Food and Water Security with Food Sovereignty

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- 6. Threats to food sovereignty: three models of food production
- Conclusions: food sovereignty as resiliencebuilding from top-down to bottom-up for improving human, gender and environmental (HUGE) security

Water Security

- Water is vital for the life and health of people and ecosystems
- One common goal: to provide water security in the 21st Century:
 - This means ensuring that freshwater, coastal and related ecosystems are protected and improved;
 - sustainable development and political stability are promoted;
 - every person has access to enough safe water at an affordable cost to lead a healthy and productive life
 - the vulnerable are protected from the risks of water-related hazard
- Water resources are under **threat** from pollution, overexploitation, land-use changes, unsustainable use, climate change and other anthropogenic forces.
- Links between threats and poverty: the poor who are hit first and hardest (slum dwellers without basic services).
- One simple conclusion: **business as usual is not an option.**

Uses of Water



Water Related Security

- Water as an issue of *economic security:* creates development opportunities.
- Water as a key problem of *social* or *societal security:* permits livelihood, recreation and joy of life.
- Water creates *environmental security:* maintains eco-system services and protects the biological, and hydrological cycles and the ecosphere.
- Water is a precondition for *food security:* permanent, sufficient, accessible, safe and nutritional food that is also culturally accepted requires enough water.
- Water is essential for *health and livelihood security:* protects people from thirst, water-born/vector diseases, but also from floods, drought and plagues.

Some definitions: Food security

Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life.

Household food security is the application of this concept to the family level, with individuals within households as the focus of concern. Vulnerable people are greatly exposed to famine (FAO, 2003)

How is Global Environmental Change related to Food Security?

- GEC is more than climate change
- Includes natural plus human components
- It is a constelation of changes in different spheres, such as:



Ecosystem Services as Foodprovider

- 15 out of 24 ecosystem services are degraded or used unsustainably
- Soil nutrient depletion, erosion, desertification
- Depletion of freshwater reserves and pollution of groundwater
- **Overfishing** is pressuring fragile soils
- Loss of tropical forest and of biodiversity reduces food availability
- Urbanization is diminishing the availability of land for food production.

Via Campesina's food sovereignty

"Food sovereignty is the right of people, communities, and countries to define their own agricultural, pastoral, labour, fishing, food and land policies which are ecologically, socially, economically, and culturally appropriate to their unique circumstances. It includes the right to food and to produce food, which means that all people have the right to safe, nutritious and culturally appropriate food and to foodproducing resources and the ability to sustain themselves and their societies" (2004).

World Food Situation



Fuente: FAO, 2002

Food and virtual water in 2000 (only grains)



International Corn Prices



source: Rosegrant, Mark W.; Cal, Ximing; Cline, Sarah A., 2002: 20

Food Price Speculation, November 2009



Food Commodity Price Indices 2002-2004=100 340 ------Sugar 280 -220 Oils Cereals and Fats 160 Dairy Meat 100 ----OND FMA A 5 0 М

2009

2008

Hunger and bioenergy

- Cultivation for bioenergy, electricity and heat
 - Crops (grains and agricultural waste)
 - Forest waste
 - Solid municipal waste
- Who produces? OCDE; Brazil
- Why?
 - Energy security
 - Climate change mitigation
 - Rural development
- Required characteristics
 - Native, perennial, rapid growth, resistance to illnesses, no competition to food, not invasive
 - Switchgrass (Panicum virgatum)
 - Alamo



Causes of food emergency

Per cent of food emergencies*



* Total exceeds 100% because of multiple causes and cited for many emergencies.

** Includes internally displaced people.





Exploitation of marine fish stocks

Figure 4.13 Exploitation status of marine fish stocks

per cent

100 Crashed Overexploited 90 Fully exploited 80 Developing 70 Underdeveloped 60 50 40 30 20 10 0 Con the she she he he and the the star the the the the star the the the the the the the star the the the P. Source: SAUP 2006



Figure 6. High Potential for Food Crisis 2001-2050 – with GDP Increase and Climate Change.

Global Hunger Index 1990 & 2008



*percentage decrease in 2008 GHI compared with 1990 GHI

Food security 2040 - 2069 (HADCM3 GGa1)

Food Scenarios: 2020, 2050, 2090



potential yield change [%]





potential yield change [%]

Food security 2070 - 2099 (HADCM3 GGa1)



-10 -5 -2.5 0 2.5 5 10

no data

Social Processes and Food Insecurity

Threats to Food Sovereignty: 3 Models of Food Production

Productivity paradigm
Life science paradigm
Green agriculture paradigm

A Problem of Equity

- Each sixth person in the globe is hungry: 1.06 billion are undernourished, have not enough food or money to pay for it. Food price rise provoked 107 million more hungry people in 2008. MDG can not be reached and affects above all rural and urban poor.
- Land Degradation and Desertification affect one third of the world land surface and affects around 485 million people; 46% of people in Africa have 43% of desert.
- In Africa the **productivity loss/year** is estimated in 0.5-1%
- Desertification and land degradation pose multiple global, regional and national security issues: food, water, climate, livelihood, health, urban, rural and transportation security.
- Desertification and land degradation agravated by drought may induce large-scale forced migration movements, hunger riots and emerging conflicts on scarce resources.

Productivity paradigm

- Green revolution with intensive use of chemicals, veterinarian drugs, improved seeds, machines, fossil energy, and irrigation systems;
- industrialization of agriculture.
- cheap and homogenous food for urban areas with government subsidies,
- Low food prices leaving poverty in the countryside.
- Production controlled by agronomists, veterinarians, and the chemical industry.
- **Ministry of Agriculture** managed natural resources: soils, water, forests, flora, fauna, and fish. Health and environment concerns were marginal.
- Limits of this model: negative effects on health, environment (scarcity in water and oil resources) and the destruction of rural livelihood.

Life science paradigm

- Life science model integrates the food chain in form of clusters of production, transformation & trade of food.
- Combines genetic research with field experiments, biotechnology, engineering, nutrition, pharmacology, health, and mobile field labs controlled by multinational food chains.
- Offers clean and homogenous products that can stay for weeks on the shelves of supermarkets, thanks to genetically modified genes and organisms with some undesired social, health and environmental effects.
- **Cornucopian vision** of life where MNE resolves environmental, social, and health problems through science and technology.
- Increases costs of production and food prices due to TRIPs, and created monopolies of agro-chemicals and food transformation.
- Food get transformed into medicine (Nestlé, 2002)



Accidents with Genetic Modified Organisms: Transgenics



Source: © GeneWatch UK/Greenpeace International

* Europe as a whole is given as a country for one of the B710 maize contamination incidents because the actual country of import is not known.

Green agriculture

- Green model generates symbiotic relations and mutual dependence between nature and food production, using soft methods of agriculture.
- Regionally diverse, utilizes policultivation, association of crops, rotation, mixed agriculture, bio-fertilizers, fixation of nitrogen from air to soil, bio-pesticides, traditional methods of soil conservation and food, inte-gral management of water, plagues, and environmental services.
- Local agricultural production, transformation and trade, with access for peasants to water, seeds, credits
- Women as key producers for food issues, care about vulnerable and consolidate livelihood,
- When livelihood in villages and countries is guaranteed public resources for **poverty and hunger alleviation** can be reduced and reallocated for other development purposes, creating stable social relations synergies and cooperation.

FAO Program after Food Summit

- To eradicate hunger from the earth.
- To feed 2050 world population: will grow 50 % & reach 9 billion
- More coherent and effective system of governance of food security at national and international levels.
- **Developing countries get fair chance** in world commodity markets (no unfair international trade).
- Ensure farmers incomes comparable to other sector workers.
- Mobilize additional public and private sector investments in agriculture and rural infrastructure to boost food production and productivity.
- More than 30 countries have food emergencies: effective mechanisms for early reaction to food crises.

Women are Key Food Producers

- Women are in all parts of the world responsible for food and food transformation
- Sub-Saharan Africa countries women represent:
 - 33 % of the rural labour force;
 - 70 % of paid rural daily work;
 - 60-80 % of self-subsistence crops and local sale;
 - 100 % of food transformation;
 - 80% of harvest, transportation from the fields to the community and food storing;
 - 90% of weaving and hooking;
 - 60% of market activities (FAO, 2008)

Integral proposal of poverty alleviation and environmental recovery to reduce migration

Investing in the interdisciplinary science of sustainable development

Rising well-being

Ecosystem

sustainability

Investing in

environmental

conservation

Investing in poverty reduction



Survival Strategies





Survival Strategies (Oswald, 1991, 2007)

- 1. Massive rural migration to urban slums
- 2. Illegal occupation of marginal and risky land
- 3. Construction of shelter with precarious materials (waste)
- 4. Chronic unemployment of men and lack of cash
- 5. Selling unnecessary goods
- 6. Credits from family members and neighbors
- 7. Economic crises increases and lack of food
- 8. Recollection of perished fruits and vegetables
- 9. Collective popular kitchen
- 10. Rotation of women in collective community work (kitchen, child rearing)
- 11. Common struggle for basic services (electricity, water, access, community center)
- 12. Communal organization for regularization of land and services
- 13. Struggle for public subsidies and poverty alleviation programs
- 14. Temporary paid work
- 15. Multiple activities: services, handicraft, food, washing, ironing, paid jobs
- 16. Social organization against organized crime and gangs
- 17. Empowerment and fight against intra-family violence
- 18. Social and economic consolidation of colony and families

Fig 1. Model of selfreliant entrepreuneurship Programation Common cultural identity External evaluation Identification of projects Internal organization Auditing Cultural consolidation Capacity-building Execution Instruction Internal control Administrative structures Insurance Legalization Financing

Self-sufficient Micro-business in Campeche, Mex.





Transition to Alternative Livelihoods and Sustainable Economy

- Decentralized governance: traditional knowledge from women, peasants, grassroots movements against desertification
- Consolidation of leadership (local clergymen, spiritual leaders, doctors, lawyers, schools, teachers) and training (old/young people, migrants)
 - Off-farm jobs create financial resources to recover degraded land and feed people. Concrete Action Programmes to prevent
 - migration, crises and conflicts.

Achieving Soil, Water, Food Security for People Most Affected by GEC Food security & sovereignty (FAO, Via) Campesina). • Water security: Ministerial Declaration World Water Forum, The Hague (2000) Health security (WHO, scientific discourse Human, gender and environmental: a HUGE security addresses major related challenges for the people most affected by GEC.



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