

Fundación Marcelino Botín | OBSERVATORIO DEL AGUA WATER OBSERVATORY

PRESENT AN FUTURE ROLES OF WATER AND FOOD TRADE IN ACHIEVING FOOD SECURITY, REDUCING POVERTY AND WATER USE (PART I)

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RE-THINKING PARADIGMS: WATER AND FOOD SECURITY
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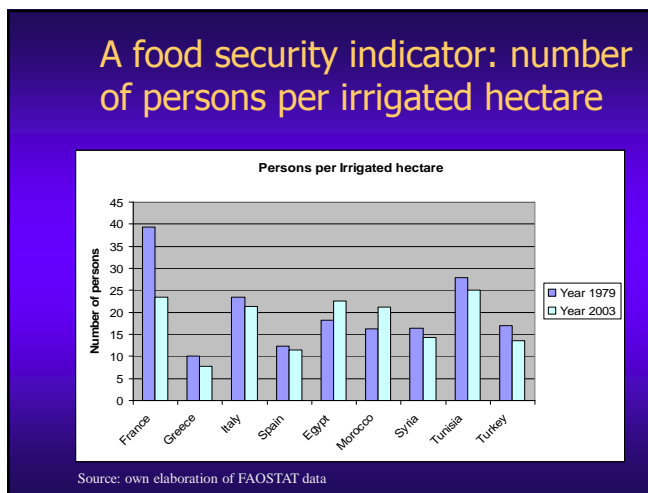
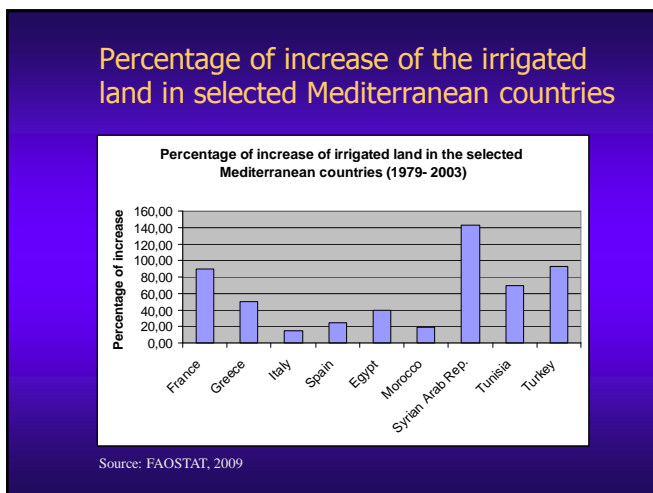
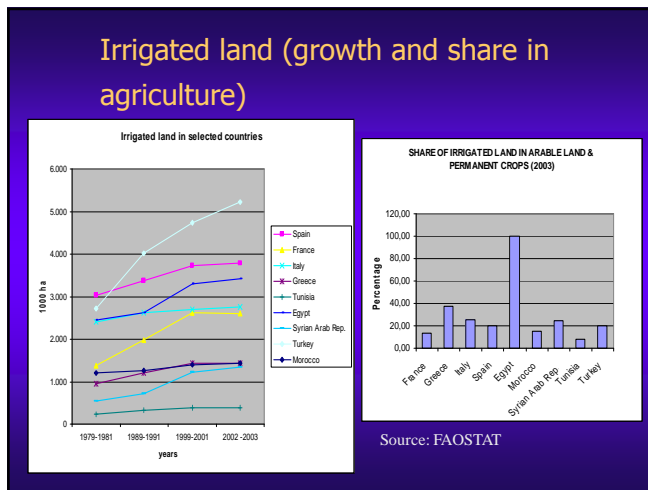


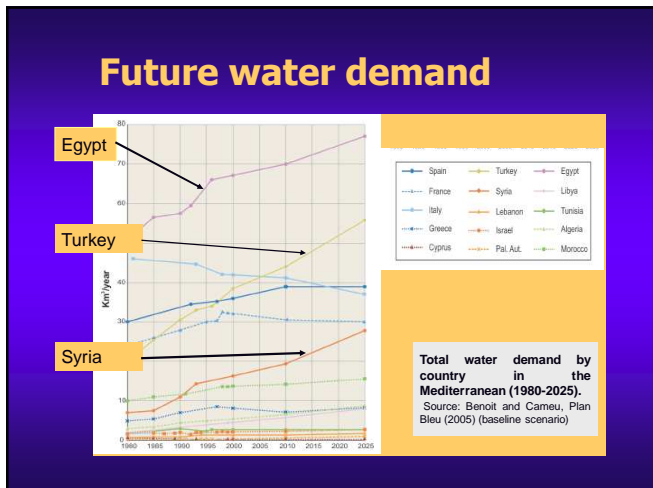
Section I: Water resources, Irrigation development and Food Security (present and future)

Source: Sagardoy

Water availability in the Mediterranean countries

Group	Criteria	Countries
First Group	Water availability will remain adequate up to 2025 and beyond,	France, Italy, Croatia, Serbia, Slovenia, Albania, Turkey, Lebanon
Second group	Water resources are barely adequate at present	Spain, Morocco, Algeria and Cyprus.
Third group	Current water availability is already limited or negligible and will not meet future demand	Malta, Egypt, Syria, Libya, Israel, Jordan, Tunisia and Palestinian



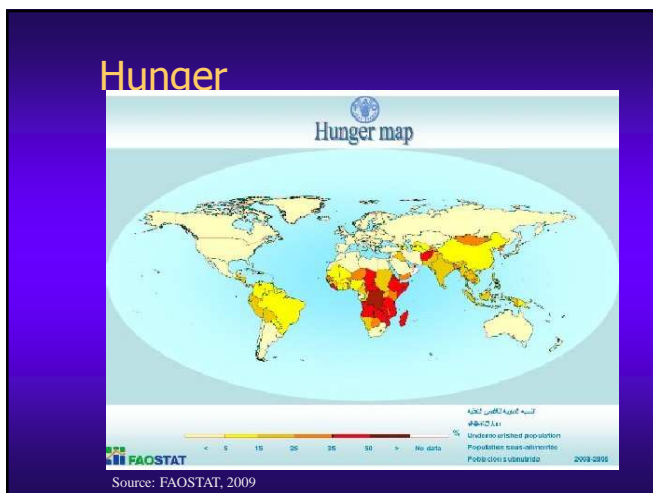
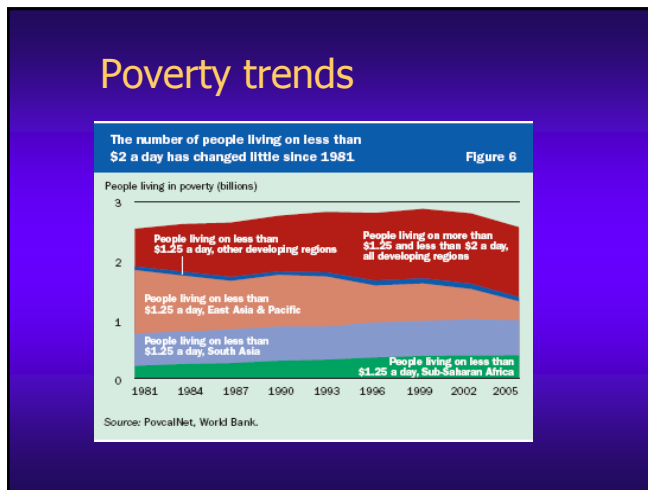
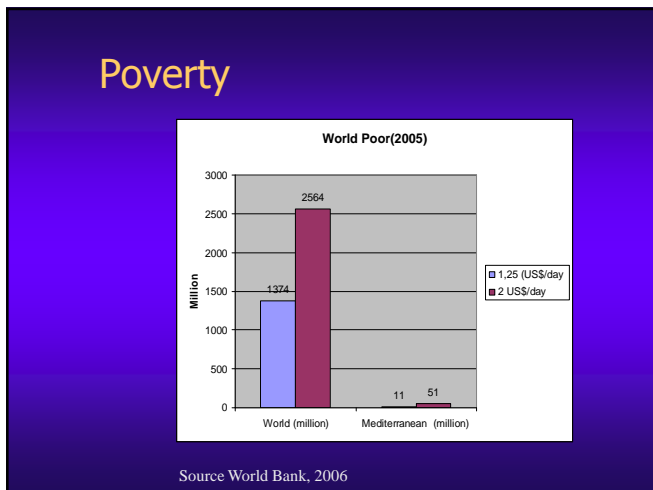


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Section II: Poverty hunger and gender

Source: FAO



- ## Gender
1. **"Feminization of poverty"**. FAO estimates that 70% of the world poor are women and girls due to gender inequalities.
 2. **"Feminization of agriculture"** Women are heavily involved in agriculture (irrigated and non). They contribute more than 40 % of the work in the Mediterranean region. However, this work is rarely recognized and compensated adequately.
 3. **"Women empowerment"** Women are hardly represented in the governing institutions and organizations concerned with water management.
- Only gender mainstreaming can ensure that attention to gender equality becomes a central part of agriculture and rural development interventions. All policies must be examined from a gender and poverty perspective.

Contributions of irrigation and trade to alleviate poverty.

Irrigation

- Small farms in the Mediterranean irrigated agriculture has provided the opportunity to millions of farmer to earn revenues that place them beyond the poverty lines.
- in Egypt the average size of farms is 1,7 ha and the revenue generated is over 300 US\$. In Spain more than 55% of the irrigated farms in the East Coast have less than 3 ha.
- Large farms also provide employment opportunities that contribute to reduce poverty.
- Rural development programs are the new wave to improve life in the rural sectors but their progress in developing countries is slow.

Contributions of irrigation and trade to alleviate poverty.

Trade

- Food trade is playing a more important role in the economies and in the agriculture sector. However, is not at all clear that the poor sections of the population are benefiting from it.
- For many, the trade restrictions are increasing poverty and hunger and the need for reforming trade rules are strongly felt.
- The role of food trade in alleviating poverty can be highly relevant when food imports are used to alleviate the hunger of the poorest people through the food emergency programmes and small farmer have a better access to markets.
- However, food aid must ensure that the aid provided does not create dependency or harm the communities and stakeholders it hopes to assist.

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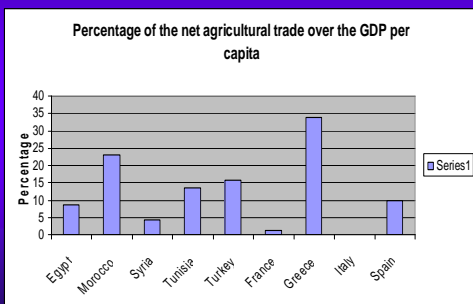
Section III: Trade the new frontier of Food Security

Overview of agriculture and trade (1)

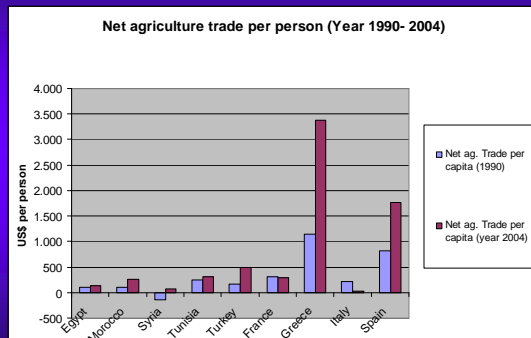
COUNTRY	GDP per capita (1990, US \$)			Agriculture (as % of GDP)		Agriculture value added per worker (2000.\$)	
	1990	2004*	% increase	1990	2004	1990-92	2002-04
SEMR countries							
Egypt	1.185	1.600	35,0	19	15	1.575	2.007
Morocco	1.057	1.150	8,8	18	16	1.275	1.582
Syria	1.129	1.650	46,1	28	23	2.356	2.977
Tunisia	1.485	2.300	54,9	16	13	2.365	2.415
Turkey	2.563	3.100	21,0	18	13	1.772	1.793
EU countries							
France	21.321	25.000	17,3	4	3	24.724	40.521
Greece	8.360	9.950	19,0	11	7	8.315	9.303
Italy	19.401	22.450	15,7	4	3	13.672	21.553
Spain	12.928	17.750	37,3	7	4	12.611	19.132

* values are estimated for the year 2004
 Source: <http://www.un.org/esa/population/publications/countryprofile/>

Relative importance of ag. Net Trade in the GDP

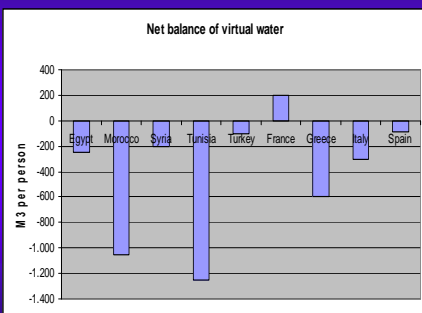


Overview of agriculture and trade (2)



Source: FAOSTAT, 2009

Overview of agriculture and trade (3)



COUNTRY	Net trade value (2004) per m3 of virtual water (per capita)
Egypt	-0,54
Morocco	-0,25
Syria	-0,36
Tunisia	-0,25
Turkey	-4,91
France	1,47
Greece	-5,63
Italy	-0,09
Spain	-19,59

Source: Fernandez, S. 2007

Section IV:
Analyzing agricultural trade and virtual water trade data to reorient national crop production. A methodological outline.



Source: FAO

The essential tables

The analysis is based on the following tables:

1. **Historical (15-20 years) production and value data of main crops**
2. **Water use of main crops (irrigated and rainfed) Latest available info.**
3. **Estimation of the irrigation water use per ton of crop**
4. **Historical agricultural trade (15-20 years). Import, exports, net trade**
5. **Virtual blue water trade of main crops**

Most of this information is available on Internet from FAO and other sources.

Example (Egypt 1)

1. Agricultural production

Main Crops	1990						2004						Increase/decrease (%)			
	Surface (ha)	%	Production (tonnes)	%	Price (US\$/ton)	Value (million US\$)	Surface (ha)	%	Production (tonnes)	%	Price (US\$/ton)	Value (million US\$)	Surface	Production		
Cotton	417247	13	830000	3	91	76	2	300307	8	785182	2	93	73	1	-28	-6
Sugar cane	110584	3	889262	34	18	164	4	135308	3	11230438	27	19	205	4	22	26
Rice	435908	13	3167421	13	127	404	9	645670	17	6352370	15	188	1183	20	48	101
Wheat	821301	25	4268049	16	159	678	16	1094741	28	7177855	17	132	945	18	33	68
Maize	830174	26	4798635	18	141	674	16	788520	20	6236140	15	121	754	13	-5	30
Other crops	618286	19	4101318	16	n.a.	2281	53	902663	23	9314495	23	n.a.	2619	45	46	127
Total	3231510	100	26886885	100		4277	100	3887210	100	4108460	100	5778	100	20	58	38

Source: FAOSTAT, 2009 and own elaboration

Example (Egypt 2)

2. Irrigation water use

Main Crops	Irrigation water use at farm				Total irrigation water use (2004)	
	Irrigation req. (M3/ha)	M3(million) 1990	M3(million) 2004	Increase or decrease (%)	Distribution efficiency	Total irrigation water use (2004)
Cotton	9000	3755	2703	-28	0,70	3861
Sugar cane	10000	1106	1353	22	0,70	1933
Rice	11000	4795	7102	48	0,70	10148
Wheat	4000	3285	4379	33	0,70	6256
Maize	8000	6641	6308	-5	0,70	9012
Other crops	6000	3698	5416	46	0,70	7737
Total						38945
Total per inhabitant						505

Example (Egypt 3)

3. Irrigation water per ton of crop production

Irrigation water per ton		
Main Crop	Yield (tn/ha)	M3 of total irrigation water use /ton
Cotton Seed	2,6	4926,11
Sugar cane	83,0	172,12
Rice	9,8	1597,24
Wheat	6,6	871,523
Maize	7,9	1445,07
Cotton Lint	0,9	14778,3

Example (Egypt 4)

4. Net trade (imports- exports)

Main crops	Net trade (import - exports)			
	1990		2004	
	Quantity (tonnes)	Value (millions \$)	Quantity (tonnes)	Value (millions \$)
Cotton	20562	-66,092	-101549	-389,663
Maize	1899937	248,935	2427724	364,447
Rice	-63924	-15,498	-804730	-222,974
Sugar cane	-548	-0,065	-4227	-0,689
Wheat	5400000	853	4366462	727,57
Total Merchandise Trade	No data	6617	No data	7522,7

Source: FAOSTAT, 2009

Example (Egypt 5)

5. Virtual blue water traded for the selected crops

Main crops	Blue virtual water traded	
	m3/ton	Year 2004 m3 (million)
Cotton lint	14778	-1500,72
Maize	993	2411,91
Rice	1597	-1285,34
Sugar cane	172	-0,73
Wheat	872	3805,47
Net Total		3430,58
M3 Per inhabitant		44,46


Example (Egypt 6)

Conclusions about rice.

1. A highly profitable crop for farmers and the country
 2. The second important export crop for the country.
 3. Largest user of water in the country (26%)
 4. Egypt is an exporter of virtual water through this crop. This appears contradictory for a country of limited water resources.
 5. For every hectare of rice exported nearly 3 hectares of imported wheat can be planted.
- ♦ Reducing the area of rice and substitute if for other crops present ecological problems (soil suitability and compatibility with present low water quality)

Caution !

- ♦ The result of the analysis indicates broad directions to reorient production but many other factors (farmers' income, labor, environmental effects, soil and water suitability, etc..) affect the possible decisions.
- ♦ Any possible change of the existing cropping patterns requires further detailed analysis. Part of that analysis will be presented in the second part of this presentation.



Thank you for your kind attention !

Source: Lamaddalena, 2004