

REDISA / CIAT-CD



AldeiaGlobal
Food, Health and Wealth

UNIVERSITY OF LISBON
ISA – INSTITUTO SUPERIOR DE AGRONOMIA

“Sovereignty,” Food Security and Sustainable Development: Environmental and Economic Challenges

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Introduction -1

- Food Sector and Ag. Sector are among the crucial economic and social areas in the European construction, but also responsible for the administration of great share of territorial resources in any country.
- Economic Policy, public but also private, can play a determinant role regarding the main sustainable DIMENSIONS of the human development system.
- FOOD and AG POLICY in European Union is, indeed, responsible for solving the “food security equation” providing guarantees of sufficient food intake for all in the region with reasonable quality.
- Today, multifunctionality dimensions of the Ag. Sector will be crucial regarding sustainability questions.

Introduction – 2 (background ideas)

- 1 - Europe and OECD countries are living on an **output surplus capacity phase**, mainly in food production (but also in several other sectors);
- 2 – “**Consumption space**” a concept to be introduced....
- 3 – Regulation and Markets are most of the time assumed to be two different dimensions of the system, the first based on Government intervention and the second resulting from the interaction of the economic agents.
- 4 - . The author’s view, and main conceptual and theoretical basic models used, stands providing arguments, rational, facts and empirical evidence showing how important is to provide the economic policy for the most correct “regulatory environment,” always “pro-market oriented” and not against markets functions.

Introduction – 3

- 5 - The European Union and, specifically, the CAP – common ag. policy, has been very successful. Most of the time, has been oriented to use “markets” as the best instrument, whenever they can function in reasonable terms, but without giving up the objectives of pursuing social and environmental objectives, that is, a sustainable development process.
- 6 – Environmental Challenges today are quite clear, starting with climate change pressure about the human impact over the ecosystem. Ag. sector is certainly one source of problems (energy, water and fertilizer use, etc) but also one possible source of solutions, **and definetly linked with “territorial considerations.”**
- 7 – Economic and Environmental Challenges for a sustainable development process are certainly global problems, such as food security, **but all need to be addressed and solved at local base.**

Introduction – 4 (Future challenges)

- 1 – Sustainable development and quality of life is clearly the most important objective for any action, private and/or public/colective decisions **for policy definitions** on a medium long range horizon.
- 2 – The relative importance of the ag. Sector, for food supply, but also to support services from nature along with territorial considerations, needs to be well understood, without forgetting a tremendous group of other activities which directly and/or indirectly are interdependent from it (**indeed is a structural sector**).
- 3 – **An ecological perspective** is also important, human kind is part of a biological system, and the contact and global equilibrium with nature is also a referential issue (climate changes but also ecological changes).
- 4 – Freedom of Choice and “territorial” considerations are inevitable, so **“sovereignty” questions need to be addressed**.

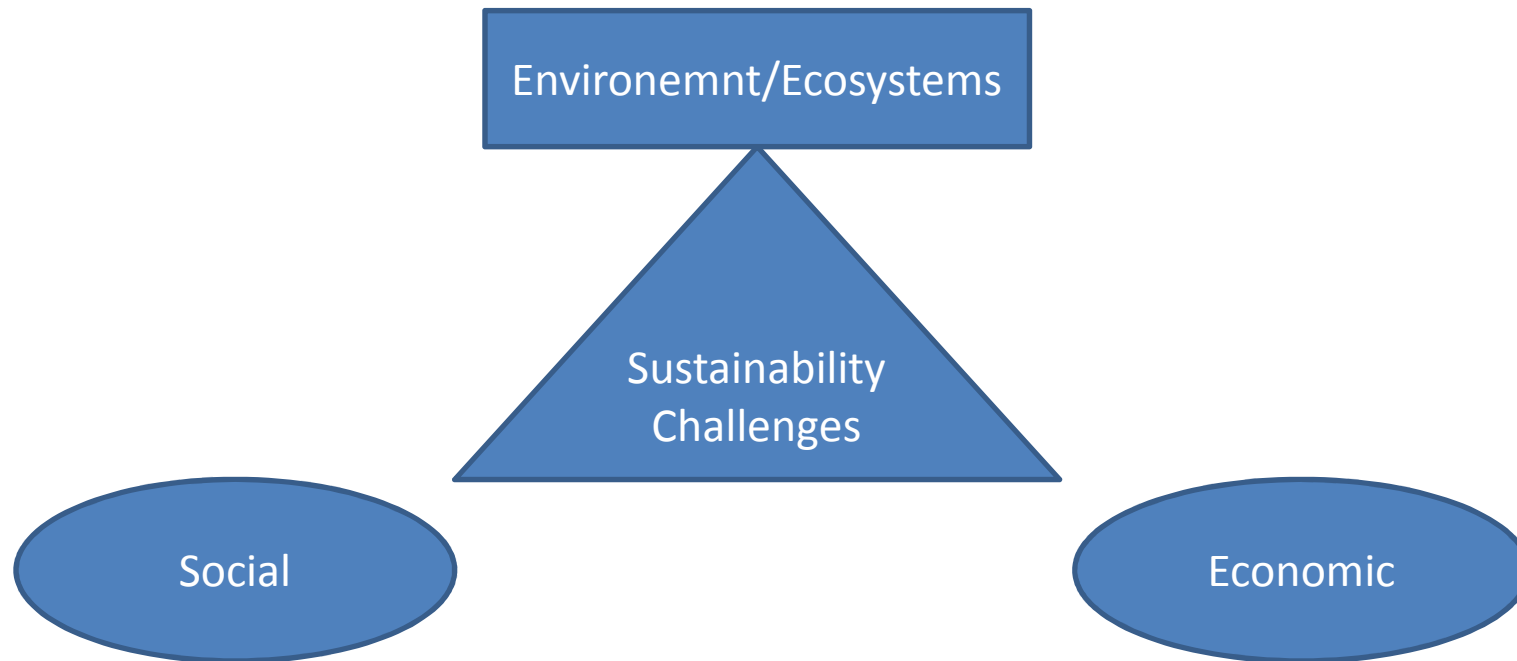
Methodology and Structure

- Referential Models and Concepts
- Food Policy Examples: Data Facts and Analysis
- Discussion
- Conclusions

– Referencial Models - Model A

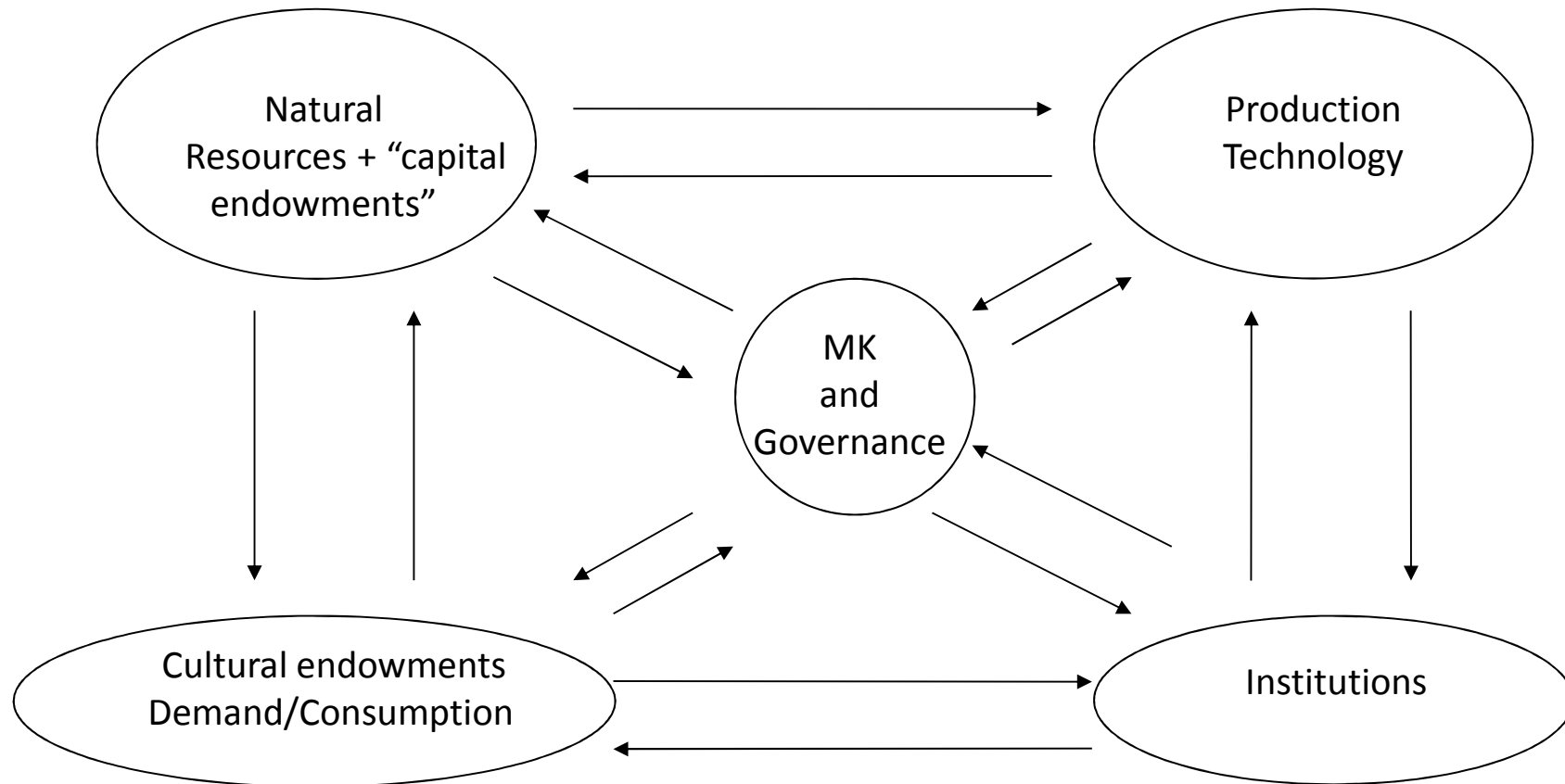
-Basic Sustainable Dev. Model

A three dimension model:



- Referential Model B

Fig 2. Induced Changes and Innovation model



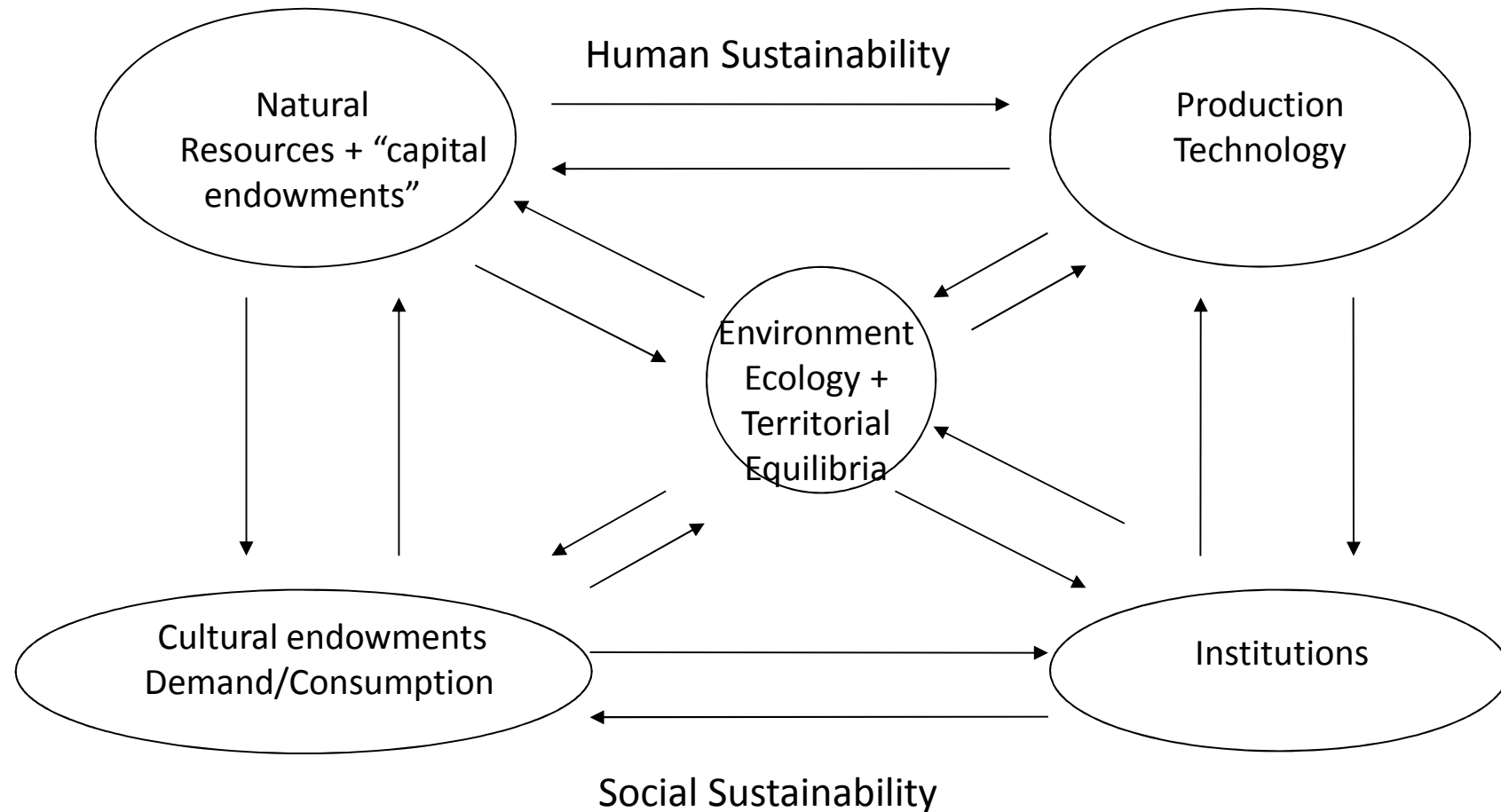
Source: Carvalho, B. P de (2004) and author elaboration

Merging Both Models

- 1 – Consider that Markets (MK) and Governance dimensions can be included into the Institutional factors set.
- 2 – Environment (and quality of life), plus the ecological equilibrium is a central piece for human considerations in any development process, mainly within a sustainability perspective.

- Referential Model B2

Fig 3. Induced Changes and Innovation model+Sustainability



Source: Carvalho, B. P de (2004) and author elaboration

Referential Model C – Demand Constraints and New Demands

- Demand is the new “driving force” in the modern economy, where production capacity is now beyond consumption possibilities;
- New Demands arrive every day, but some constraints are present, such as the “time frame” and the “value of time;”
- A “modern definition” for production is needed....Production is the last aim of any activity, but we need a chain perspective where the last step is the “production of utility,” present and /or future utility (able to improve the well being of someone). Indeed, with that perspective, Consumption is the last step in the Production Chain and Chain Value.
- Chain Value studies are becoming every day more important, allowing to focus on the essential objective, “creation of value” and at the same time with focus on the Market Functioning, power issues along the chain and respective distribution of the value creation process.

Derived Comments:

- 1 – Europe (EU-15) is clearly achieving a new equilibria in food production and consumption, with almost no growth in both sides – production and consumption;
- 2 – Demand growth is always dependent from more consumers (population), and per capita growth consumption. In per capita terms, in many products is evident the “plateau” and/or decreasing levels of consumption (Engel’s law, 1857).
- 3 – Food is one of the first consumption needs to be “solved” in any development process (saturation levels are achieved frequently in many consumption goods).

Demand Constraints and New Demands

- 4 – Food Demand is typically an inelastic price demand system.
- 5 – Development brings new products and new demands, but most of the time with a logistic behavior. For industrialized countries Engler's curve is evident for food, with low income elasticity and diminishing with time and "\$" (income growth levels).

Demand Constraints Relaxation Measures for Food Policy:

- Many solutions can help, some examples:
- A) Enlargement of markets;
- B) Logistics and Information availability;
- C) International Trade;
- D) Processing and Conservation measures;
- E) Adding value strategies with other dimensions beyond nutritional value (such as ludic, historical, cultural, ecological and sustainability dimensions).

Important Considerations/Hypothesis Derived from Models and Key Concepts

- 1 – Sustainability questions are always related with an inter-temporal analysis and territorial based;
- 2 – Models are built to help understanding changes over time and underlying rational;
- 3 – The IMI model (Induced Changes and Innovation Model, (Carvalho, 2004)) assumes an induced process of changes (mainly economic rational), but also introduced some dimensions for sustainability questions, where food security, territorial and sovereignty concerns can be studied and better understood to allow for improvements into freedom of choices, sustainable development and quality of life.
- 4 – Demand Constraints and New Demands are driving forces, forcing changes but allowing for food policy interventions into the correct (sustainable)direction.

Revision on Concepts -1

- Sustainability Concerns are not new, and can be found in the literature at least, since the XIX century (for example with Thomas Malthus, in food matters).
- Conservation and Environmental issues are not exclusive matters from the last decades, but a referential moment was the United Nations Conference on the Human Environment, 1972 in Stockholm.
- The problematic and Concept of “sustainable development” gained international support latter on in 1987 with the publication of “Our Common Future” by the World Commission on Environment and Development with the definition: “ development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

Revision on Concepts -2

- The World Food Summit (1996) referential definition:
- Food security exists when all people, at all times, have access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.”
- The author definition: Food security means ability to access food in physical and economic terms to achieve a healthy diet in permanent and continuous way. Implies on diminishing risks and uncertainties in the food system, at least in the following dimensions:
 - A- Availability;
 - B- Access;
 - C-Consumption/quality, nutritional and utilization;
 - D- Stability;
 - E- Vulnerability and Resilience of the Food Systems
 - Obs: Food Security implies a “sustainable perspective”

Revision on Concepts - 3

- Space and Time factors are unavoidable dimensions under food security and sustainable development (economic and environmental) considerations.
- “Territorial notion” importance – The notion of a territorial dimension has been always polemic. But it is always a relation between a certain space (and time) and an established relationship of power “over space” “appropriated” for someone. Any society produces a “territory” and depends from a certain territory.
- Obs: A territorial definition is always a social production process....individual initiative or not is a collective outcome.

Revision on Concepts -3

Definition of Food Sovereignty

- Definition of the Strategy for Food and Nutritional Security (ESAN – CPLP)
- “Soberania alimentar é o direito dos indivíduos, países e povos de definirem as suas próprias políticas de agricultura, emprego, pesca, alimentação e de terra para que sejam ecológica, social, económica e culturalmente apropriadas às suas circunstâncias únicas. Isto inclui o verdadeiro Direito à Alimentação e a produzir alimentos, o que significa que todos os povos têm direito a alimentos sãos, nutritivos e culturalmente apropriados bem como aos recursos para a sua produção, e à capacidade para se sustentarem a si mesmos e às suas sociedades.”
- “Food Sovereignty refers to the right to produce food on one’s own territory”
- Sovereignty refers always to the ability and freedom to take decisions, assumed for someone but respected socially speaking.

Case Studies for Food Policy: Sovereignty, Food Security and Sustainable Development

- The Case of Portugal
- Other cases in the Portuguese Speaking Countries
- The case of São Tomé e Príncipe in Africa

Tab. 1 - Mediterranean Diet (Intangible Cultural World Heritage) – Unesco Classification (2010-2013): An Institutional Innovation

Average calories available per person per day in
European States - 2007-2009

Estados Membros da UE	Anos		
	2007	2008	2009
>3700 calorias por pessoa/dia			
Áustria	3816	3826	3800
Bélgica	3736	3751	3721
>3500 e <3700 calorias por pessoa/dia			
Grécia	3637	3656	3661
Luxemburgo	3599	3592	3637
Itália	3628	3612	3627
Portugal	3582	3614	3617
Irlanda	3564	3588	3617
Alemanha	3552	3537	3549
França	3520	3598	3531

Fonte: DGS – direcção geral de saúde

Tab. 2 - Mediterranean Diet

Fruits and Vegetables/Legumes Average Quantity Available
per capita (kg) and per year in several
EU Member States
2007-2009

Estados Membros da UE	Anos		
	2007	2008	2009
>300 kg/ano			
Grécia	388,5	360,2	385,6
Portugal	291,2	279,7	313,1
Itália	300,0	284,1	312,4
Malta	307,4	311,6	305,6
>200 e <300 kg/ano			
Luxemburgo	283,0	291,2	277,3
Irlanda	225,6	244,1	244,3
Dinamarca	208,9	210,5	235,4
Espanha	236,5	247,6	231,8
Áustria	245,8	259,9	228,6
Roménia	209,5	229,2	226,6
Chipre	230,4	205,4	225,0
Eslovénia	203,5	210,7	224,5
Bélgica	212,3	223,0	218,3

Fonte: DGS – direcção geral de saúde

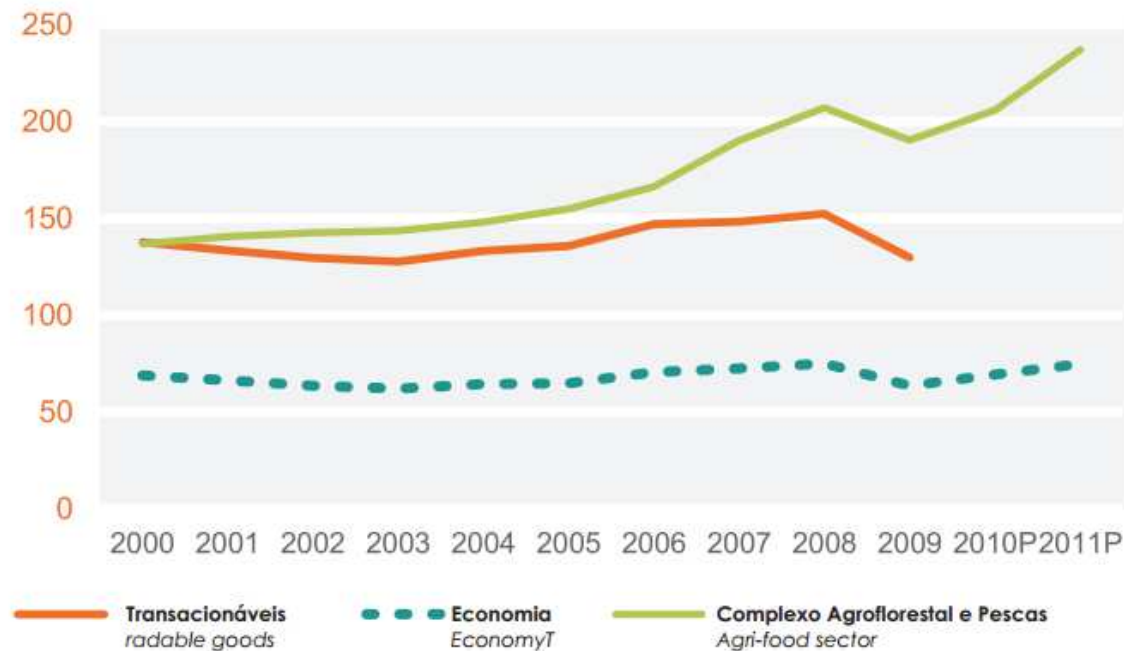
Tab.3 - Self-sufficient rates in Portugal, before and after EU integration, measured in % of local production in regard to consumption. GAA% - degree of self-sufficiency

	Before EU – GAA	After EU – GAA%
	%	
Cereals	47	27
Wheat	37	11.5
Rice	63	53
Corn	47	29.2
Roots and Tubers	94.2	58.7
Hortic+Fruits	178.8	166.4
Bovine Meat	96.2	52.2
Swine Meat	100.7	51.3
Chicken Meat	100	93
Ovine+Goats	100	79.8
Milk	100	106.2
Fish	102.1	41.1

Fig. 1 - Internationalization Importance of the Agribusiness activities

Grau de Abertura* do Complexo Agroflorestal e Pescas e Transacionáveis 2000-2011 (%) - preços correntes

Degree of openness* of the Agri-Food Sector and Tradable Goods 2000-2011 (%) - current prices



Fonte: GPP, a partir de Contas Nacionais, INE - Source: GPP from National Accounts, INE
 * Grau de Abertura = $(IMP+EXP)/VAB*100$ - Degree of openness = $(IMP+EXP)/GVA*100$

Other Results in the CPLP Countries

- CPLP – Community of Portuguese Speaking Countries:
 - Angola
 - Brasil
 - Cabo Verde
 - Guiné Bissau
 - Guiné –Equatorial
 - Moçambique
 - Portugal
 - São Tomé e Príncipe
 - Timor

The Case of São Tomé e Príncipe

Tab. 4 – Average Expectancy of life in years, for the CPLP and STP

Países	Ano	
	2000	2012
Angola	45,2	51,5
Brasil	67,7	73,8
Cabo Verde	69,7	74,3
Guiné-Bissau	44,8	48,6
Moçambique	39,3	50,7
Portugal	75,7	79,7
São Tomé e Príncipe	65,1	64,9
Timor-Leste	-	62,9
África Sub-Sahariana	48,7	54,9
Mundo	66,9	70,1

Fonte: PNUD (2002) e PNUD (2013) in Silva (2014)

Food Consumption Evolution in STP

Tab. 5 – Evolution in Kcal per capita/day in STP between 2002 e 2014.

Local	Ano	Calorias (kcal/EH/ dia)	Proteínas (g/EH/dia)	Gorduras (g/EH/dia)	Observações
Água-Grande	2002	2682,1	113,7	n.d.	Santo S. (2008)
Água-Grande	2004	2780,08	94,94	n.d.	Tavares (2005)
Água-Grande	2008	3354,4	147,3	23,73	Santo S. (2008)
Água-Grande	2011	2650,75	n.d.	n.d.	Almeida (2011)
Água-Grande	2014	3601,26	125,21	95,86	Silva (2014)

Source: Silva (2014)

Consumption Evolution in STP: Nacional Production Origin and Imports Share

Tab. 6 – Evolution in Kcal/per capita /day iberived from Nactional Products and Imports. Importados

Calories/Years	2001	2002	2003	2008	2009	2010
Nacional Prod (Kcal/day)	1514	1428	1398	1399	1316	1250
Imported Prod. (Kcal/day)	1082	1320	968	1329	1764	1809
Total	2596	2748	2366	2728	3080	3059
National Products (%)	58,32	51,97	59,09	51,28	42,73	40,86
Imported Products (%)	41,68	48,03	40,91	48,72	57,27	59,14

Source: Silva (2014)

Comparative Situation in the CPLP –Community Regarding Food Security Evolution Worldwide

Table 7 – Food Supply Evolution per capita (kcal/day) in the 2000-2007 period

Anos	2000	2007	Difer-2007-2000
World	2725	2796	71
Africa	2347	2455	108
Low Income (FD)	2508	2569	61
Small Islands in Dev.	2483	2558	75
Cabo Verde	2370	2572	202
Angola	1763	1973	210
Guiné-Bissau	2247	2306	59
Moçambique	1959	2067	108
São Tomé e Princ.	2373	2684	311
Timor	1932	2066	134
South America	2782	2886	104
Brasil	2885	3113	228

Fonte: FAO: Food Balance Sheet. June of 2012

Discussion and Conclusions - 1

- 1 – Food and Economic Policies, Public, Private and derived from Food Governance options from many economic actors matters.
- 2 – The two countries studied, completely different, improved their situation in economic terms. The first, Portugal, not necessarily in food security terms, but the second in both dimensions, economic and food situation, which is the expected behaviour for a developing country;
- 3 – However both countries are now much more dependent from abroad, with more trade.
- 4 – Sustainability, food security and quality of life (including sovereignty and freedom of choice) can now be in question.
- 5 – The models and concepts discussed before can now help to deliver some guidelines for food and economic policy:
- A) Space of consumption in food is quite obvious in Portugal to have achieved a “plateau” and is not likely to grow much more;

Discussion and Conclusions - 2

- B) Production growth will be based on exports for Portugal (or imports substitution), but development will be dependent from creating other value creation alternatives, based on services from nature, quality of life considerations and sustainable questions, including risks and uncertainty options (similar situations for other EU members, mainly the EU-15);
- C) Local development concerns should be now on the agenda, to improve/compensate asymmetric conditions on production and consumption equation (social dimension but also ecological dimension), taking care of the negative impacts from intensified systems. Externalities of intensified systems will have to be taken into account carefully, balancing the economic direct costs and benefits with the overall social and environmental costs (but also potential benefits);
- D) Sustainable Development is a global challenge, but necessarily with local solutions. The same can be said for quality of life and freedom of choice. The local dimension is central, and the territorial linkages clearly important (sovereignty options).

Discussion and Conclusions - 3

- E) Demand Behaviour and Choices will have to be improved, mainly in regard to the health factors, and environmental/ecological impacts, which will be based on better information and social consciousness.
- F) Research on Human Behaviour and Education based on sound knowledge and information should be reinforced, always taking into consideration the objective of improvements in “freedom from needs” and “freedom from fear.”
- G) Governance and Institutional Innovation will be crucial to address the future needs for a sustainable world, at local but also global level.
- H) Local economic development with an inclusive perspective on global flows, linking consumption capacity growth and options (freedom of choice) with improvements in value creation that can be capture at least partially but significantly at local, territorial base.

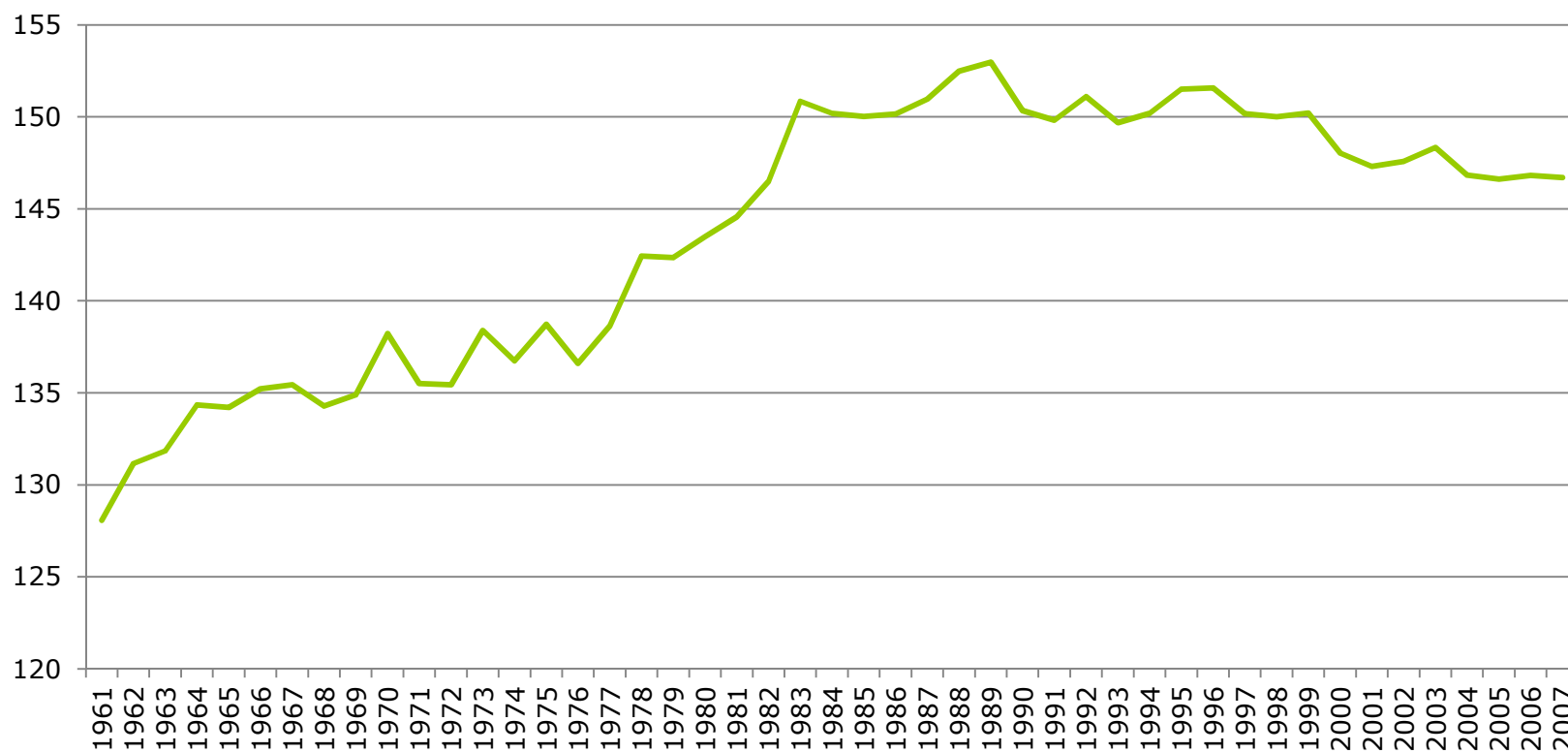
Table 1 - Food Supply per capita (kcal/capita/day) and total average growth rate in the period, per year.

	1961	1971	1981	1991	2001	2007	1961-2007 (Geom. Growth)
World	2200	2370	2512	2620	2722	2797	0.52
USA	2881	3058	3230	3509	3683	3748	0.57
European Union	3000	3212	3279	3377	3457	3465	0.31
LDC's	1918	1968	1957	1966	2053	2161	0.26
South America	2304	2457	2611	2637	2781	2885	0.49
Asia	1804	2026	2233	2441	2590	2668	0.85
Africa	2029	2111	2236	2298	2366	2461	0.42

Source: FAOSTAT, 2011

Demand Constraints Hypothesis: Main Facts and Data (based on wheat, rice and maize)

**Fig. 1 - World Food Supply of Cereals
(kg/capita/yr)**



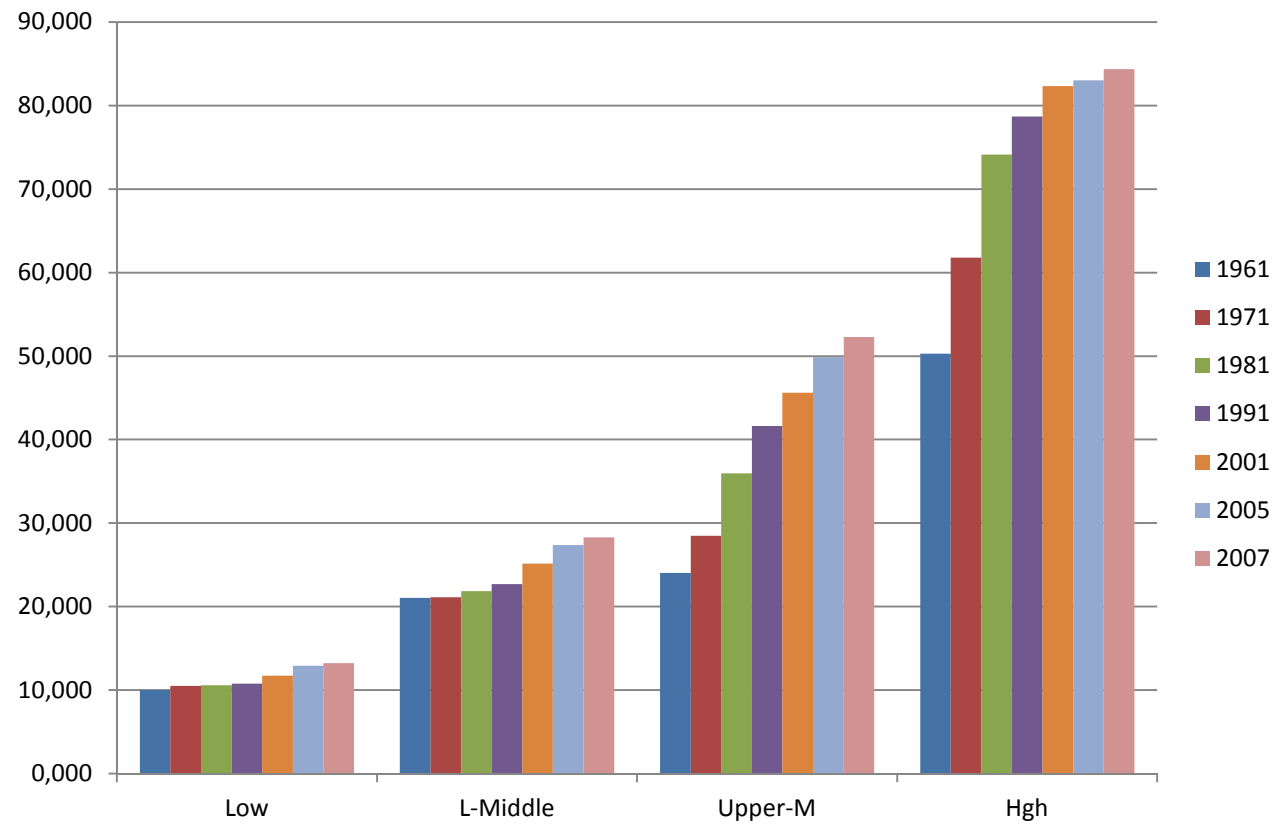
Source: FAOSTAT, 2011 and author calculations

Table 2– Geometric Growth of Food Supply per capita (kcal/capita/day)

	1961- 1971	1971- 1981	1981- 1991	1991- 2001	2001- 2007
World	0.75	0.58	0.42	0.38	0.45
USA	0.60	0.55	0.83	0.49	0.29
European Union	0.65	0.21	0.30	0.23	0.04
LDC's	0.26	0.04	-0.05	0.43	0.86
South America	0.65	0.61	0.10	0.53	0.62
Asia	1.16	0.98	0.89	0.60	0.49
Africa	0.39	0.58	0.28	0.29	0.66

Source: Faostat, 2010

**Figure 2 – Meat Supply (kg/capita/year) by country group
(low income, lower-middle, upper-middle and high income countries)**



Source: FAOSTAT (2011) basic data and author's elaboration

Consumption and Institutional Innovation

- 1 – Most of the time economists and engineers are concentrated on technological changes, but those should clearly include technological changes in consumption and also in institutional arrangements.
- 2 – Many problems can be addressed looking to systems governance, access to information, access to adequate technology and to capital (at a fair price).

- Mediterranean Diet Example
(Intangible Cultural World Heritage)
– Unesco Classification (2010-2013):
An Institutional Innovation

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Alemanha	3552	3537	3549
França	3520	3598	3531

- Mediterranean Diet - 2

Average calories available per person per day in European States
2007-2009
(cont.)

Estados Membros da UE	Anos		
	2007	2008	2009
>3000 e <3500 calorias por pessoa/dia			
Roménia	3442	3546	3487
Lituânia	3487	3514	3482
Hungria	3491	3495	3477
Malta	3444	3428	3438
Reino Unido	3453	3453	3432
Polónia	3389	3363	3392
Dinamarca	3393	3370	3378
República Checa	3244	3466	3305
Eslovénia	3221	3268	3275

Fonte: DGS – direcção geral de saúde

Some conclusions - 1

- 1 – Food Policy and Agricultural policy has been very important, based on markets and different forms of “regulation.”
- 2 – Regulation should be seen as an instrument to support markets functioning when possible, not against markets.
- 3 – Consumption constraints is already in place, globally, but there is enormous alternatives for expansion locally, mainly in EU-10 and for exports outside Europe.
- 4 – The EU role in food and agricultural imports is also very important, and can play a “vital”role” for LDC’s countries. For tropical countries there are many products that are complementary and not competing with local production.
- 5 – Consumption should be seen as the last step in the Production Chain, now redefined to be focused in “value creation.”

Some Conclusions -2

- 6 – Value creation on the chain is not equal neither the “power in the chain” of the several players.
- 7- Markets in food and agricultural products do not work frequently in good conditions, where scientific contribution is needed and necessary. (REDISACPLP/CIAT-CD contributions).
- 8 – The Food and Ag. Sector is a structural sector, with many function beyond the production of tangible goods.
- 9 – The importance of new paradigm, with the co-relation of demand constraints and new demands with quality of life, should revealed the need for newer approaches for sustainable development
- 10 – The necessary equilibrium with the eco-system, food and health factors, and human economic activities should be revisited , looking for news ways of creating value related with services, in particular services from nature.
- 11 – Being a “space” with excess production capacity, a new challenge should be embraced, which has been the European tradition in regard to support development in LDC’S, based on knowledge transfer to developed appropriated technology to local conditions.