reinforce the debt situation owing to its high investment needs, it also fails to satisfy the needs of the poorer populations, that is in particular small farmers, with their livelihood dependent on rain-fed agriculture and the cultivation of staple crops. Even worse, it seriously interferes with their future development opportunities by limiting their access to water, land and markets for food. It is unlikely that the anticipated trickle down effects of the expected economic growth, private investments and new job openings in irrigation agriculture or “off farm” can even begin to cushion these impacts.

In the opinion of water experts like Ramaswamy R. Iyer, renowned water and development expert and former Secretary for the Ministry of Agriculture in New Delhi, a “re-orientation”, a different solution perspective is called for. The key points summarized by Iyer are rather diametrically opposed to the World Bank’s policy:

- Demand-management, resource preservation and management should be emphasized rather than a supply-sided strategy, anticipating a permanently increasing demand.
- In case supply-oriented solutions are necessary, rain-fed cultivation and other appropriate alternatives should be promoted. Major infrastructure solutions should be selected as last resort, and only after having examined every other alternative. The calculable watersheds should serve as far as possible as planning units rather than the river basins.
- Traditional water management systems, including local and informal water rights, which have often been neglected and replaced, should be revitalized or acknowledged.

- The local population and experienced NGOs should be involved in all planning and at the earliest possible stage.
- In regulating use and distribution, human needs and the environment must have precedence over the commercial utilization in agriculture and industry.

Moreover, the free market approach with its cornerstone of tradable water rights is essentially in conflict with the postulate of a human right to water. Central orientation for water management and thus for decisions on political priorities, investments and measures is shifting to the economy of water utilization, in accordance with the concept of water as an “economic good”. The value of water is reduced to its negotiability as a resource, and in doing so, to the user’s ability to pay for it. Thus, in the end, profitability and spending power will decide on the distribution of water among the different areas of utilization and the availability for the individual user – to the point of excluding users and usages incapable of securing market rights or paying “market prices” for water.

5. Executive Summary

While during the early 1990s the World Bank began to employ its water privatization policy above all in urban public utilities, in current years it has been extended to other sectors as well, including agriculture in particular. In doing so, the World Bank's strategy of likewise implementing commercialization, privatization and free market control mechanisms in agricultural water utilization, threatens peasant agriculture in particular and thus food security and efforts for poverty reduction.

Up to the late eighties the World Bank mainly relied on supporting a water infrastructure financed, provided and managed by the state. Thus its policy paper on Water Resources Management in 1993 (World Bank 1993) paved the way for a substantial change in their policy. It made the Bank one of the first institutions to draft a comprehensive Integrated Water Resources Management (IWRM) policy for all sectors – that is, hydropower, irrigation, drinking water and sanitation, industry and environment. The basic components of the new strategy consisted in demanding extensive reforms within the political and institutional set-up, combined with decentralization, privatization of management and delivery structures and restricting state control to the safeguarding of legal and institutional framework. Besides avowals of increased emphasis on environment and resource protection as well as fuller participation by stakeholders, the importance of economic aspects in reforming the water sector comes to the fore. In consistence with the Dublin Principles, the treatment of water as an “economic good” is now regarded as an essential prerequisite to induce an “efficient and equitable use, and of encouraging conservation and protection of water resources.”

1. „Pragmatic but principled approach“

The new strategy, substantiated in the Water Resources Sector Strategy (WRSS, World Bank 2004), is justified on one hand with the “urgent need for increased investment in infrastructure and services for water supply, food production and energy,” and on the other one with the challenge to develop “the laws, regulations, and institutions to manage water resources in ways that are economically productive, socially acceptable, and environmentally sustainable.” (Briscoe 2003, 18). John Briscoe, who as the Bank's senior water advisor played a key role in the elaboration of said strategy, acuminates its consequences for the program and project policy in four “main messages”:

- Most developing countries require promoting both management and development of water resources infrastructure at the same time instead of first realizing reforms followed by investments;
- A “pragmatic but principled approach” is needed, which in view of the tedious, slow, and conflict-loaded reform process will have to develop a implementation strategy tailored to the specific circumstances, the so-called “political economy of reform”;

- The World Bank will have to re-engage in the development of high-reward/high-risk major hydraulic infrastructure;
- Improvement in management and access to water resources are of vital importance for ecologically and socially sustainable growth and poverty reduction.

In no other area do these new principles and approaches focus and complement one another as clearly as in the agricultural water sector. In recent years this field has moved back to the top of the Bank's activity agenda. This is attended by the Bank's rediscovery of the agricultural sector as a whole, which is reflected in the "renewed" rural development strategy ("Reaching the Rural Poor") presented by the World Bank in 2002. Simultaneously the World Bank's funds for rural development (from poverty-reduction and capacity building over fishery, resource protection and afforestation to land reforms and road works), which had reached a low level in 2002 with approx. 5 billion US\$, jumped to over 8 billion US\$ until 2005. While one third of that goes to infrastructure projects, 2,1 billion US\$ go to agriculture, with half of the money, that is 1.069 billion US\$, being allotted to irrigation and drainage – compared to just 335 million US\$ three years earlier.

Being the main creditor of many developing countries allows the World Bank to realize this new strategy. Several countries have since elaborated a new and comprehensive legislature for the water sector and introduced sector reforms. Currently, "tailored" Country Water Resources Assistance Strategies (CWRAS) are drawn up with 14 countries to begin with. Moreover the new policy is increasingly employed in World Bank projects for the restructuring of the water sector, with the issue of water management in agriculture taking up considerable room.

2. A new stage of commercialisation in the water sector

The World Bank's main claim is to reinforce the contribution of water to economic growth. In case of agriculture that means to improve both access and utilisation in order to increase production. In doing so the Bank mainly relies on irrigation agriculture, massive investment into infrastructure, unbundling service and delivery structures, and restructuring the institutional and legal framework in the water sector as well as economic instruments like cost recovery and water rights. With that the Bank e.g. aims at laying the foundations for a greater commitment of private investors, which at present does not exist to the same extent as in the urban supply area.

Priority irrigation agriculture

Until three or four years ago investment in irrigation agriculture was declining since it was, in terms of the World Bank, "economically unjustifiable" owing to low world market prices for staple foods. Lately the World Bank claims "leadership in revitalizing" (World Bank 2004, 17) it with a new "irrigation philosophy" that is reflected in numerous projects and a growing share in the granting of credits. This new commitment is flanked by the expansion of "hydraulic infrastructure", that is multipurpose dams and interbasin transfer, such as the disputed Godavri project in

India or the proposed Brazilian interbasin transfer out of the Rio Sao Francisco into the arid Northeast. Increased competitiveness in agriculture and higher efficiency in water utilization are aspired. At this, higher water availability due to river regulation, transfer and storage capacities has priority over demand management. Likewise small scale rainfed agriculture, which forms the basis of existence for the majority of the rural population, only plays a bit part – if at all.

Withdrawal of the state

Central to the general framework of reforms advanced by the World Bank in the agricultural water sector are the unbundling of supply and distribution tasks and the development of an institutional system that redefines the role and responsibility of the different players – that is in particular the state, users and the private sector. The state as the facilitator is to withdraw largely from the economic sectors and to be restricted to general tasks like the phrasing of water distribution regulations based upon water utilization rights, the allocation of water resources and water quality control.

„Autonomous management“

The management of irrigation systems as such is to be transferred from the hitherto predominantly centralised bureaucracies to local agencies, autonomous institutions, user organisations or private companies. While assessing the risks in the present situation as too high for private investors, the Bank relies over the medium term on an increased involvement of private, also foreign companies sponsored through public-private partnerships (PPP). One of the first models for this is the Guerdane irrigation project in Morocco that is conducted by an international group under the leadership of a Moroccan industrial concern.

Cost recovery and higher prices

Likewise the Bank regards a full cost recovery in most of the cases as not enforceable. Thus cost sharing of 10 to 30 percent in investment costs, is aspired as well as cost coverage of the expenditure on operation and maintenance and phasing out energy subsidies.

The World Bank expects from the higher rates for water supply not only financial relief for over-indebted national budgets. At the same time the water price is regarded as being instrumental in advancing more efficient water use, controlling the water distribution both between different cultivation products and different water-using sectors as well as providing a basis for the profitability of private management activities in irrigation agriculture.

Water Rights – “Pillars of Water Management“

Moreover the World Bank pushes for the introduction of formalized water rights that would provide – the Bank claims – even more strongly than the water price an incentive for increased efficiency, private investments and redistribution in favour of “higher-value” water use. In order to tap the full potential, mechanism for trading

water rights (as already in force in some countries, like Chile and Australia) should be created before long.

With this policy the World Bank crucially advances the handling of water as an “economic good”, embedded, however, in structural reforms and by providing favourable investment conditions for private companies. Water as such is not to be privatised, the Bank promises, yet the designed usufructuary rights *de facto* turn water into private property. Thus providing the basis for a systematic trade with water whereby cost, demand, offer, and possible profit would increasingly determine the price and thus the distribution among different users and usages. This change of system is the true purpose of the reforms applied.

Experimental field Ethiopia

Dams for energy and irrigation agriculture, new roads and better marketing opportunities are the crucial points mainly recommended by the World Bank for the Ethiopian water sector. Thus the abundantly available water resources could be used to full capacity for economic development and poverty reduction, the Bank maintains. In doing so, it consistently realizes the “high risk/high reward strategy” outlined in the Water Resources Sector Strategy (WRSS) of 2004: the benefit of major “hydraulic infrastructure” would clearly exceed the risks. In comparison measures like improved water management or environmental protection in the watersheds are piling into insignificance.

This strategy, however, does not satisfy the needs of the majority of the population, living primarily off rainfed cultivation. Instead they would need efficient measures against soil erosion; simple, small-scale and inexpensive methods for additional irrigation and extension services on the subject of improved cultivation measures and commercialization of spillovers from domestic supply. Moreover, the dependency on food imports and aid that at least six million people rely upon every year will not be reduced, because irrigation agriculture prioritizes products for exportation and foreign exchange proceeds.

Source: Country Water Resources Assistance Strategy, June 2005

3. The Water Market Syndrome

Initial efforts to commercialise water as such go far back. For instance John Briscoe, senior water professional of the Bank, declared as early as the mid-nineties as the key orientation the neo-liberal hope, that instead of national administration of resources, “the genius of the market approach” would help to solve the complex tasks of a comprehensive and integrated water management (1996, 21). Yet the World Bank is well aware of the conflict potential this system change implies. The question of water rights, John Briscoe resumes, is one of the three “most difficult and controversial issues” in the critical public’s perception of the World Bank – apart from its role in the construction of major dams and as precursor for the participation of foreign water concerns in urban water supply. To overcome possible opposition the Bank pleads for a new “political economy of reform” and a “dialectic reform process.”

The prerequisites for the introduction of tradable water rights, specified in numerous studies commissioned by the World Bank in the second half of the nineties, widely align with the World Bank’s new policy in the agricultural water sector. Stated are among others:

- A management approach permitting active participation of water users, e.g. in the distribution of water,
- a reliable and efficient system of user's fees (cost recovery),
- clearly defined and enforceable usufructs;
- institutionalization of market processes, including an infrastructure distribution network sending the water from the vendor to the buyer,
- institutional framework securing the completion of contracts and regulation entities to prevent negative impacts of "market failure",
- reliable, detailed information regarding available water quantities.

Moreover there is the material condition that sufficient "commodity" has to be available – be it by releasing water from agriculture, be it by opening new supply resources with dams.

In practice, the free market management tools applied threaten to seriously distort the water distribution among the different sectors and within agriculture as such, subsequently leading to an impairment of the production of staple foods, acceleration of the displacement of peasant agriculture and poverty growth.

Redistribution: Water for the Cities

Towns and industry are seldom in the possession of sufficient proper local water resources like groundwater and rivers to guarantee the supply. Hence they have drawn their water from rural areas at all times. That leads to conflicts already now, in particular with agriculture. For instance during a long-term aridity during the late nineties, the water of farmers in the periphery of Manila was turned off without further ado so as to maintain the supply in the Philippine capital.

By creating tradable water rights and water markets such redistribution would be subjected to and accelerated by free market rules. In economic lingo: in towns and industry "opportunity costs" are higher, which means that demand and value are higher and hence a higher price can be realized. That increases the incentive for usufructuary right holders to sell them, for example, to urban service companies. In doing so, a whole new business field would be opened for private water traders and speculators. This would generally imply further increasing rates for urban consumers, affecting the poorer population in particular.

On the losing side: Peasant agriculture

In individual cases the selling of water rights may be quite profitable for the vendors. Yet in general it would also cause a price increase for agriculturally used water. The attraction of the urban water market might also reinforce water scarcity in rural areas, especially during the dry season, when demand and hence prices are higher than ever. Peasant agriculture would be more affected by this than well-to-do farmers and plantations investing in efficiency enhancement or in the position to buy additional water, if need be. Peasants would be increasingly pressured to transfer their usufructs, for instance to pay off their debts.

The end of food security

Rising water prices and emerging water markets would moreover fortify the tendency of cultivating “higher-value” agro-products in irrigation like industrial raw materials, fruit, vegetables or flowers for exportation since staple foods are not profitable. Together with the neglect of rainfed cultivation, which still secures the basic food supply especially for the poorer population and is regarded by experts as holding high potential (adequate consulting in cultivation methods, additional irrigation and marketing provided), this would further reduce the food security of many countries.

The solution suggested by the World Bank is that in the future arid countries increasingly should buy food from countries rich in water like the USA, Canada or Thailand using their proceeds from agro-exportation. But this calculation doesn't work out in many cases: while costs for the capital-intensive production for exportation of agro-products are increasing, prices are dropping in view of the hefty competition and the market power of international trade companies. In addition to that, food security would depend even more than today on production in the developed countries, on the world market and business strategies. Not to mention that a worldwide redistribution of surpluses would hardly help the poorer rural population due to the lack of spending power.

The „invisible third party“

As illustrated with the case of peasant agriculture, financially weaker user groups, “third parties”, would be disadvantaged in case of distributing water by tradable rights and the market. The same applies for environment that, as is generally known, does not represent a financially strong demand. Market mechanisms can additionally fortify the in part disastrous effects of over-exhaustion and pollution on the natural water cycle, groundwater stocks, rivers and lakes, flora and fauna: profit outlook, for instance, could lead to the activation of “sleeping” usufructs as well as the launching of unused resources, having remained so far in the natural water cycle, on the market.

At the same time there are approaches to advance the development of economic instruments in water management also in the environmental sector. Thus, for instance, the environmental protection organisation Nature Conservancy bought water for 1.5 million US\$ from farmers in the North American state of Nevada, so that they'd keep it for the protection of fish stock in the river instead of conducting it on their fields. Such payments for so-called “environmental services” could turn into an incentive for the expansion of water markets.

4. Water for Profit

The United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 made the public realize the vital significance of water for a comprehensive and sustainable development, the manifold, complex interrelations and dependencies in the water area as well as the hazards of a water crisis. Yet the approach and policy of the World Bank are less characterized by concerns

about the water resources and their sustainable management than much rather by economic objectives like economic growth, promotion of the private sector and free market control mechanisms – while asserting its own best interest as creditor:

- First, the Bank concedes priority to irrigation agriculture instead of rainfed cultivation, with a focus on production for exportation in order to accelerate economic growth and promote private investments.
- Second, the Bank supports major infrastructure like multi-purpose dams and interbasin transfers instead of small-area, inexpensive, versatile, and locally adjusted structures and improved demand management; thus creating new private investment opportunities as well as state demands for World Bank credits for example.
- Third and final, under the pretext of improved water management, the Bank advances the commercialization of water per se as an “economic good” or rather, as a commodity. In doing so, the Bank makes the resource accessible for private water trade and speculation, which threatens water redistribution in favour of the more profitable urban supply and at the expense of a wide agricultural development.

The promotion of private investments in infrastructure and irrigation agriculture is subsidized in many direct and indirect ways through public-private partnerships, compensation of risk and profit covering.

Not only does this policy reinforce the debt situation owing to its high investment needs, it also fails to satisfy the needs of the poorer populations, that is in particular peasant agriculture. Even worse: it seriously interferes with their future development opportunities by denying or limiting their access to water, land and markets for food.

Hence in the opinion of water experts like Ramaswamy R.Iyer, former Secretary for the Ministry of Agriculture in New Delhi, a “re-orientation” is called for, the crucial issues of which are diametrically opposed to the World Bank’s policy:

- Demand-management, resource preservation and management should be emphasized rather than an expansion of the water supply.
- In case supply-oriented solutions are necessary, rainwater harvesting and other adjusted alternatives should be advanced with precedence. Major infrastructure solutions should be selected as last resort and only after having examined every other alternative.
- Traditional systems of water management that are inexpensive and can widely be operated by the users themselves should be revitalized.
- Population and experienced NGOs should be involved in all designs at the earliest possible stage.
- In regulating use and distribution men and nature must have precedence over the commercial utilization in agriculture and industry.

In addition to that, the free market approach essentially conflicts with the postulate of a human right to water. Central orientation for water management and thus for decisions on political priorities, investments and measures is shifting to the

economy of water utilization – in accordance with the concept of water as an “economic good”. The value of water is reduced to its negotiability as a resource and thus to the user’s disposition to pay for it. Thus in the end profitability and spending power decide upon the distribution of water among the different areas of utilization and the availability for the individual user – to the point of excluding users and usages incapable of securing market rights or paying “market prices” for water.”

6. Annex

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Index of Abbreviations

ADB	Asian Development Bank
ADLI	Agricultural Development Led Industrialisation (Ethiopia)
ADB	African Development Bank
ARD	Agriculture and Rural Development Department (World Bank)
BMZ	Bundesministerium für Wirtschaftliche Zusammenarbeit und Entwicklung/Federal Ministry for Economic Cooperation and Development
CAS	Country Assistance Strategy (World Bank)
CGIAR	Consultative Group on International Agricultural Research
CWRAS	Country Water Resources Assistance Strategy (World Bank)
DRA	Demand Responsive Approach
DWR	Department of Water Resources (California)
EZ	Entwicklungszusammenarbeit/Development Cooperation
FAO	UN Food and Agriculture Organisation
FZ	Finanzielle Zusammenarbeit/ Financial Cooperation
GTZ	Gesellschaft für Technische Zusammenarbeit
GWP	Global Water Partnership
I&D	Irrigation and Drainage
IBRD	International Bank for Reconstruction and Development (World Bank)
IFC	International Finance Corporation, Washington
IFPRI	International Food Policy Research Institute, Washington
IRN	International Rivers Network
IWMI	International Water Management Institute, Colombo
IWRM	Integrated Water Resources Management
KfW	Kreditanstalt für Wiederaufbau/ KfW Development Bank
NBI	Nile Basin Initiative
OED	Operations Evaluation Department (World Bank)
PID	Project Information Document (World Bank)
PIM	Participatory Irrigation Management
PIP2	Private Irrigation Promotion Project (Niger)
PMIR	Integrated Irrigation Modernization Project (Mexico)
PPP	Public Private Partnership
PRSP	Poverty Reduction Strategy Paper
PSI	Public Sector International
REST	Relief Society for Tigray (Ethiopia)
SDPRP	Sustainable Development and Poverty Reduction Programme (Ethiopia)
SIWI	Stockholm International Water Institute
UNESCO	UN Educational, Scientific and Cultural Organisation
UN	United Nations
WRSS	Water Resources Sector Strategy (World Bank)
WISMP	Water Resources and Irrigation Sector Management Program (Indonesia)
WRMP	Water Resource Management Plan (Ethiopia)
WSDP	Water Sector Development Programme (Ethiopia)

WTO	World Trade Organisation
WUA	Water Users Association
WWC	World Water Council

World Bank Projects in the agricultural water sector, or rather with agricultural water sector components – a selection⁵⁴

(Date of project start; credit volume in US-Dollar)

Egypt:	Integrated Irrigation Improvement and Management Project (2005)
Azerbaijan:	Irrigation Distribution Systems and Management Improvement Project (35 M; IBRD/IDA)
Brasil:	Rio Grande do Norte Integrated Water Resources Management Project (pipeline; 15 Mio.; IBRD/IDA)
China:	Jiangxi Integrated Agricultural Modernization Project (11/2003; 100 M; IBRD)
India:	Madhya Pradesh Water Sector Restructuring Project (9/04; 394 M; IBRD)
India:	Maharashtra Water Sector Improvement Project, (2005; 325 M; IBRD)
India:	Uttar Pradesh Water Sector Restructuring Project (2/02; 149 M; IDA)
India:	Rajasthan Water Sector Restructuring Project (2/02; 140 M; IDA)
Indonesia:	Water Resources and Irrigation Sector Management Program (6/2003; 70 M; IBRD/IDA)
Iran:	Alborz Integrated Land and Water Management Project (2005)
Mexico:	Water Resources Management Project II, (5/05?; 110 M; IBRD/IDA)
Mexico:	Integrated Irrigation Modernization Project (PMIR), (9/03; 303 M; IBRD)
Niger:	Private Irrigation Promotion Project (PIP2), (3/02; 39 M; IDA)
Pakistan:	Northwest Frontier Province On-Farm Water Management Project, (7/01)
Peru:	Irrigation Sub-Sector Supplemental Project (2005)
Sri Lanka:	Second North East Irrigated Agriculture Project, (6/04)
Sri Lanka:	National Water Management Improvement Project (pipeline, 36 M)
Tajikistan:	Ferghana Valley Water Resources Management Project (7/05; 13 M; IDA)
Uzbekistan:	Drainage, Irrigation and Wetlands Improvement Project (60 M; IBRD/IDA)

⁵⁴ Plus several projects funded by the ADB, and IADB