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# INTEGRATION OF GENDER DIMENTION IN WATER MANAGEMENT IN CYPRUS

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Gender equality in rural areas is set to become a major point on rural development agenda. Without the presence and input of woman, agriculture worldwide would not exist. Women have traditionally played an important role in agriculture in Cyprus where farms for the most part are family run. Labor provided by family members accounts for 80% of the total compared with 93% in EU-15 in 1997. Women are involved principally in the growing of field crops and livestock rearing. Women working in agriculture made up 3% of the working population of the country. The female workforce, whether made up of family members or employees, represented over a third of the total population working on farms.

This paper is concentrated on the present situation of irrigated agriculture in Cyprus and the contribution of women in Cyprus agriculture. Particular emphasis is given to the role of women in the family farm.

The family farm is the typical production unit in Cypriot agriculture, with the farm family being the main agricultural labor source. Out of a total number of 27,552 engaged in agriculture, 77.5% were farmers or members of the farm family. Rural women account for 16.5% of the total population and constitute substantial and integral part of the country's labor force. They account for 15% of the total female or 6% of national labor force.

In most Mediterranean countries the problem of an adequate water supply to meet the present and future demands of irrigated agriculture is very important. The scarcity of water together with the high cost, have become real constraints for irrigated agriculture. Because of this, particular emphasis is placed on the water use efficiency and to intensive cultivations with high return per volume of water. Modern irrigation technology has moved very rapidly from an experimental technique to a commercially significant method of irrigation. New atomization of irrigation and computerized systems were introduced as well as new cultivation methods. In all these, women have a significant role to play and the need to support and raise women's profile in the decision-making process is clear.

Women constitute 15% of the economically active population; about half of them are employed in the rural economy. Women are employed in all types of agricultural jobs, and some of them they have important competencies and responsibilities.

Although equality of opportunity for women is fully guaranteed by legislation, in reality here, too, there are factors (patriarchal structure of the family, relatively small and closed society), which prevent full participation of Cypriot women in the economic and social life of the country.

## IRRIGATED AGRICULTURE IN CYPRUS

There is an increasing concern about the effective and efficient utilization of water for agriculture and water conservation in general. The promotion of effective water use and on farm water management were identified as an important contribution to the management strategy needed to address problems of water scarcity and practicing intensive agriculture on environmentally sound grounds. Full intensification of agriculture, while taking all possible precautions against the environmental problems that could follow this approach, is the challenge of the immediate future. This of course affects the needs and modes of future intensive irrigated agriculture (Chimonidou and Papadopoulos, 2002).

Improving the water use efficiency at farmer's level is the major contributor to increase food production and reverse the degradation of the environment or avoid irreversible environmental damage and allowed for sustainable irrigated agriculture (Papadopoulos, 1996). The overall target is to maximize positive impacts of irrigation and minimize potential environmental hazards. The interaction between agricultural production and the environment should be complementary rather than

competitive for balanced development of both. In the same line, in scheduling irrigation it is also important to identify the critical periods (stages) during which plant water stress has the most pronounced effect on growth and yield of crops, since this is also directly related to the nutrients requirement by the crop (Chimonidou, 1996).

### **Cultivable and Irrigated Areas**

Cyprus is the third-largest island in the Mediterranean with an area of 9251 km<sup>2</sup> (925000 ha). The total Agricultural land covers an area of about 200.000 hectares. From these 92.300 hectares represent temporary crops (46,5%) and 41.300 hectares permanent crops (20,8%). The remaining 55.400 hectares represent fallow, uncultivated, grazing, forest and scrub or deserted land with 5%, 24%, 1% and 3% respectively. From 1985 to 2001, the Agricultural land decreased by 6% mainly due to urban development (Agricultural Statistics, 2001). The main temporary crops were cereals with 61% of the total area under temporary crops, followed by fodder crops with 27,4% and vegetables with 10,5%. The main permanent crops are grapes with 44,1% of the total area under permanent crops, followed by olives and carobs with 24,5%, citrus with 13,1%, nuts with 9,4% and fruits with 8,7%.

Irrigated land accounts 38.200 hectares or 19,2% of the total area enumerated. Of this 51% was irrigated from water pumped from boreholes, 39,2% from dams, 6,3% from rivers and 3,5% from springs. The irrigated agriculture in semi arid countries like Cyprus demands large amounts of water and faces the serious challenge to increase or at least sustain agricultural production while coping with less and/or lower quality water.

### **Origin of Irrigation Water**

A percentage of 57% of the annual amount of water for irrigation purposes is provided mainly from Government Irrigation Schemes. In the Government schemes the sources of water used are surface water, groundwater and reclaimed water. As a rule the water demand in the non- Government schemes is satisfied by groundwater.

Surface Water: Although the capacity of all the main dams is 273.6 MCM, the average annual amount of water available for use is estimated to be about 101.5 MCM. During the dry year of 2000 the contribution to irrigation of all dams was only 28.5 million m<sup>3</sup>. Out of the 101.5 MCM, 82 MCM are used within Government Projects, 14.5 MCM for domestic use (after treatment) and 5 MCM for ecological areas.

Groundwater extraction is estimated to be about 127.4 MCM on an annual basis. Such figure does not mean the safe yield of the aquifers, which is much lower. From this amount, 100.4 MCM are used for agriculture (26 MCM are within the Government Irrigation Schemes and 74.4 MCM are outside the Government Schemes).

Springs contribute very little, amounting to 3.5 MCM per year, for the domestic use of the mountainous villages.

Desalination units at present contribute up to 33.5 MCM per year.

Treated sewage effluent: Presently, only about 3 MCM is used, from which 2 MCM for agriculture and the rest for landscape irrigation.

### **Types of irrigation (Surface, Sprinkler, Microirrigation, etc)**

Modern irrigation systems have been used in Cyprus agriculture for the last 30 years. Due to the relatively high installation cost the drip method was initially used for irrigation of high value crops, such as greenhouse vegetables and flowers. At a later stage the installation cost was reduced, and the use of drippers, mini sprinklers and low capacity sprinklers was expanded for irrigating trees and field vegetables. Proper hydraulic design of the irrigation systems, offered free of charge by the Ministry, coupled by a subsidy of the installation cost, resulted in a rapid expansion of the new irrigation systems. It is estimated that currently over 95% of the total irrigated land of the country is being served by modern irrigation methods. With the improved irrigation systems and the scheduling of irrigation based on experimental work of the Agricultural Research Institute, the overall water use efficiency at farmer's level is above 80%.

### Irrigated Crops (Permanent, Annual)

The percentage of water demand for permanent and annual crop is 59% and 41%, respectively (Chart 1). This accounts 95,8 MCM/year and 65,5 MCM/year.

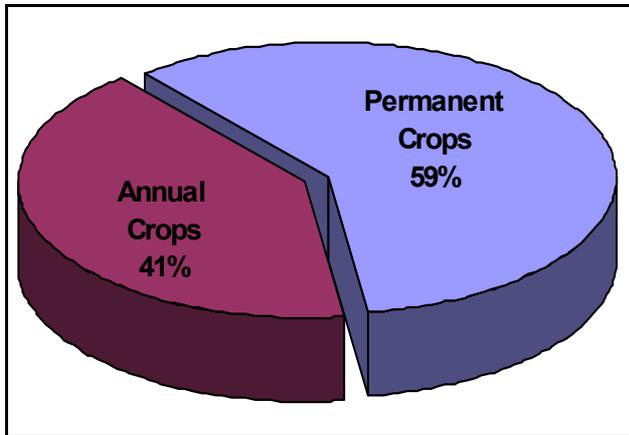


Fig. 1. Distribution of water demand for Permanent and Annual crops

### Types of Irrigated Crops: Vegetables, Fodder, Cereals, Others

The Irrigation Water Demand of 174.4 million m<sup>3</sup> is distributed by crop as presented in Chart 2 while the total irrigated areas all over Cyprus are presented in Table 2.

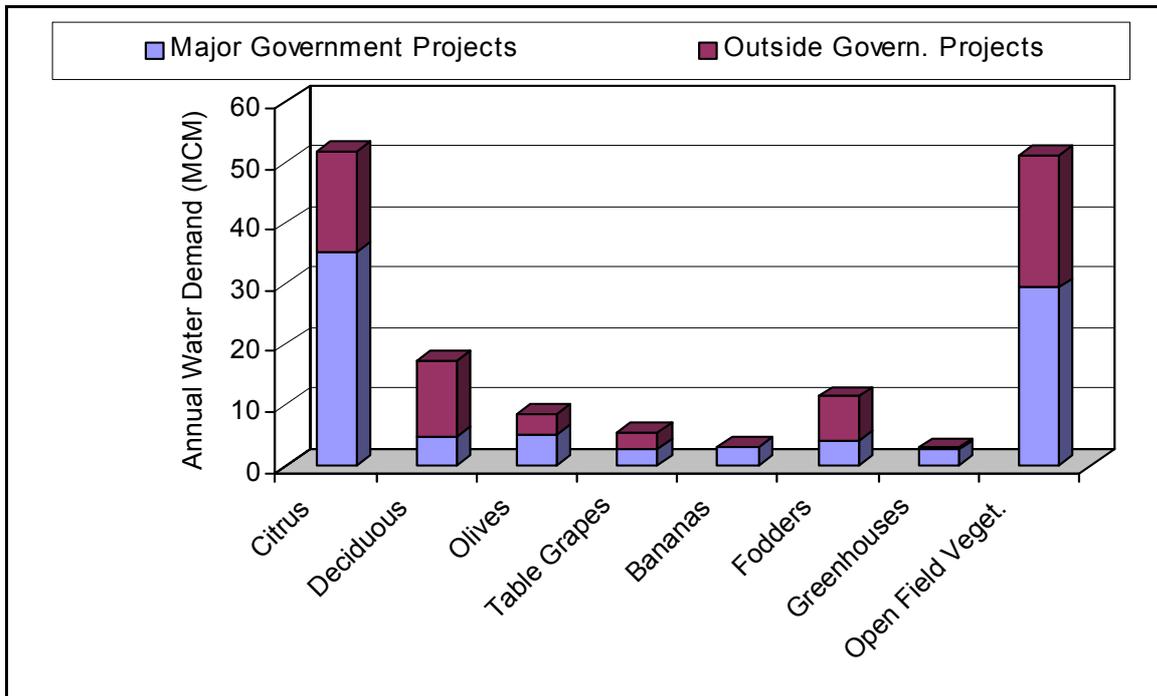


Fig. 2. Distribution of annual water demand among crops

Table 1. Distribution of Irrigated Areas by crop in Decars (1Ha=10Decars)

	Irrigated Areas in Decars			
	Major Government Irrigation Schemes	Outside Government Irrigation Schemes	Total	%
<b>Permanent Crops</b>				
Citrus	47662	23177	70839	26%
Deciduous	6483	18326	24809	9%
Olives	11375	8472	19847	7%
Table Grapes	10438	9636	20074	7%
Bananas	2899	10	2909	1%
Remaining areas		14000 (estimated)	14000	5%
<b>Total Permanent</b>	<b>78857</b>	<b>73621</b>	<b>152478</b>	<b>56%</b>
<b>Annual Crops</b>				
Fodders	2377	6260	8637	3%
Potatoes	35457	7241	42698	16%
Greenhouses	2893	315	3208	1%
Open Field Vegetables	31354	32827	64181	24%
<b>Total Annual</b>	<b>72081</b>	<b>46643</b>	<b>118724</b>	<b>44%</b>
<b>Grand total (MCM)</b>	<b>150938</b>	<b>120264</b>	<b>271202</b>	<b>100%</b>

### Types of Irrigated Crops

From 35.200 hectares of irrigated crops, 19.200 refer to temporary crops, while 16.000 refer to permanent crops. The main irrigated temporary crops were vegetable and melons with 27,6%, followed by fodder crops with 12,8% and cereals with 11,4%. The main irrigated permanent crops were citrus with 15,3% followed by fresh fruits with 10,2%, olives and carobs with 9,4% and Vines with 7,1%.

### Protected Cultivation, Soilless Culture and Modern Irrigation Technology

In most Mediterranean countries the problem of an adequate water supply to meet the present and future demands of irrigated agriculture is very important. Water supply must be used in the most efficient way especially in countries where water is scarce, of high cost and in most cases of poor quality.

The scarcity of water together with the high cost associated with collecting and using the limited surface rainwater for irrigation have become real constraints for our irrigated agriculture. Because of this, alternative water resources, innovative approaches and new technologies are sought to help solve the problem. Development of more efficient irrigation methods to save water by better utilization with marginal quality water, and the turn to intensive irrigated agriculture, protected cultivation and soilless culture are promising alternative and innovative approaches (Chimonidou, 2000). Recently particular attention was given in soilless cultivation and the area under soilless culture is rapidly expanding due to many advantages i.e. higher water use efficiency, increase of yield and mainly of the quality, avoidance of soil disinfections, soil born diseases, control of growth, improve labor conditions, avoid cultural practices (i.e. digging, weed control, etc) and use of areas that the soil conditions were not suitable for cultivation.

Modern irrigation technology has moved very rapidly from an experimental technique to a commercially significant method of irrigation. The ability to carefully control water application not only offers improved efficiency in the use of an increasingly scarce natural resources for agriculture, but opens the door to new and more efficient ways to manage fertilizers and other agricultural chemicals.

## WOMEN IN AGRICULTURE

Without the presence and input of women, agriculture in Europe would not exist. Women make up 37% of the total workforce on European farms and account for 31% of working time. One in five agricultural holdings in the European Union is managed by a woman. Approximately one in two women (48%) engaged in agricultural production and rural life falls into the category 'spouse or partner' of an agricultural producer. Alongside the 'spouse-partner' category, part of the female rural population is turning more and more to other areas and activities within the rural economy in the form of paid employment. In this paid employment category, which makes up 7.1% of the total agricultural labor force, women account for 23%. The main sectors of employment for women in the rural economy and agricultural production are considered to be (a) mixed grazing livestock, (b) horticulture, (c) olive growing and (d) mixed crops. In these four sectors, women provide 31% of total labor and their contribution ranges from 36% to 39%.

Table 2. Employment in the broad agricultural sector, 2000-2001

Sub-Sector	Number of persons					
	2000			2001		
	Males	Females	Total	Males	Females	Total
Crop production	10.679	6.498	17.177	10.390	6.320	16.710
Holders and family members	9.240	5.071	14.311	8.990	4.932	13.922
Employees	1.439	1.427	2.866	1.400	1.388	2.788
Livestock production	4.024	2.332	6.356	3.967	2.300	6.267
Holders and family members	2.756	1.900	4.656	2.717	1.873	4.590
Employees	1.268	432	1.700	1.250	427	1.677
Forestry	342	91	433	333	90	423
Holders and family members	54	30	84	53	30	83
Employees	288	61	349	280	60	340
Total	15.045	8.921	23.966	14.690	8.710	23.400
Holders and family members	12.050	7.001	19.051	11.760	6.835	18.595
Employees	2.995	1.920	4.915	2.930	1.875	4.805

Women have traditionally played an important role in agriculture in Cyprus where farms for the most part are family run (Table 3). Labor provided by family members accounts for 80% of the total compared with 93% in EU-15 in 1997. Women are involved principally in the growing of field crops and livestock rearing. Women working in agriculture made up 3% of the working population of the country. The female workforce, whether made up of family members or employees, represented over a third of the total population working on farms (Table 4).

Table 3: Employment in agriculture by category, sex and sub-sector, 1996-2001

Sub-Sector	1996	1997	1998	1999	2000	2001
Crop and livestock production	27.086	24.590	24.440	23.928	23.533	22.977
Holders and family members	21.075	19.932	19.670	19.218	18.967	18.512
Males	12.844	12.596	12.437	12.150	11.996	11.707
Females	8.231	7.336	7.233	7.068	6.971	6.805
Employees	6.011	4.658	4.770	4.710	4.566	4.465
Males	3.286	2.750	2.845	2.813	2.707	2.650
Females	2.725	1.908	1.925	1.897	1.859	1.815
Forestry	447	440	446	426	433	423
Holders and family members	105	85	86	82	84	83
Males	65	55	57	54	54	53
Females	40	30	29	28	30	30

Sub-Sector	1996	1997	1998	1999	2000	2001
Employees	342	355	360	344	349	340
Males	288	299	302	284	288	280
Females	54	56	58	60	61	60
Total	27.533	25.030	24.886	24.354	23.966	23.400
Holders and family members	21.180	20.017	19.756	19.300	19.051	18.595
Males	12.909	12.651	12.494	12.204	12.050	11.760
Females	8.271	7.366	7.262	7.096	7.001	6.835
Employees	6.353	5.013	5.130	5.054	4.915	4.805
Males	3.574	3.049	3.147	3.097	2.995	2.930
Females	2.779	1.964	1.983	1.957	1.920	1.875

The family farm is the typical production unit in Cypriot agriculture, with the farm family being the main agricultural labor source. Out of a total number of 27,552 (Agricultural Statistics, 2001) engaged in agriculture (8.9 percent of the total economically active population), 77.5% were farmers or members of the farm family. Rural women account for 16.5% of the total population and constitute substantial and integral part of the country's labor force. They account for 15% of the total female or 6% of national labor force (Aristotelous, 1994).

## ANALYSIS OF THE STATUS OF WOMEN IN CYPRUS

The status of women in Cyprus, according to the CEDAW Report of 4.5.1995, is comparable to their status in other Mediterranean countries (Spain, Portugal, Italy).

Although equality of opportunity for women is fully guaranteed by legislation, in reality here, too, there are factors (patriarchal structure of the family, relatively small and closed society) which prevent full participation of Cypriot women in the economic and social life of the country.

During the last 20 years, great mobility has been observed in society; as a result, women have become more active in education and work.

Women's participation in decision-making and fiscal policy-making appears to be lower than men's. According to 1991 data, out of a total of 262 government positions, only 22 were held by women. The same low rate of senior positions held by women can also be seen in other sectors of the economy and in women's participation in public life. As elsewhere, this phenomenon can be traced to the preconception that a woman's role as wife and mother is more important, as well as to women's lack of free time due to their family commitments.

The same phenomenon can be seen in employment. Women constitute 15% of the economically active population; about half of them are employed in the rural economy. Women are employed in all types of agricultural jobs, and in some of them they have important competencies and responsibilities. It is important to note that the agricultural sector accounts for 7.5% of GDP, and constitutes a significant part of the Cypriot economy. Although there is no discrimination as regards women's participation in associations, cooperatives or access to financing, their working conditions are problematic. For example, they work long hours, have no leave, and, most important, receive no social insurance benefits, since there is no insurance coverage for the majority of agricultural jobs.

In other sectors of activity, there are many regulations against discrimination, but again full equality is not ensured. Thus, in the private sector especially, there is an indirect or hidden discrimination and gender stereotype with regard to recruitment, promotion, wages, etc. In the public and broader public sector, such discrimination is negligible.

In addition, the principle of equal pay for work of equal value is not applied in certain sectors of activity, a fact that can be seen in many branch agreements.

As concerns the level of education in Cyprus, it is generally high among both men and women, who participate on an equal footing at all levels. The illiteracy rate is now almost zero, because basic education has been compulsory and free since 1960. Some problems still exist among female agricultural workers and elderly women.

Careers education in Cyprus is of very high quality, but again there are many instances where girls choose occupations traditionally considered appropriate for women (e.g. teacher, nurse, secretary, etc.). The number of women pursuing a technical education is also very low compared to the number of men.

## **PRESENT SITUATION AND ACHIEVEMENTS**

Gender equality constitutes a prerequisite for social development and social justice. Cyprus remains fully committed to fighting any kind of gender discrimination by pursuing policies that are designed to lead to a gender-sensitive and educated society — a society, which will secure dignity and respect for all its members in compliance with the principles of equality and justice.

Cyprus, since the ratification of the UN Convention on the Elimination of all Forms of Discrimination Against Women in 1985, launched a promising and dynamic national program of action aiming at the pursuit of gender equality and equal participation of women in all walks of life. The program consists of the formulation of a gender-comprehensive legal framework based both on international legal instruments and on gender-supportive domestic legislation, as well as of the adoption of consolidating mechanisms for the implementation of all commitments emanating from this legal framework.

The National Machinery plays a key role in all attempts to integrate gender perspective into all aspects of social and political life.

At the international level Cyprus in 2002:

1. Ratified the Optional Protocol to the CEDAW.
2. Accepted the amendment of article 20, paragraph 1 of the Convention.
3. Acceded to the convention on Consent to Marriage, Minimum Age for Marriage and Registration of Marriages.

At the national level, domestic Law reform has been carried out especially in the field of Family and Labor legislation. In the field of Family Law a series of amendment Laws have been enacted, improving the legal framework concerning Property Rights among Spouses, Parents and Children Relations, Family Courts etc. In the field of Labor Law a series of legal measures, aiming at the improvement and expansion of the legal rights and protection of women at work, were adopted this year covering the areas of Maternity Protection, Social Pension, Social Security and Part-time work. Furthermore, within the framework of the process of harmonization with the *acquis communautaire* of the European Union in the social sector, the preparation of other important equality Laws has begun, including the drafting of the Law on Equal Opportunities and Treatment in Employment.

In terms of implementation of its objectives towards gender equality, Cyprus proceeded this year to an innovative Scheme for strengthening women's entrepreneurial activities. For the implementation of this scheme the Government has approved this year approximately one million dollars for funding women's activities in the fields of manufacture, trade and tourism. In addition, the recently established Women's Cooperative Bank Initiative also seeks to tackle, precisely, the problem of access to financial resources. Three hundred and fifty women with the vision to improve women's living standard founded the Women's Cooperative Bank, which started functioning in 2001 under the auspices of the Ministry of Commerce.

The Republic of Cyprus acknowledges that an important component of the new strategy of Gender Mainstreaming is putting in place such mechanisms as will allow gender issues to be integrated into key sectors of government, as well as of the private sector and civil society. To this purpose, close collaboration has been developed between government departments and the National machinery for Women's Rights on the one hand and with NGO's, academic institutions and other agencies on the other.

Within this framework of cooperation, it is worth noting that an International Conference on "Violence in the Family: a plan of action for the 21<sup>st</sup> century has been jointly and successfully organized by NGO's and the government of Cyprus in Nov. 2000 with the participation of civil society. The bureau of the secretariat of the conference will be hosted in Nicosia Cyprus till 2004.

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