# FOOD SECURITY AND SUSTAINABILITY: A CRISIS OF CULTURE AND POLICY[1]

"Given the chance, poor communities hold the key to the solution of their own problems" (Pretty et al 1995, 139)

**Introduction**

Food is both practical necessity and cultural product. Food reflects a communal order that can be exclusive (as in industrial agriculture) or inclusive (with more evenly distributed size classes). Issues around food call into question cherished beliefs regarding consumption and intriguing ideas of whether achieving the triple bottom line (optimal economics, environment, culture) in production is a possibility.

More often than not, though, meeting the triple bottom line is fraught with constraints. The Sustainable Community Connections project, coordinated by AWISH-HELLAS, seeks to address food security issues in creating "stronger and closer relationships between Mediterranean cultures" (EUROMED 2008*: Project briefing-report from the Dec 8-9 2007 workshop,* 3). In this four-part workshop (the first was held in Athens in Dec. 2007, we are here today at Lake Como for the second one, a third will be held in Tunisia, and the fourth in Athens), the specific goal is development and planning for implementation of Fair Trade (FT) olive oil-related products, with targeting of markets in the European Union (EU) and United States (US). Through planning, the project aims to support local economies, promote cross cultural understanding, and provide a modern and practical planning tool both utilizing and advancing local economic development theory.

To do this, it is first necessary to consider principles of sustainability, which include considerations of community, resilience, and food security – all of which should be incorporated into sustainability criteria guiding the EUROMED project. The triple bottom line concept of sustainability includes consideration of economic viability, social acceptability, and at the same time, environmental integrity and sustainability. This calls for the "reconfiguration of human economies," in the words of Wes Jackson of the US-based Land Institute, molding agricultural economies to nature's image (Jackson 2002, 75). Sustainability criteria for cooperative enterprises, however, may be unique to these villages, and not necessarily suited everywhere.

In this paper I will review political economy, as a framework for contextualizing some of our current sustainability dilemmas. The emerging geopolitical dynamic may in fact help open a world system which would allow for the reassertion of comparative advantage, and thus open up markets for the high-quality processed olive oil from Troinata and Farsa, and indeed for other study villages in Italy, Jordan, and Palestine (EUROMED 2008).

**Geopolitics**

Just as in the US, reforms over the past 15 years in the EU's Common Agricultural Policy (CAP) have created crop program rules that discourage crop rotation and other sustainable practices. This is in order to maintain high base acreages, which then qualify for subsidies (EUROMED 2008; European Communities 2004).

Within the past several years in the World Food Programme, the cost of obtaining basic commodities such as wheat, rice, and corn has doubled. Observers may blame this on "food shortages" created by resource constraints. A careful look at USDA data, however, show why stocks are being depleted: both production *and consumption* are high (Fig. 1) – food and farm policies explain much of the variation in any food equation. For example, a burgeoning livestock and ethanol market, the latter of which has absorbed 15 percent of the US corn crop in the past year and could take as much as 30 percent this year, have significantly contributed to such demand (Fig. 2). Clearly, competition between the 860 million people in the world who own gas-gulping automobiles and the 2 billion poorest (with little purchasing power) are at odds. Food and farm policies actually exacerbate and create such anomalous situations – pitting humans against animals for consumption of traditional staples (see Figures 1 and 2).

Decreasing grain stocks have led social critics to call for even more grain eating (whole grains). Earlier work such as France Moore Lappé's *Diet for A Small Planet, Food First*, and this author's *World Food, Population, and Development* exposing political economies preceded the spate of "locavore" writing today (Kingsolver, Pollen, Smith and Mackinnon, many others). This latter approach is stated cogently by journalist Michael Pollen in his newest book, *In Defense of Food*. Pollen's Mantra is "Eat Food, Not too Much, Mostly Plants." Pollen is referring to grass-fed ("natural") livestock – as well as plant products such as olive oil.

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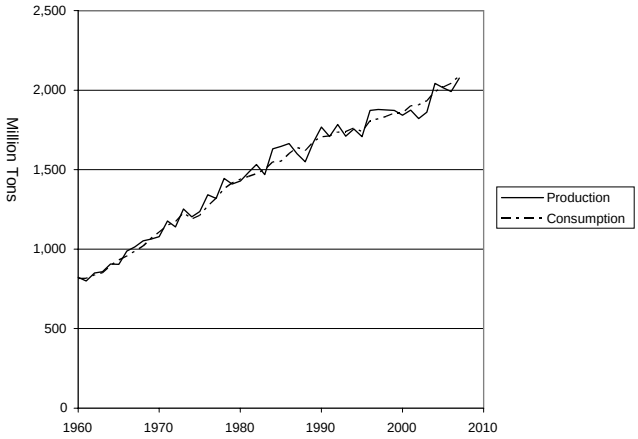
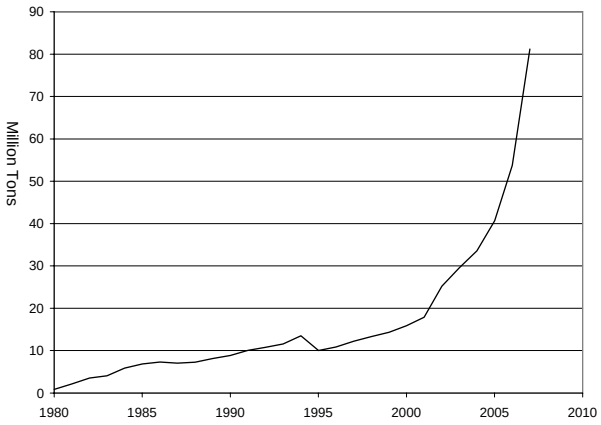
World Grain Production and Consumption, 1960-2007




*Source: USDA*
(Brown, 2008, http://www.earth-policy.org/Books/PB3/Plan%20B%203.0%20Data%20-%20Chapter%202.xls)

Fig. 1

U.S. Corn Used for Fuel Ethanol, 1980-2007




*Source: USDA*
(Brown, 2008, 1Hhttp://www.earth-policy.org/Books/PB3/Plan%20B%203.0%20Data%20-%20Chapter%202.xls)

Fig. 2

No scholar touches on the purview and extent of economic distortion and havoc as well as Harriet Friedmann of the University of Toronto (Friedmann 1994, 2004). Friedmann neatly tells the story of the commoditization of food in terms of three complexes that form the "shaky foundation" of the world food economy. These complexes are: Wheat, Durable Food, and Livestock. Each complex includes many class, race, and gender relations within a certain international division of labor – few of which are positive, in terms of achieving principles of sustainability.

Friedman argues that the wheat complex facilitated food import dependency, the durable food complex reduced demand for traditional tropical exports, especially sugar and (tropical) vegetable oils (but allowing developing economies to export high-valued olive oil), and the livestock complex undermined local, mixed economies with its emphasis on a "world (marbled) steer" and appropriation of lands for grazed cattle. Almost all of the complexes were enabled by farm and food policies, which eventually added distributive economic and social goals (see, for example, European Communities 2004: *The Common Agricultural Policy Explained*).

Principles of sustainability are needed to guide such efforts. Certainly, mobility of capital and labor, and global outsourcing and marketing, all disrupt the living and material cycles of local ecosystems and attempt to compensate for the disruptions by more technology, more purchase of inputs, and more selling or using of wastes. Although capital movements and markets tend to eliminate wild places and ecosystems, they may then be relinked through the very social institutions – markets and transnational corporations—that disrupt them.

According to Friedmann (1994, 2000), agriculture, the method of human food getting, is key to transforming economy and governance. Others argue that it must be placed at the center of economy, governance, and science. This elevating of agriculture is the essence of food security. It involves substituting certain management practices and minimal interventions for annual disruptions of tilling, planting, and leaving the soil bare, as in the old English "High Farming" that Friedmann writes about. This is otherwise called "habitat enhancing agriculture," which reverses the logic of industrial agriculture and modern capitalism. Some would call this "agroecology" or "ecological agriculture," and it is designed to consciously recover the self-renewing qualities of much traditional agriculture. Such practices are most certainly wise traditions.

**Greece, Olive Oil, and the Common Agricultural Policy (CAP)**

Since the mid 20th century, two "pillars" of policy have operated in the Mediterranean -- one to offer price supports so products can be sold at competitive prices, the second, to advance rural development (EUROMED 2008). Within the EU, Italy had been the sole producer of olive oil until 1981 when Greece joined the Union (France had been producing very little); Spain and Portugal joined in 1986. At that time, competition was coming from cheaper

producers – Morocco, Syria, Tunisia, Lebanon – with better climate and less expensive inputs.

The first regulation of note affecting olive oil was 136/66/EEC of Sept 22, 1966, which included olive oil in the CAP subsidies. The Council declared olive oil of "special economic importance" and "the most important source" of oils and fats for large categories of consumers (European Communities 2004).

The goal was to ensure that producers received a fair income. To do this, olives would need to come from the locales themselves, to be "native (and traceable) to place." The rule set minimum prices, established border protection, supplied public and private storage to manage surpluses from the market, and granted export subsidies to assist marketing outside the EU.

In 1981, in large part due to fraudulent cases in Italy and the unwarranted and unprecedented tripling of Italian subsidies, amendments were made to the 1966 regulation – subsidies were to be distributed according to the quantity of oil produced. This resulted in intensified production to achieve even higher yields, including denser plantings of trees. Chemical-laden surface water runoff became a problem, as did the quality of the olive oil itself. Reforms in 2001 aimed at addressing this, and grants were issued specifically for quality development measures.

At the same time, attempts were made to ease barriers to production and marketing for other Mediterranean countries. It was recognized that 95 percent of the olive oil sold in world supermarkets was coming from Spain, Italy, and Greece. The CAP had effectively neutralized the comparative advantage of its Arab neighbors by paying European olive oil growers 2.3 billion dollars each year in subsidies; for example, Morocco had 260 modern olive oil factories and could produce 290,000 tons of oil a year for export but the biggest export year was 1997 at only 35,000 tons. By contrast, growers in the Andalusian area of Spain exported 500,000 tons of oil each year (EUROMED 2008).

In 1999, the EU was preparing to add 13 new member states and agricultural inequalities were looming large. In the previous 10 years, United States' imports of olive oil (mostly from the three major suppliers) had doubled. Previously, policy tools such as Agenda 2000 (a project of the Network of Mediterranean Non-governmental Organizations focused on Ecology and Sustainable Development) was meant to address agro-environmental measures and to foster the regeneration of agricultural areas – especially in mountainous areas, those threatened with abandonment, areas affected by certain physical constraints where agriculture is necessary to preserve the environment (with, for example, the addition of cover crops and vegetative cover), or to ensure tourism value or protect coastlines.

The 2003 CAP reforms of the EU Commission brought decoupling: separating subsidies from levels of production. It established a Single Payment Scheme (60 percent of funds) based on hectares of land and numbers of trees –and the rest (40 percent) was allotted to states as "National Envelopes" – given to olive growers in years of rest or to preserve the area for cultural purposes. These reforms were scheduled to take effect in the 2005-06 marketing year, ostensibly limiting payments to olive areas in production before May 1, 1998 and to new planting under approved programs.

Greece itself has experienced steady policies of industrialization and rural-to-urban migration. Through 1991, the agricultural population was reduced by more than half from 45 percent to 17 percent; between 1987 and 1993 alone, total cultivable land area decreased by 10.5 percent. Today Greek agricultural policies aim to restore agricultural communities.

On the basis of "environmental" and "rural heritage" considerations, communities like Farsa and Troinata on the island of Kefalonia would qualify for subsidy funds under the recent EU Regulation No 1698/2005. Subsidies are available through this regulation to villages under categories such as Article 34(3) "semi-subsistence agriculture holdings," Article 35 "producer groups" and Article 37 "mountain areas." The regulation was implemented January 1, 2007 and will continue through 2013. It also creates a separate fund, the European Agricultural Fund for Rural Development (EAFRD), which provides funds for land management, improvement of the rural quality of life, and encouragement of diversification. As such, it was designed to support traditional agricultural communities to become economically independent while adhering to principles of sustainable food production.

**Sustainability Indicators and Benchmarks**

Sustainable development as a term first appeared in World Conservation Strategies in 1980. Within the past 15 years, a "gallery of definitions" for sustainability – over 70 uses – has emerged (Birkmann 2000a, Kirkby et al 1996). The most common usage is given by the Brundtland Commission report (*Our Common Future*) – "Sustainable development is development that meets the needs of the present without compromising the ability of future

generations to meet their own needs." (Birkmann 2006b, 43) Today, ideas about carrying capacity and ecological footprint, bioregionalism, food miles, and fully integrated food systems build on the ideas first elaborated by the Brundtland Commission (Spector 2002).

It may seem odd talking about relatively recent studies of sustainability with a Greece or Roman or Tunisian or Jordanian case – cultures that have existed for millennia. Yet Greece presents a very interesting case of environmental modification. Greece is one of the cradles of civilization, yet (Jackson 2002, 67) the impact of millennia of agriculture practice is everywhere -- "archeological investigations of ancient ecosystems using soils and fossil pollen along with human relics and artifacts reveal that when hill slopes lose their soil, people move; when usable soils re-form thousands of years later, people return to farm."

Plato and Aristotle witnessed this degradation. Plato, in one of his dialogues, has Critias proclaim: "What now remains of the formerly rich land is like the skeleton of a sick man, with all the fat and soft earth having wasted away and only the bare framework remaining…The plains that were full of rich soil are now marshes. Hills that were once covered with forests and produced abundant pasture now produce only food for bees. Once the land was enriched by yearly rains, which were not lost, as they are now, by flowing from the bare land into the sea." (Jackson 2002, 67)

For the Romans, the earth was "mater terra" – when topsoil was lost, fertility declined. According to Virgil,

> *Before we plow an unfamiliar patch*
> *It is well to be informed about the winds,*
> *About the variation in the sky,*
> *The native traits and habits of the place,*
> *What each locale permits, and what denies.*

One of the challenges today confronting sustainable agriculture is taxonomic – the concept is often vaguely defined. One of its oldest precursors is "organic," although even Rodale himself admits to not knowing its derivation (Lockeretz 1990). Sustainable agriculture can, in fact, alternatively mean:

- Sustainable over time (an ability to endure, maybe indefinitely);
- Alternative (something different from the prevailing or conventional);
- Low input or low external input – reduced use of materials from outside;
- Ecologically-sound (consistent with principles and processes that govern natural environmental systems; may include labels such as ecological agriculture or agroecology);
- Regenerative (continuing ability to recreate the resources that the system requires); or,
- Organic (like an organism or a whole consisting of inherently functioning parts).

In Kefalonia, a great advantage for sustainable agriculture studies and research informing agriculture-based cooperatives is the work of the Department of Organic Farming of the Technological Educational Institute (TEI) of Ionian Islands in Argostoli. Established in 1999, this is the first and only department of higher education in Greece whose sole subject is organic farming. With 800 students, the department is in its ninth year. It works closely with the Hellenic Environmental Movement – the environmental movement in Greece (Doukas 2001).

The first attempt at organic farming in Greece may have been in 1982 in Egialeia in Corinthos, with organic raisins. In 1993, the Division of Organic Farming was established in the Ministry of Agriculture (renamed in 1994 the Ministry of Rural Development and Food). Throughout Greece, 1200 ha are registered as organically cultivated according to EEU Legislation (2092/91); this represents only .03 percent of total cultivated land in Greece. In 1999, organic livestock was introduced (EU Legislation 1804/99). Today, of 5.1 million ha cultivated in Greece, 31,000 are organically farmed, which represents .6 percent of the total (Lunde 2007; Doukas, undated). According to IFOAM (Doukas 2001), of 95 countries, Greece places 36$^{th}$ in extent of relative cultivated acres. According to data from 2003, the top producing counties in Greece are Laconia, Aitoloakarnania, Achaia, Chalkidiki, and Grevena. In Kefalonia, a variety of organic products are grown or produced with an option of three certification organizations: Dio, Fysiologiki, BioHellas. Growers also participate in international programs.

Greece has four organic farming agencies (Doukas 2001): the Union of Organic Farmers of Greece, Science Society for Organic Agriculture, Workshop for Ecological Practice, and the Union of Consumers of Organic Agriculture Products. The main organic products are olives, olive oil, other vines, and other tree crops especially citrus. Currants are listed only by DIO, crocuses for saffron by Fysioogoki. Organic olive cultivation is popular – it is distinguished by non-toxic fertilization and pest control practices.

The practical application of concepts of sustainability to agricultural systems is illustrated by the recommendations of numerous analysts as outlined below.

| Natural/Habitat-based Farming | | |
|---|---|---|
| *Ecosystem service provided* | *Farm practices* | *Agricultural landscape management practices* |
| Protect native ecosystems | Protect or restore patches: wetlands, forests, prairies | Maintain corridors in and between farmstead areas with high conservation value |
| Improve landscape connectivity | Hedgerows, windbreaks | |
| Protect aquatic/terrestrial species | Breeding area habitats, etc. | |
| Landscape beauty | | |
| Recreational access | | |
| Pollinator protection | | |

Such systems would:

- Build on local knowledge of pest management, soil, and nutrient conservation, water conservation and harvesting, waste recycling and irrigation;
- Build on local social organization and management systems; and,
- Use process-oriented approaches for projects to permit sequential and adaptive planning and development.

They would incorporate:

- Efficient energy and resource use;
- Practices that optimize the rate of turnover and recycling of nutrients, maximize multiple use capacity of the landscape, establish energy efficient flow (Warner 2007);
- Marketing of crops with unique characteristics due to microclimate and physical locale; and,

In our discussion, it also is important to consider the scale of analysis (Schneiderbauer and Ehrlich 2006):

- Individual;
- Household (building quality);
- Administrative community;
- Cultural community; and,
- National regional (good governance and policy).

The production system should be designed with consideration of the following (Altieri 1995, 89ff):

- Purpose (why the system is being established --quality, yield, heritage considerations);
- Boundary (where the system begins and ends);
- Context (external environment in which the system operates);
- Components (main constituents that form the system);
- Interactions (relationships between components);
- Inputs (items used by the system that come from outside it);
- Resources (elements in the system that are used in its functioning: e.g., soil, energy, etc.);
- Products of performance (primary desired outputs); and,
- By-products (useful but incidental outputs)

Yet another way to conceptualize thinking about these systems includes the following factors (Kok et al 2006):

*Environment*

- Net energy inputs
- Soil degradation
- Safe water
- Arable land
- Net thermal units to environment
- Air quality
- Noise quality
- Biological diversity
- Climate, weather
- Water quality, siltation

*Economy*

- Percent arable land that's actually being used
- Real GDP per capita
- Adult illiteracy rate
- Different indicators of literacy/illiteracy

*Society*

- Rural population growth (annual percent)
- IMR
- Life expectancy
- Morbidity

*Institutions*

- Public expenditures on defense vs. education, primary and secondary
- Degree of democratization
- Human freedom index

Another schema (Scherr and McNeely 2007) would include:

- native ecosystems;
- landscape connectivity for mobile species;
- habitat for native aquatic and native terrestrial species;
- carbon emission reduction (avoids deforestation and encourages perennials);
- water quality;
- flood control;
- landscape beauty;
- recreation; and,
- pollinator protection.

At any rate, criteria for designing and assessing the system should be (Birkmann 2006a; Schneiderbauer and Ehrlich 2006):

- Measurable;
- Capable of measuring important key elements instead of trying to indicate all aspects;
- Analytically and statistically sound;
- Understandable;
- Easy to interpret;
- Sensitive and specific to the underlying phenomena;
- Valid/Accurate;
- Reproducible;
- Based on available data;
- Cost effective.

Climate change

One very important consideration in planning and implementing agricultural systems for food security is accelerated climatic change. One of the most well respected scientists in this area, Cynthia Rosenzweig, has produced some widely-cited estimates for the agricultural effects of climatic change. Rosenzweig is co-chair of the working group of the International Panel on Climate Change.

Using computer simulations as "crop models," which were originally created during the 1950s in part to help the United States predict how much grain the Soviet Union was likely to harvest. Rosenzweig estimates that for the next few decades, climate change probably won't seriously impact global food supplies. Canada and other temperate-zone countries are likely to grow more food, partly because rising temperatures will lengthen the growing season in higher latitudes; developing countries will get less rain and experience more frequent droughts. The additional warmth negatively affects crops, and thus farmers in developing countries are more vulnerable. By 2080, however, global food production overall will begin to decrease. The need to reduce carbon emissions in agriculture and throughout other economic sectors cannot be overemphasized.

Wine grapes, and perhaps olives, too, are highly sensitive to rapidly-changing climatic conditions. Some observers use wine grapes as an indicator of global warming, as in the last medieval warm period in England. Recent research shows a gradual increase in the potential alcohol levels at harvest for Riesling in Alsace of nearly 2 percent in the last 30 years-- and worldwide as well; the same tendencies are being observed elsewhere in Europe as well as in the Pacific region of the US.

**The Case of Kefalonia**

Considerable information exists on traditional olive cultivation, processing, and marketing techniques (Lunde 2007). In Farsa, some trees are over 2,000 years old, in Troinata, 1,000 years. According to the 2000 Census of Agriculture, 534,701 ha of land with trees of various sorts were reported in Kefalonia, divided among 4,735 plots; olive trees are present in almost all tree-containing plots. Additionally, unregistered trees also may exist in some places.

The Union of Agricultural Cooperatives of Kefalonia and Ithaca has information on current co-op members in Farsa. Members receive funding from the Reformed 2004 CAP “Uniform Subsidy” which is granted yearly. The subsidy is independent of the kind and amount of production. Members are required to respect laws of public health, health of plants and animals, and environmental protection.

In 2004-05, 15 producers of olive oil in Farsa were registered with the co-op. There were 1,201 trees registered as well as 1,536 kg of oil production. Absentee landlords are not allowed to participate in subsidy programs. The Ministry of Environment and Public Works registered 1000 trees in Upper Farsa alone. Given that a high-producing tree can produce 20 kg of olives yearly and that 3-5 kg of olives are needed to produce one kg of oil, the trees of Farsa could produce 5,600-9,300 kg olive oil/yr; this is more than enough to support a local co-op press (Lunde 2007).

It is important to note, however, that many of the trees above the old village suffer from neglect, particularly a lack of pruning resulting in trees taking the shape of a globe so that light can’t penetrate fully and most solar energy is expressed in the branches rather than the fruit. Perhaps as with Robola, which has over 1,000 members in the San Gerasimos region of Argostoli managed by EUROMED partner Spiros Andonatos, vines have been

revitalized and a small  percent of profits given back since few growers have any investment capital. Such ideas can perhaps be adopted in our case villages.

**Concluding Words**

The EUROMED project seeks to reframe food security as a crisis of access to information and management of sustainable inputs – in production and consumption. It seeks to use policies and planning tools to envision a plentiful and secure food supply which also protects the resource base and cultural heritage. In so doing, the project offers ways forward in addressing the ever-illusive tripartite goal of economic viability, social acceptability, and environmental sustainability.

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