

Chapter 3 : Conventional Food Systems

I. Definition and General Overview

1. Definition

The conventional food system refers to the dominant global model of food production, processing, and distribution that relies on industrialization, chemical inputs, and large-scale mechanized agriculture.

2. Scope

It encompasses all activities involved in bringing food from farm to table, including production, transformation, storage, transportation, marketing, and consumption.

3. Objectives

Its main goal is to maximize productivity and economic efficiency to meet the food demands of a rapidly growing population.

4. Relation to Agriculture

Conventional agriculture is the foundation of this system. It depends on synthetic fertilizers, pesticides, and genetically improved seeds to ensure high yields and standard quality.

5. Global Significance

This system dominates the global food economy and shapes international trade, consumer habits, and agricultural policies in most developed and developing countries.

6. National Relevance (Algeria)

In Algeria, the conventional food system began developing after independence through state-driven modernization policies aiming to increase agricultural output and reduce food imports.

II. Historical and Global Context

1. Origins of the Conventional Food System

The conventional food system emerged during the Industrial Revolution in the 19th century, when technological progress transformed traditional agriculture into a mechanized and market-oriented activity.

2. The Green Revolution (1940s–1970s)

The modern form of the system was consolidated during the Green Revolution, which introduced high-yield crop varieties, chemical fertilizers, and irrigation technologies, especially in Asia and Latin America.

3. Industrialization and Globalization of Food

Post-World War II industrial expansion and globalization of trade led to the dominance of multinational corporations controlling seeds, fertilizers, processing, and distribution networks.

4. Urbanization and Changing Lifestyles

The growth of urban populations changed dietary patterns toward processed, standardized, and convenience foods, reinforcing the conventional system's dominance.

5. **Technological and Economic Drivers**
Advances in machinery, refrigeration, transport, and biotechnology, coupled with market liberalization, have made the system more productive and globally integrated.
6. **Algerian Context**
In Algeria, modernization of the food system accelerated after the 1970s through agricultural development plans such as the “Révolution Agraire” (Agrarian Revolution), which aimed to increase national food production and promote industrial processing.
7. **Current Situation**
Today, Algeria’s food system remains largely conventional, depending on large-scale production, imported agricultural inputs, and centralized distribution through industrial and commercial channels.

III. Main Characteristics of Conventional Food Systems

1. **Intensive Use of Agricultural Inputs**
Conventional systems rely heavily on synthetic fertilizers, chemical pesticides, and improved seeds to maximize crop yields and ensure large-scale production.
2. **Mechanization and Technological Dependence**
Modern machinery such as tractors, harvesters, and irrigation systems enables large-scale operations but also increases dependency on fossil fuels and imported technologies.
3. **Monoculture Practices**
Large areas are often devoted to a single crop, simplifying management but reducing biodiversity and increasing vulnerability to pests and soil degradation.
4. **Industrial Food Processing**
Raw agricultural materials are transformed into standardized, long-shelf-life products such as canned foods, dairy derivatives, and refined cereals through industrial processing.
5. **Globalized Supply Chains**
Production, processing, and distribution are interconnected at the international level, with multinational corporations playing a central role in global food trade.
6. **High Energy and Water Consumption**
Conventional agriculture requires large quantities of energy and intensive irrigation, especially in semi-arid regions such as those found in Algeria.
7. **Market Orientation and Profit Maximization**
Food production is mainly driven by profitability and competitiveness rather than by local nutritional needs or environmental sustainability.
8. **Example: Cereal Production in Algeria**
In Algeria, cereal farming (mainly wheat and barley) clearly reflects these characteristics through the use of chemical inputs, mechanized harvesting, and industrial milling.

IV. Advantages of Conventional Food Systems

1. **Increased Food Production and Availability**
Conventional systems enable large-scale food production capable of meeting the nutritional needs of growing populations, both nationally and globally.
2. **Improved Agricultural Productivity**
Through the use of chemical fertilizers, improved seeds, and mechanized techniques, crop yields have significantly increased compared to traditional methods.
3. **Economic Efficiency and Cost Reduction**
Mass production allows economies of scale, lowering unit costs and making food products more affordable for consumers.
4. **Technological Innovation and Modernization**
The adoption of new technologies in machinery, irrigation, and genetic improvement has modernized agriculture and increased its resilience to climate variations.
5. **Food Security and Supply Stability**
By ensuring continuous and large-scale production, conventional systems contribute to national food security and reduce dependency on imports.
6. **Development of Agri-Food Industries**
Conventional systems support the growth of food processing industries, storage facilities, and logistics sectors, generating employment and economic value.
7. **Example: Algeria's Cereal Sector**
In Algeria, cereal production has benefited from mechanization, improved irrigation systems, and fertilizer use, helping to reduce the country's dependence on imported grains.

V. Limitations and Criticisms

1. **Environmental Degradation**
Conventional food systems rely heavily on chemical fertilizers, pesticides, and intensive land use, leading to soil degradation, water pollution, and loss of biodiversity.
2. **Climate Change Contribution**
High energy consumption, greenhouse gas emissions from machinery and livestock, and deforestation make the system a major driver of global climate change.
3. **Overdependence on Chemical Inputs**
Continuous use of synthetic fertilizers and pesticides depletes soil fertility over time and poses health risks to both farmers and consumers.
4. **Economic and Social Inequalities**
Large-scale industrial agriculture often benefits corporations and wealthy landowners, while small farmers struggle to compete and may lose their livelihoods.
5. **Loss of Traditional Knowledge and Cultural Diversity**
The dominance of standardized food systems reduces reliance on local practices, traditional crops, and cultural food heritage.
6. **Health Concerns and Nutrition Quality**
Highly processed foods typical of the conventional system often contain excessive sugar, fat, and additives, contributing to obesity and chronic diseases.
7. **Example: Algeria's Agricultural Challenges**
In Algeria, soil salinization, limited water resources, and overuse of fertilizers have raised concerns about the long-term sustainability of conventional farming practices.

VI. Transition Toward Sustainable and Alternative Systems

1. Need for Transformation

Growing environmental, social, and health challenges have revealed the limits of the conventional food system, making the transition toward sustainability a global necessity.

2. Concepts of Sustainable and Alternative Systems

Alternative food systems aim to balance productivity with ecological preservation, social equity, and nutritional health. These include organic, local, and circular food systems.

3. Key Strategies for Transition

Reforms include promoting agroecology, supporting smallholders, improving resource efficiency, and encouraging responsible consumption.

4. Technological and Policy Innovations

Innovation plays a central role in this shift through precision farming, renewable energy use, and national food strategies promoting local value chains.

5. The Role of Education and Research

Universities, research institutions, and training centers contribute to the dissemination of sustainable practices and the development of innovative solutions adapted to local realities.

6. Algeria's Ongoing Efforts

In Algeria, several initiatives have been launched to promote sustainable agriculture, reduce dependence on imports, and strengthen food sovereignty through programs such as the "National Plan for Agricultural and Rural Development (PNDAR)."

7. Future Perspectives

The challenge for Algeria and the world lies in building a food system that combines productivity, equity, and sustainability to ensure long-term food security for all.

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